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Reforming Welfare States

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1. Introduction

This report presents first results from four distinct work packages concerned with the Welfare State reform of research Area 1 of the WWWforEurope project. The aim of this first stage of the project (the "analytical work") was to provide a solid theoretical and empirical background for the derivation of policy recommendations that will follow in the second stage of the project. The starting point of the analysis was that advanced welfare systems in developed nations carry out numerous important economic and social policy tasks. Governments provide more or less comprehensive social insurance against risks of unexpected income losses: they produce specific services, most notably in health care and education, and they redistribute income and wealth via taxes and transfers, in order to facilitate economic efficiency, bring down poverty, slash social exclusion and establish higher equality of starting positions.

Expenditure on social issues is by far the largest spending category in the European Union Member States' budgets. According to functional National Accounts statistics (COFOG[1]), general government outlays on social protection, health and education sum up to an average of 32.2% of GDP in the EU-27 (2011), reaching a maximum of 41.4% of GDP in Denmark. Despite a substantial rise in expenses since 2007, welfare spending in the United States still amounts to a comparably moderate 24.8% (2010), and in Switzerland government expenditures for social welfare add up to just 21.4% of GDP. The share of welfare spending on overall government spending is above 50% in all Member States, and the (unweighted) budget share across all EU-27 countries in 2011 sums up to 62.6%.[2]

Moreover, to accomplish certain objectives, such as the improved protection of workers from arbitrary or unfair treatment, and to ensure more efficient contracting, advanced Welfare States frequently rely on a system of complex labour and employment laws. Available data show that such regulations differ significantly across countries in Europe (Koster et al., 2011; World Bank, 2013). Allowing for various configurations of labour market regulations and social expenditures, evidence for the development of a uniform "European Welfare State" regime is absent (Esping-Andersen, 1999; Hall and Soskice, 2001; Arts and Gelissen, 2010; Ebbinghaus, 2012). Despite this lack of a common definition and probably also common view of the role of the Welfare States among the individual Member States of the EU, the European Union envisions a new growth path for Europe that will at the same time be "smart" (i.e., based on knowledge and

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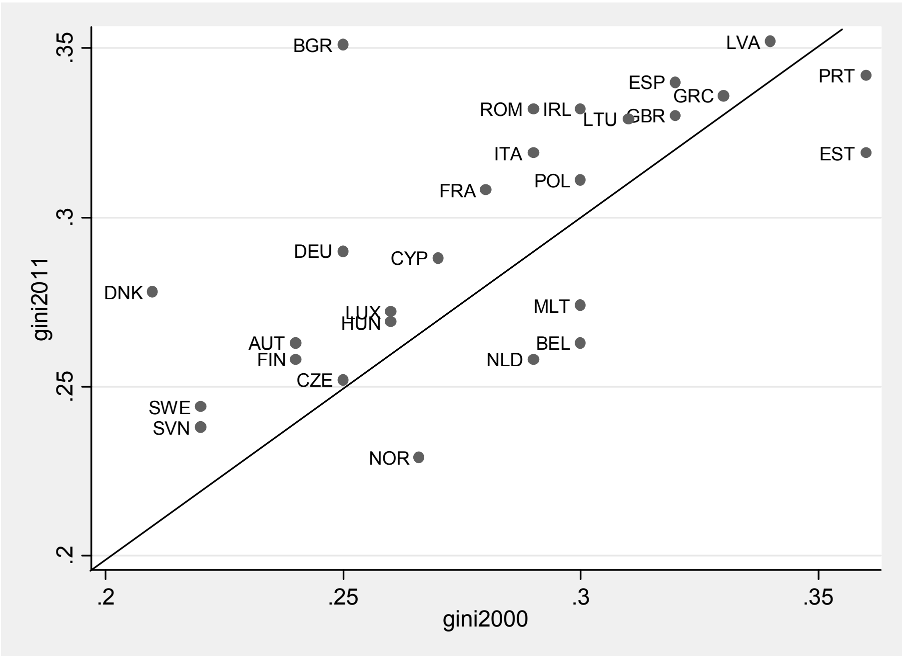
1 The Classification of Functions of Government (COFOG) is fully compatible with National Accounts Statistics as regards its sectoral classification. Moreover, COFOG data also cover those European Union countries that are not OECD Members. This definition of welfare spending is, however, slightly different from the definition in the OECD's social expenditure data base (SOCX), see Adema et al. (2011).

2 Focusing on public social expenditure alone may, however, be an inappropriate measure of the size of the Welfare State, since this does not account for private social expenditure and the specifics of national tax systems. In this context, Adema et al. (2011) notes that "Accounting for the effect of the tax system and private social expenditure leads to greater similarity in social expenditure-to-GDP ratios across countries and to a reassessment of the magnitude of welfare states. After accounting for the impact of taxation and private benefits, social expenditure amounts to over 30% of GDP at factor cost in Belgium and France. Differences in social expenditure amount to a few percentage points for Austria, Canada, Denmark, Finland, Italy, Japan, the Netherlands, Portugal, the United Kingdom and the United States."

education), “sustainable” (i.e., resource efficient, green and competitive) and “inclusive”, aimed at high employment and delivering economic, social and territorial cohesion (European Commission, 2010).

However, with regard to the inclusiveness goal, there is some evidence that the redistributive capacities of advanced Welfare States have also declined over the last decades. A recent OECD report (2011) highlights that over the past 20 years market-income inequality has increased in almost all OECD countries. Since the mid-1990s, however, cash transfers and progressive income taxes have not offset this development, despite higher overall cash transfer spending (Immervoll and Richardson, 2011). Figure 1 confirms that between 2000 (or the earliest year for which data are available) and 2011 a vast majority of the EU Member States experienced an increase of inequality as measured by the Gini-coefficient of equivalised disposable household incomes. Only five EU-countries and Norway are situated below the 45°-line in Figure 1, and have hence observed a reduction of “after tax and cash transfer-income inequality” over the respective time period.

Figure 1 **Gini-coefficient of households’ disposable incomes (after taxes and transfers) in EU-27 plus Norway (2000 or earliest available year vs. 2011)**



Source: Eurostat. Data for Czech Republic, Denmark, and Sweden refer to 2001, Norway to 2003 and Slovakia to 2005 instead of 2000.

Government services and provision of in-kind benefits should mitigate the adverse consequences of income inequality to a certain extent. For a sample of 27 OECD economies covering the period from 2000 to 2007, Verbist, Förster and Vaalavuo (2012) analyse how the income distribution changes when the value of publicly-provided social services to households is included. Five categories of public services (education, health care, social housing, child care and elderly care) are considered. They report that if in-kind benefits are imputed in disposable cash income, households' resources increase by almost 30% on average. Notwithstanding methodological problems of imputation and cross-country differences in the efficiency of public service provision, the data also indicate that social service benefits substantially reduce income inequality and poverty. In that respect, education and health services appear to have the strongest redistributive impact.

The possible causes of inequalities of incomes, but also wealth, education and health outcomes, are manifold. For overall well-being and sustainability issues the problem of inequality of opportunity may be the most important by far (Atkinson and Morelli, 2011). There is a "fairness accord" based on which unequal outcomes of an income-generating market process are to a certain extent acceptable, if they are rooted in variations of individual effort. Ethically or morally based notions of fairness and justice, however, suggest that differences in external circumstances which are beyond an individual's control are usually not seen as tolerable sources of inequality (Roemer, 1998; Lefranc, Pistolesi and Trannoy, 2008). "Fair inequalities" may thus co-exist with "unfair inequalities" (Checchi, Peragine and Serlenga, 2010). From this point of view, the impact of external factors such as family background, gender and ethnicity on individual success and/or intergenerational mobility should be reduced.

Inequality of opportunity, furthermore, seems to play an important role beyond such questions of justice and fairness. In particular, removing certain forms of inequality may contribute to the achievement of other economic objectives. For instance, while previous empirical studies do not produce clear-cut results with respect to the question of whether income inequality affects growth performance positively or negatively (e.g., Alesina and Perotti, 1994; Deininger and Squire, 1998; Forbes, 2000; Banerjee and Duflo, 2003), the contribution by Crespo Cuaresma, K.C. and Sauer (2013, Annex II) analyses the impact of inequality of educational outcomes on economic growth. In the first place, the authors document important stylized facts with respect to the inequality of education and educational mobility, such as a general trend towards a more equal distribution of human capital across individuals at the global level over the last decades, a rather sizable gender gap in educational attainment in European and Southern European economies in particular, and long cycles in intergenerational education mobility. Moreover, Crespo Cuaresma, K.C. and Sauer find that, beyond the link between educational attainment and income developments, intergenerational education mobility is also positively related to economic growth. Countries that have succeeded in reducing educational disparities, particularly amongst their younger cohorts, have grown more rapidly in the last five decades than countries which have been less successful in this endeavour. According to these results, policies aimed at providing broad-based access to schooling and improving intergenerational education mobility and equal access to education therefore have a double positive return in terms of economic development.

This finding is in line with recent results which suggest that one should distinguish different effects. For example, unequal outcomes due to dissimilar efforts may contribute positively to economic development as incentives to work hard may be strengthened, while inequality of opportunity could be seen as an obstacle for such development through reduced opportunities (Aghion, Caroli and Garcia-Penalosa, 1999). For instance, on a more general level, a recent paper by Marrero and Rodriguez (2013) explicitly investigates the relationship between these two different sources of inequality and growth. Employing the Panel Survey Income Dynamics database for 23 states in the United States, they find the expected robust support for a negative relationship between "inequality of opportunity" and growth, and a positive relationship between "inequality of returns to effort" and growth performance. Taken together, this leads to a revised understanding of a modern Welfare State, not just as an agent for ex-post-redistribution of unequal incomes and wealth, but even more as a promoter of equal employment opportunities and labour market participation.

Against this background, advanced Welfare States across Europe face broadly similar challenges.

- Emergence and diffusion of new technologies, and a transformation from more traditional modes of industrial production towards a post-industrial society and the associated changes in life-styles and habits have an impact on the work environment and generate new economic opportunities, but also breed new forms of social risks. An on-going process of individualisation of lifestyles and pluralisation of family forms, accompanied by a shift in gender roles, also challenges traditional means of providing insurance through the Welfare States.
- Globalisation amplifies competitive pressures from within the European Union and – even more so – from non-European low-wage countries. On the one hand, economic integration may reduce employment prospects for particular societal groups, generating higher demands for new Welfare State provisions. On the other hand, competitive forces and the increasing international mobility of tax bases put the generosity of certain welfare regimes in Europe under further retrenchment pressures, especially in light of the on-going sovereign debt crisis.
- Demographic developments generate further closely related reform challenges. Population forecasts suggest that most European countries will face a rapidly ageing society, as well as increased diversity in their foreign-born populations. Rising longevity and falling fertility rates generate additional spending requirements for old-age-related issues like public pensions and health care, and simultaneously intensify fiscal strains as a result of rising old age dependency ratios and potentially reduced economic growth (European Commission, 2011). Increasing diversity, by contrast, is likely to raise demands on Welfare States in terms of the integration of foreign-born populations and will in all likelihood also reframe the debate on equal opportunities among different groups of the population.
- Over time, maturing Welfare States establish mutual dependencies between beneficiaries (voter groups), politicians and welfare bureaucracy. Developed social security systems create entitlements for many groups in a society. A change in the rules creates winners which are often difficult to make out, as benefits accrue in the future and are diffuse, along with more easily identifiable groups of losers, which are often politically vocal. The implementation of Welfare State reforms is therefore a difficult and sometimes risky task for governments who wish to remain in office.

The remainder of this report discusses these challenges in light of the current state of research in the respective fields, focusing on the contributions from the working papers that have been produced in four work packages of Area 1 of the WWWforEurope project presented in this report. Section 2 is dedicated to the "new social risks" faced by European citizens as a consequence of socio-economic change subsumed under the heading of "post-industrialization", with a specific focus on the issue of female employment and the reconciliation of work and family. The next sections address the challenges to the Welfare State that stem from globalisation (section 3) and from the demographic evolution of European societies due to ageing and migration (section 4). Section 5 tackles the question of Welfare State reform from the political economy angle, providing a detailed overview of our understanding of obstacles and pathways to reform processes in democratic regimes. In the final section of this report we discuss avenues for future research and draw first tentative policy conclusions, which will be developed and scrutinized in the second phase of the WWWforEurope project.

2. Post-industrialisation, new perspectives on social risks

The first of the above-mentioned challenges has led to wide-ranging discussions on the capacity of European Welfare States to address social risks in an effective and sustainable way. These discussions have often been framed by the notion of "new social risks". Generally speaking, these can be understood as situations in which individuals experience welfare losses as a consequence of long-term trends such as de-industrialisation and tertiarisation of employment, women's entry into the labour market and the increased instability of family structures (Bonoli, 2005, 2007; Taylor-Gooby, 2004; Pintelon et al., 2011). Examples include having a precarious position on the labour market, being working poor, lacking sufficient social insurance or being unable to reconcile work and family. Thus, new social risks are typically related to changes in the sphere of the labour market or the family, and often result from the intersection of these two life domains (Bonoli, 2006).

Depending on the definition and perspective of interest, a list of new social risks can contain a varying number of risk categories. There is, however, broad agreement with respect to the identification of social risk typologies. Their "novelty" has to be interpreted in a broad sense, emphasizing the quantitative dimension with respect to the qualitative dimension. Although most risks were also present in the past, their quantitative importance and their relevance as specific social policy targets greatly increased over the last decades, because long-term socio-economic trends increased the size of social groups at risk as well as the likelihood of given social groups being affected by these risks (Huber and Stephens, 2006). Most of the recent research and associated controversy has focused on understanding the driving forces behind these risks, their distribution across population groups and the interaction between different risk typologies.

2.1 Approaches to understanding new social risks

Following the synthesis by Pintelon et al. (2011), we can distinguish three different and partly competing perspectives on social risk: the notion of individualization of risk, the life course perspective and the more traditional social stratification approach.

The first perspective stresses the fact that contemporary societies have become more fragmented and biographies more individualized, thus diminishing the role of social class and its intergenerational transmission as a structuring factor of social risk. In this view, horizontal life trajectories and lifestyles have become more important than hierarchical determinants of inequality (Vandecasteele, 2007, 2011). Social class and other external constraints have lost importance, whereas preferences and individual agency have increased their role. Hakim (2000, 2006), for instance, has developed a "preference theory" to emphasize the role of preferences as determinants of women's life choices, arguing that social structural factors and economic environments are of declining importance. There are indeed some indications that social stratification matters less than it used to with respect to certain risks, for instance the likelihood of being affected by short-term poverty (Vandecasteele, 2007). On a similar note, unemployment, which in the "Golden Age" of post-war Europe was confined to small groups of the workforce, is today more broadly spread across the population. These observations have prompted some authors to speak of a "democratisation" of risk, arguing that the expansion of flexibility and precariousness and a de-standardisation of life-courses to what Ulrich Beck has called a "risk society" (Beck, 1986).

The life-course approach shares some common ground with the individualisation perspective, stressing the role played by biographical life events as determinants of welfare. Welfare losses, such as poverty spells can be triggered by life-course transitions (such as family formation and the transition from education to employment), as well as by "risky life-events" such as partner dissolution and health shocks, and have to be understood within this context. Also, problems experienced during any specific life-cycle phase may be either a consequence of earlier difficulties or a precursor of later problems (NESC, 2005). Both the life-course and the individualization approach emphasise the importance of agency in responding to biographical events. The life-course approach is, however, more apt than the individualization thesis to incorporate elements of hierarchical stratification in its analysis.

The fact, that "traditional" determinants of social outcomes are less relevant than in the past should not lead to overstating the case for a "democratization" of risk. Social stratification research continues to emphasise the relevance of socio-economic background, gender, ethnicity and social class for numerous outcomes, including poverty duration, unemployment and health (e.g. Whelan and Maître, 2010; Schmid, 2004; Tubeuf et al., 2012). Wiborg and Møberg (2010), for instance, examine how social origin affects unemployment risks and social assistance reception over the early life course in Denmark and Norway. They find a stable impact of social background over the life course on the probability of being disadvantaged (defined as being unemployed or social assistance recipients).

This is in line with findings from another strand of the social science literature, which has focused on the existence of cumulative (dis)advantage processes over the life-course. The central idea of cumulative advantage theory is that the relative advantage (or disadvantage) of one individual or social group over another grows over time, with the consequence that inequality with respect to key stratification factors such as, among others, cognitive development, wealth or health, increases over time (DiPrete and Eirich, 2006). In the framework of life-course analysis, research on cumulative disadvantage has mainly focused on the way in which statuses and events from early points in the life-course influence lifelong development and have enduring consequences on life chances (Schafer, Ferraro and Mustillo, 2011). A large body of literature confirms the existence of long-term consequences of childhood adversity on later life trajectories, particularly with respect to well-being and health outcomes (see for instance Hayward and Gorman, 2004; Brandt et al., 2012). These findings highlight the importance of early life circumstances and lend support to the view that modern Welfare States should pay sufficient attention to addressing inequalities in opportunities. The accumulation of advantages and disadvantages can also be fuelled by on-going economic processes: Buchholz et al. (2009) investigate the impact of globalization on social inequalities along the life-course, finding that globalization induces a strengthening of existing social inequality structures through its asymmetric effect across educational groups and social classes.

From today's vantage point, the most promising avenue of research to identify levers for social policy adaption is thus the combination of the life-course and social stratification perspectives on social risks. For instance, Layte and Whelan (2002) and Whelan and Maître (2008) have shown that social class and life-cycle stage influence the occurrence of social risks in an interactive manner. Vandecasteele (2011) finds that life-course events do not trigger identical poverty effects for different social classes, affecting the most vulnerable groups disproportionately. Social class and life-course perspectives should therefore be viewed as potentially complementary, rather than as necessarily generating competing hypotheses (Pintelon et al., 2011). This interdependence between stratifying ("vertical") and biographic ("horizontal") elements is further complicated by the role of institutional factors. Welfare State institutions and policies have a profound effect on the occurrence and distribution of social risks.

Comparative studies reveal substantial differences between Welfare States in the efficacy to equalize opportunities, to prevent risks and/or to compensate persons for welfare losses. Numerous research findings highlight the relevance and usefulness of clustering exercises in the tradition of Esping-Andersen (1990) to facilitate the interpretation of institutional effects on Welfare State outcomes (e.g. Layte and Whelan, 2003; Avendano et al., 2009). There are, however, a number of caveats to keep in mind when classifying countries according to Esping-Andersen's Welfare State typologies. In the past decades, European countries belonging to the same "welfare regimes" have undergone reform experiences of different magnitude and speed, resulting in very specific reform patterns and increased heterogeneity within welfare regimes. In addition, recent research has shown how the outcome of a classification exercise might well change depending on the policy or Welfare State dimension that has been chosen.[3] Accordingly, the usefulness of Welfare State categorisations has to be judged on an ad-hoc basis, depending on the time period, country selection and topic under scrutiny.

The heterogeneity of welfare policies and institutions thus represents a further challenge for researchers, while providing the scope for comparative analysis and the identification of best

[3] Reibling (2010), for instance, shows that a focus on the access to health services leads to regime definitions and a country clustering that differs from typologies based on other system indicators. In the WWWforEurope project, Schweickert et al. (2013) use cluster analyses to demonstrate the heterogenous evolution paths of economic systems in CEECs, relying on modified Varieties-of-Capitalism classifications from Hall and Soskice (2001).

practices. As suggested by Bonoli (2007), some Welfare States, particularly the Nordic ones, have been more successful than others in adapting to changing patterns of social risk and can provide useful benchmarks for reform. In light of institutional complementarities and country-specific reform patterns, detailed policy-recommendations will have to rely on analyses that pay great attention to national circumstances.

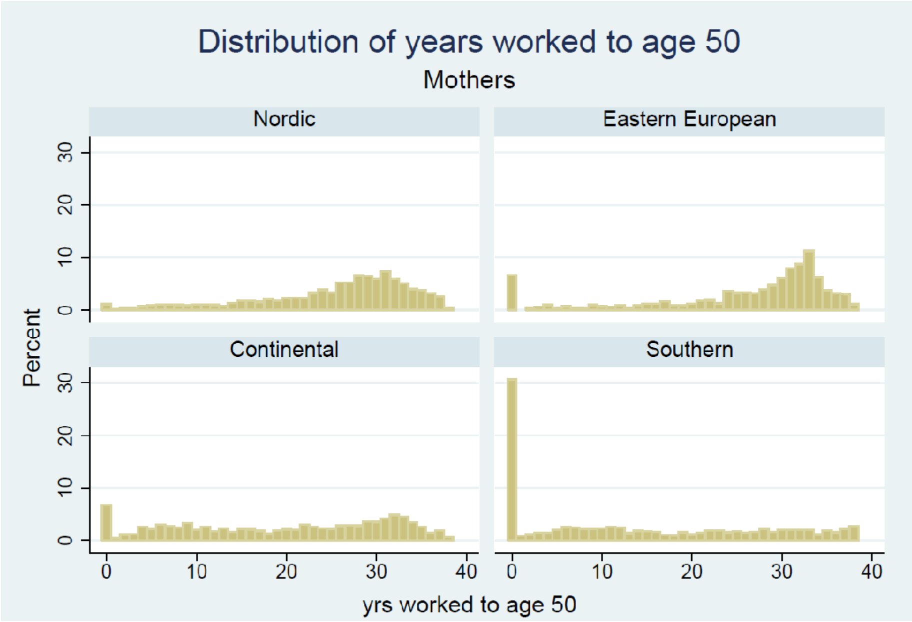
2.2 The reconciliation of family and work

One example of a field in which such an analysis can provide important new insights is the reconciliation of family and work, which – due to the still unequal gender division of unpaid work – has important repercussions on female labour market outcomes. The emergence of post-industrial labour markets has been accompanied by far-reaching changes in family life. One of the major trends is the erosion of the traditional male breadwinner/female carer family model and an increasing shift towards dual-earner families (Daly, 2005). The strong increase in female labour force participation, fuelled by a big leap in women's educational attainment, is arguably the most important trend in labour markets of the 20th century (Goldin, 2006) and certainly one salient trait of post-industrialization. It reflects an expansion of women's opportunities to pursue their individual self-fulfilment, choose between different combinations of family and career involvement, and achieve economic independence. At the same time, this momentous shift has created new tensions and needs.

Since the increase in female employment has resulted in neither an equal gender division of unpaid work nor an equivalent externalization of household activities to public or private service providers, it is primarily women who are exposed to the risk of experiencing some sort of work-family conflict. A rapidly increasing body of literature therefore scrutinizes the opportunities and constraints associated with the multiple exigencies of family and working life, as well as the outcomes that result from different individual strategies and policy settings (e.g. Misra et al., 2011; Del Boca et al., 2007; Janus, 2012).

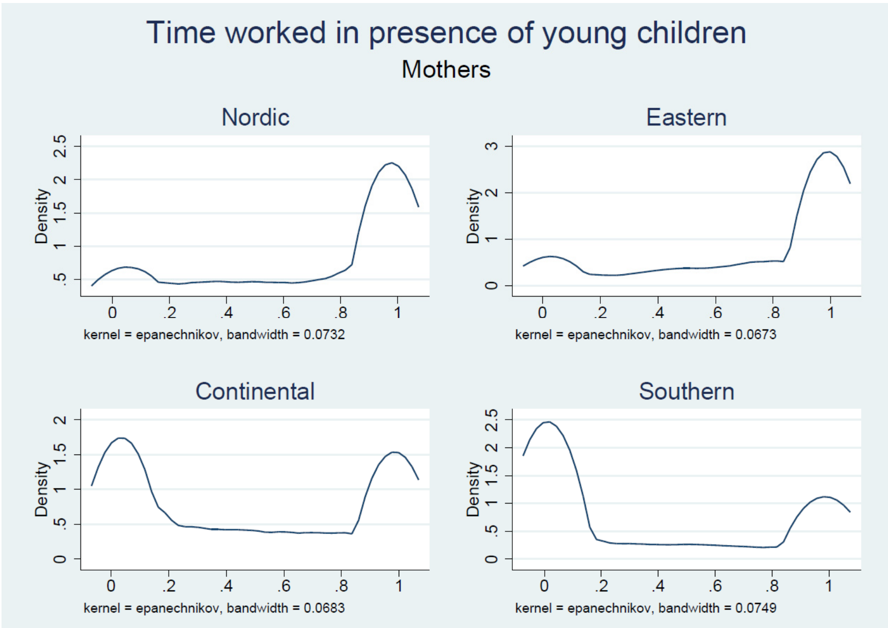
Theory and empirical evidence indicate that paid work is generally beneficial for physical and mental health, and that employed persons enjoy better health relative to the non-employed or intermittently employed (Ross and Mirowsky, 1995; Pavalko and Smith, 1999; Frech and Damaske, 2012). This finding seems plausible, as stable and steady employment is conducive to achieving economic security and is demonstrably one of the most effective protective factors against poverty. Longitudinal studies confirm the findings of cross-sectional research, showing that employment has either beneficial or neutral effects on women's health (Klumb and Lampert, 2004). Early life-course disadvantages tend to accumulate over time, as the more disadvantaged women are less likely to experience the work pathways associated with the greatest health benefits at later stages in life. The combination of work and care activities might, however, also result in work overload and work-family conflict. Moreover, outcomes may differ by country and country group, as work and family choices as well as health outcomes are shaped by different institutional settings.

Figure 2 **Distribution of years worked by European mothers up to the age of 50, by welfare regime**



Source: Leoni and Eppel (2013). SHARE data. The indicator on the x-axis shows the total number of years in paid employment up to the age of 50. Nordic: Denmark and Sweden; Eastern European: Czech Republic, Poland and East Germany; Continental: France, West Germany, Austria, Belgium, Netherlands and Switzerland; Southern: Italy, Spain and Greece.

Figure 3 **Distribution of time worked by European mothers in the presence of young children, by welfare regime**



Source: Leoni and Eppel (2013). SHARE data. The indicator on the x-axis shows the share of years in which a woman was in paid employment and had children aged below 10 in the household, as a share of all years with young children in the household. Nordic: Denmark and Sweden; Eastern European: Czech Republic, Poland and East Germany; Continental: France, West Germany, Austria, Belgium, Netherlands and Switzerland; Southern: Italy, Spain and Greece.

Leoni and Eppel (2013, Annex II) contribute to a better understanding of the roles of work and family in women's life trajectories, by shedding light on both the determinants and welfare outcomes of different combinations of motherhood and employment. They follow a life-course perspective and investigate the realized work-family profiles of women up to the age of 50 in connection with life conditions in childhood and early adulthood on the one hand, and health status at mature age on the other. Based on two indicators – the number of years in paid employment (Figure 2) and the number of years with both engagement in paid work and care for a child aged below 10 (Figure 3), the authors distinguish between mothers with different degrees of labour market participation (home-centred, marginal employment, intermittent employment and full-career).[4]

In contrast to earlier studies that investigate the relationship between work pathways and health for single countries, the analysis covers a range of European countries and is embedded in the framework of comparative Welfare State analysis. Not surprisingly, there exists a strong variation in the distribution of work-family profiles across Welfare State regimes. This concerns the overall picture as well as its evolution over time.

Clearly, the choice of work-family profile is not random. Econometric results indicate that women with favourable initial conditions, such as high socio-economic status of parental home, good childhood health conditions and high cognitive skills, are more likely to reconcile care for their children with continuous employment over the life-course. This can be taken as further evidence of the existence of cumulative (dis)advantage, although the explanatory power of childhood condition is low when compared to information on later periods in life, such as attained educational level and age at first childbirth. The inclusion of variables that describe the situation of women at first childbirth indicates that the moment at which women reach adulthood and start a family represents a crossroads with respect to their future employment career. Personal characteristics and life-course circumstances play a very similar role, irrespective of the Welfare State regime in which a person lives, although clearly these characteristics and circumstances are in turn co-determined by national institutions and policies.

Leoni and Eppel (2013) also explore the interactions between work-family profiles and subsequent health outcomes. This task is complicated by the potential endogeneity of the work-family trajectory with respect to individual health. Estimation results, which are based on a two-stage model aimed at controlling for selection into work and family profile, confirm that for mothers the pursuit of continuous employment is associated with more favourable health outcomes than the choice of careers with only marginal or intermittent employment. On the contrary, the statistical difference in health status between full-career mothers and home-centred mothers observed in a bivariate setting disappears in this multivariate setting. This

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[4] The authors define home-centred mothers as those who have not pursued paid employment in their lives; mothers with marginal employment as those who have worked for no more than 19 years; mothers with intermittent employment as those with at least 20 years of work experience, but a comparatively low share of dual family-work commitment; and full-career mothers as those with at least 20 years of work experience and a share of at least 90% of time worked, while having one or more young children in the household.

means that health differences between the two groups can be fully explained by observed characteristics such as income and educational level.

The positive link between the extent of mothers' employment up to age 50 and subsequent health seems to be strongest in the Nordic and Eastern European countries. It is weaker in Continental Europe and insignificant for Southern Europe. This result indicates that in Southern Europe, where full-career mothers represent a minority, observable characteristics such as education and income are sufficient to explain the existing differences in health between groups. In the other welfare regimes, where employment of mothers is much more common, health effects possibly depend on the opportunities to reconcile family with paid work. The clearest evidence of a positive nexus between mothers' employment and health is found for the Northern European countries, in which work-family combination is most facilitated by the institutional context.

These findings therefore may be taken as additional evidence that the combination of family and continuous employment is beneficial to individual well-being in a number of dimensions. This strengthens the case in favour of continuous efforts to expand policies in support of work-family reconciliation (even in times of tight budgets). Circumstances and choices at the time of first birth largely predetermine subsequent work trajectories. On a cautionary note, however, it has to be pointed out that the results presented in this report are based on cohorts of women born between the late 1930s and the late 1950s. These results cannot necessarily be generalized to younger cohorts. Clearly, more research is needed in this field, also to determine the role played by specific circumstances, such as the intra-household division of tasks, working conditions and other determinants of family-work reconciliation or conflict.

3. The globalisation challenge for Welfare States

3.1 Does globalisation erode the Welfare State?

The notion that economic globalisation is a challenge for established Welfare State structures is based on theories of fiscal competition, as well as research on trade and factor market integration (Oates, 1972; Cameron, 1978; Katzenstein, 1985; Oates, 1999; Garrett and Mitchell, 2001; Cai and Treisman, 2005). In this literature, the conventional line of reasoning is based on the idea that, in combination with new technological developments, an elimination of barriers to international trade and factor movements substantially reduces the cost of international transactions, while being associated with a number of important benefits (such as an increase in aggregate welfare) as a result of deepened international division of labour. Globalisation also increases the competitive pressure for domestic firms to reduce production costs, and for governments to adapt Welfare State structures. Especially low-skilled workers at the bottom of the income distribution ladder are expected to bear the highest share of the burden of adjustment to globalisation in developed countries, whose comparative advantage is expected to be in the production of goods with an intensive use of highly-skilled labour, and who may as a consequence expect to disproportionately profit from increased world trade.

In particular, globalisation defined either as increasing trade or foreign direct investments is expected to be associated with a number of adjustments:

- A first important adjustment channel is through wage cuts, when import competing firms try to keep up with low-wage country producers. According to this view, economic integration will exert downward pressure on the wages of unskilled workers in rich countries, thus leading to a substantial increase in wage inequality. If wages are not downwardly flexible, globalisation worsens the employment prospects for some groups in society, amplifying distributional conflict. High wages for unskilled labour can only be maintained if firm productivity in developed countries is also high enough to keep unit labour costs at a competitive level.
- While globalisation may therefore increase wage inequality between skill groups, it may also have an impact on other forms of inequality, such as those caused by ethnic or gender discrimination. Here, a recent World Bank report – somewhat in contrast to the conventional view – has taken a cautiously optimistic view[5], because, discrimination may become unsustainable in international competition[6] and because globalisation goes hand in hand with better access to information, which may also promote the diffusion of less conservative gender norms and attitudes (World Bank, 2011).[7]
- Moreover, increased international competition and market integration erode the ability of Welfare States to tax mobile goods and factors. To attract footloose industries, governments exposed to globalisation are "forced" to lower the tax burdens of capital and highly skilled labour. As a consequence, increasing net income for capital owners and highly skilled workers additionally contribute to a rise of inequality within rich economies.
- Intergovernmental competition for internationally mobile tax bases will also shift public spending priorities. According to the conventional view, governments will have to cut expenditures and social spending, which predominantly benefits poorer segments of society. Moreover, state competition for capital will require more and better infrastructure inputs, which also predominantly benefits mobile firms (Keen and Marchand, 1997).

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5 This is also confirmed by some results in the literature on the impact of trade liberalisation on gender inequality – which has however mainly focused on developing countries (e.g. Oostendorp, 2004). Here Do, Levchenko and Raddatz (2011) show that effects of trade integration on gender inequality may depend on a respective country's production structures. Countries with a comparative advantage in female-labour-intensive industries experience increasing costs from gender discrimination when they open to trade. Female wages will rise and women will have a greater incentive to participate in the formal labour markets and invest in human capital. By contrast, when a country has a comparative advantage in goods produced primarily by males, women's incentives to invest in human capital and to participate in the formal labour market will decrease with trade integration is a main characteristic of equality of opportunity.

6 E.g., Busse and Nunnenkamp (2009) provide evidence that countries with small education-related gender disparities have an advantage in attracting foreign direct investment. The results of their standard gravity model on bilateral FDI flows reject the view that foreign investors favour locations where gender disparities may offer cost advantages.

7 Potrafke and Ursprung (2012) study the prospects of achieving gender equality in developing countries within the context of the institutional change that accompanies globalisation. Their results indicate that institutional change associated with globalisation especially benefits women and that globalisation is favourable for the achievement of gender equality in the course of development.

- Likewise, regulations which drive up firms' production costs, such as environmental regulation or employment protection law, are also under scrutiny to become less strict or even completely abolished. Competition for Foreign Direct Investment (FDI) may undermine the regulatory capacities of countries and may lead to a race to the bottom in social and environmental standards.

To summarise, the mechanisms of globalisation are assumed to simultaneously increase the need to redistribute and provide social insurance for the poorer segments of society, especially for unskilled workers, and to diminish the ability of Welfare States to redistribute income and wealth. The observed increase in market income inequality as well as disposable income inequality (after tax/transfers) in many OECD countries already noted in the introduction of this chapter may therefore be partly attributed to the wage-differentiating effects of globalisation, on the one hand, and a reduced effectiveness of redistribution policies on the other.

In the relevant literature, the expected impact of globalisation on Welfare State expenditures and regulatory provisions is discussed under the headings “efficiency” versus “compensation hypothesis” (Garrett and Mitchell, 2001). The efficiency hypothesis states that trade integration and international capital mobility generally restrain the Welfare State. Under the assumption that governments maximise a (hypothetical) social welfare function, competitive forces ultimately constrain benevolent politicians in striving for equality and efficiency goals. Hence, globalisation is perceived as a serious danger for the functioning of the Welfare State and consequently leads to (political) calls for policy harmonisation to mitigate downsizing pressures.

From a political economy perspective, globalisation may, however, serve as an indispensable corrective device in taming a Leviathan state that redistributes taxes towards vocal and influential interest groups and an ever-expanding public bureaucracy (Brennan and Buchanan, 1980). This view of globalisation is much more positive, as international competition forces governments to curb inefficient redistribution and wasteful spending. The welfare implications of the efficiency hypothesis hence differ, depending on the assumptions about the effectiveness and quality of government behaviour.

The compensation hypothesis, on the contrary, assumes that democratic governments face an increasing political demand for social protection against a higher exposure of the economy to external shocks and a de-compressed wage structure (e.g. Iversen and Cusack, 2000). From this point of view, governments respond with more protection against increased social risks from globalisation, regardless of the higher costs of redistributive policies in a globalised economic environment. One potential benefit of such a strategy is that it in turn increases employees' acceptance of trade liberalisation and may thus improve preconditions for a country's stable globalisation path (Rodrik, 1998).

Recent empirical studies find little or no confirmation of a “race to the bottom” in taxation or welfare spending as a response to general globalisation forces (e.g. Dreher, Sturm and Ursprung, 2008; Bergh and Nilsson, 2010; Meinhard and Potrafke, 2012).[8] Evidence on these issues is far more in favour of the compensation hypothesis, confirming the view of Iversen and

8 For earlier studies see, for example, the survey by Schulze and Ursprung (1999).

Cusack (2000: 346) that trade and financial liberalisation may have generated a stronger policy interdependency among countries, but the seemingly causal primacy of globalisation factors in shaping Welfare State structures "... appears to be greatly exaggerated." In a more differentiated analysis for Western European countries, Leibrecht, Klien and Onaran (2011) provide some evidence in favour of the compensation hypothesis. For CEECs, their results, however, imply that globalisation leads to a significant decline in the share of social protection spending, which is more in line with the efficiency hypothesis.

To a certain degree, a lack of clear evidence for a race-to-the-bottom may also be explained by the fact that "simple models" of a competition of states for mobile firms and taxpayers do not fully capture the complex interactions in a process of institutional competition. The general idea is that not a single policy instrument (like capital tax rates) is decisive for a firm's choice of location, but the quality of the entire bundle of policies and institutions that is associated with a country or region is. Governments that impose higher tax burdens can compensate (mobile) firms through better legal or physical infrastructure or other investment incentives. Taxation is only one of the many factors that determine the international location of firms; other institutional factors, as well as cost and market access considerations, may be equally or even more important (e.g. Görg, Molana and Montagna, 2009). Hence, there is no inevitable race to the bottom in social standards, Welfare State spending or taxation.

3.2 Trade liberalisation, negative shocks and adjustment dynamics

A different problem pertains to the 'first round' effects of trade and financial market integration: Does globalisation really increase the need for social protection, and which forms of Welfare State intervention are required as an adequate policy response? Seen from this perspective, the dynamic process of adjustment following economic integration and trade liberalisation is still underexplored (Dewit, Görg and Montagna, 2009). Trade and technology may play mutually reinforcing roles in shaping labour-market developments in rich countries. The modelling of wage dynamics and unemployment has sparked research interest, but is very incomplete, e.g. how and by which processes different groups of workers are affected is still rather unclear. And, as a consequence, there is also a lack of knowledge about how welfare policies could be used to spread the gains from globalisation more equally. The two papers by Lechthaler and Mileva (2013, Annex II) and Kopasker, Görg, Molana and Montagna (2013, Annex II) are concerned with such questions.

A first case in point is the disputed topic of the effects of globalisation on wage inequality. Until recently, the dispute over causes of increasing wage inequality in many developed countries over the past decades seemed to be settled in favour of skill-biased technological change. Katz and Autor (1999) identify skill-biased technological change as the main contributor to rising wage inequality. The OECD (2011) also does not support the idea that globalisation is a major source of increased wage inequality, as "[...] neither rising trade integration nor financial openness had a significant impact on either wage inequality or employment trends within the

OECD countries. The wage-inequality effect of trade appears neutral even when only the effects of increased import penetration from emerging economies are considered."

However, while traditionally advanced economies have mainly traded with other developed countries, the recent enormous rise in trade with low-income/low-wage countries (most notably China and India) has brought about a shift in the structure of trade. This shift is associated with re-appearing fears that low-skilled workers from developed countries might lose out in competition with workers from developing countries.

The starting point of the analyses by Lechthaler and Mileva (2013, Annex II) is the finding in recent studies that increased trade with China goes hand in hand with a decrease in the share of manufacturing employment, and that local labour markets which are exposed to Chinese imports suffer higher unemployment and lower wages. In addition, wages grow less quickly in sectors exposed to more import penetration, giving rise to increased wage inequality. This is a particularly relevant topic for the European Union, as for the last two decades trade with China has increased enormously while manufacturing employment has decreased (Autor, Dorn and Hanson, 2013).

Against this background, Lechthaler and Mileva provide new insights on the distributional implications of trade integration, based on a more detailed analysis of the adjustment process to economic integration. The study is based on a two-country, two-factor, two-sector model with firm and worker heterogeneity in various scenarios and based on various assumptions about symmetric and asymmetric trade liberalisation, as well as active inter-sectoral switching of skilled and unskilled workers. The main focus lies on the effects of trade liberalisation on wage inequality in rich countries with a relatively higher endowment of skilled labour. Trade liberalisation is modelled as a reduction in the Iceberg trade costs. These are meant to measure all kinds of restrictions to trade, such as costs of transportation or governmentally imposed trade barriers.

In the longer run, trade liberalisation may lead to higher overall welfare by allowing firms and workers to be allocated to more productive uses. However, to take advantage of these benefits, both firms and workers need to be reallocated from sectors with a comparative disadvantage to sectors with a comparative advantage. The paper therefore studies transitional dynamics after a reduction in trade barriers. The focus lies on two kinds of wage inequality, i.e. inequality between skilled and unskilled workers and wage inequality across sectors.

Lechthaler and Mileva find that income inequality increases following trade liberalisation. In the short run, this is driven by a rise in the wage differential between skill-intensive and low-skill-intensive sectors. In the medium to long run, inequality increases due to a rising skill premium in the exporting sector. They find the two inequality measures to have different dynamics: the skill premium responds slowly, while wage inequality across sectors jumps on impact and then only slowly recedes. In the long run, wage differentials between sectors vanish, but in the short run they are the more important source of inequality. As a consequence, the model by Lechthaler and Mileva can also trace out distributional consequences resulting from globalisation over and above those between high and low skilled workers. These may arise if certain groups of the population (e.g. women or foreign-born persons) are segregated in low skill sectors.[9]

Labour mobility assumptions are critical to identifying the winners and losers of liberalisation. The conventional concern is that unskilled workers in import-competing sectors are the biggest losers. However, the results by Lechthaler and Mileva suggest that skilled workers in the low-skill intensive sector suffer the most when they are stuck in the non-competitive sector with relatively lower wages. By contrast, when unskilled workers have the option to train, trade liberalisation can lead to a drop in wage inequality in the medium run, on account of the increased incentives for workers to engage in training.

A few policy conclusions are suggestive. The labour market policies of developed countries should concentrate on providing moving subsidies to highly skilled workers so that they can switch their sectors of employment more easily or, equivalently, on providing well-functioning matching services to reduce mobility costs for highly skilled workers. In addition, low-skilled workers greatly value the option to train and become highly skilled in the exporting sector. In fact, having this option is behind the result that they are not the main losers of trade liberalisation.

The paper by Kopasker, Görg, Molana and Montagna (2013, Annex II) adopts a somewhat different perspective on adjustment. The key aspect of their contribution is that inter-country differences in firm size can be an important channel through which external shocks affect aggregate outcomes. Variations in the productivity distribution of firms across countries contribute to explaining observed differences in aggregate employment. This channel is of relevance in predicting the level and effectiveness of policy interventions aimed at increasing employment and/or offsetting the effects of negative shocks.

The recession following the financial crisis has confirmed the existence of high inter-country variability in the responsiveness of both output to (exogenous) shocks and employment to output contractions. Country-specific productivity responses to shocks have been explained with differences in labour market institutions (e.g. Blanchard and Wolfers, 2000; Nickell, Nunziata and Ochel, 2005; Howell et al., 2007) and/or in aggregate economic structures, e.g., countries specialised in labour-intensive sectors experience stronger employment responses. Intra-industry, inter-firm heterogeneity and selection is a channel through which shocks, by affecting average industry productivity, have an impact on employment and welfare. Countries with a "more efficient distribution of firms" weather out the shock better than less efficient ones, experiencing a weaker anti-competitive selection effect, and smaller aggregate employment and welfare losses.

Within this framework, Kopasker et al. (2013) examine how intra-industry reallocations influence the effectiveness of Active Labour Market Policies (ALMP) in the form of employment subsidies,

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9 This seems particularly plausible in the case of gender differences, since an important proportion of the female workforce accounts for administrative assistants, shop assistants, or cleaning and care work. Women are under-represented in managerial and senior positions. For example, women represent only around 16% of board members in the biggest publicly listed companies within the EU, around 3% of chairs of boards and around 32% of scientists and engineers across Europe.

countering the effects of a shock on employment and welfare. These policies, which were in widespread use across the OECD during the recent recession, are central to the "European Employment Strategy" which strives to address structural unemployment and increase labour participation. The model shows that in most cases optimal use of ALMP entails taxing firms and subsidising workers. This policy mix toughens export selection, increases average industry efficiency and expands aggregate demand directly by increasing workers' income. From a welfare perspective, a policy that entails picking winners (i.e. exporters) by taxing their production for export in order to sustain aggregate demand and employment via worker subsidies is preferable to a policy that does not discriminate between production for domestic markets and that for exports. [10] These policy results therefore go against the widespread assumption that hiring credits, i.e. subsidies to firms for hiring of workers, are more effective than worker subsidies in encouraging labour force participation and generating employment. Thus, ALMP can be seen as an effective means of sustaining the rates of active labour market participation and employment levels. A plausible conjecture calling for further research is that, in encouraging participation, ALMP effectiveness may be particularly relevant in activating those segments of the labour force with a higher elasticity of labour supply, such as women.

4. Demography

In contrast, the demographic challenges posed to the Welfare State arise from the fact that population forecasts for the countries of the European Union (EU) expect two parallel demographic developments in the next decades: a noticeable ageing of the population and a substantial increase in the ethnic diversity of the resident population. Despite assuming a slight increase in birth rates, EUROSTAT's newest EUROPOP2010 (European Commission, 2011) population forecast predicts a noticeable increase in old age as well as total dependency ratios for the overall EU and for each and every country of the EU until 2020. According to these forecasts, in the time period from 2010 to 2020 the old age dependency ratio (i.e. the population aged 65 or more in percent of the population aged 20 to 64) will rise from 28% to 42% and the total dependency ratio (the population aged 19 or less and the population aged 65 or more in percent of the population aged 20 to 64) will increase from 63% to 78%. By 2060 these ratios will be at a level of 58% and 95%, respectively.

At the same time, most population forecasts also assume a substantial increase in migration to the EU. Again, using the EUROPOP2010 forecasts as an example, this suggests a cumulated net immigration of around 13.3 million persons or 2.7% of the EU population until 2020. While this increase in migration is sufficient to keep the population from falling below its current level,

[10] This stands somewhat in contrast with the observation that those economies which best managed the crisis of 2008 often implemented schemes that subsidised staying in jobs. This may, however, be a result of the difference in the type of shocks modelled in Kopasker et al. (2013) and those of the crisis. While Kopasker et al. (2013) model a permanent reallocation shock, the crisis was a more aggregate temporary shock. In cases of such temporary shocks to aggregate demand, policies aimed at retaining employment may be helpful, as they contribute to maintaining human capital. Clearly, this points towards a need for extending the type of analysis in Kopasker et al. (2013) to different kinds of shocks.

it will not prevent a decline in the working age population. This would require immigration of around 5% of the EU’s total population (or 24.6 million people) until 2020. This quantity could probably be achieved given the EU’s high level of income if the current restrictive migration regimes in many Member States are liberalised sufficiently to allow for more migration.

4.1 Challenges posed by migration

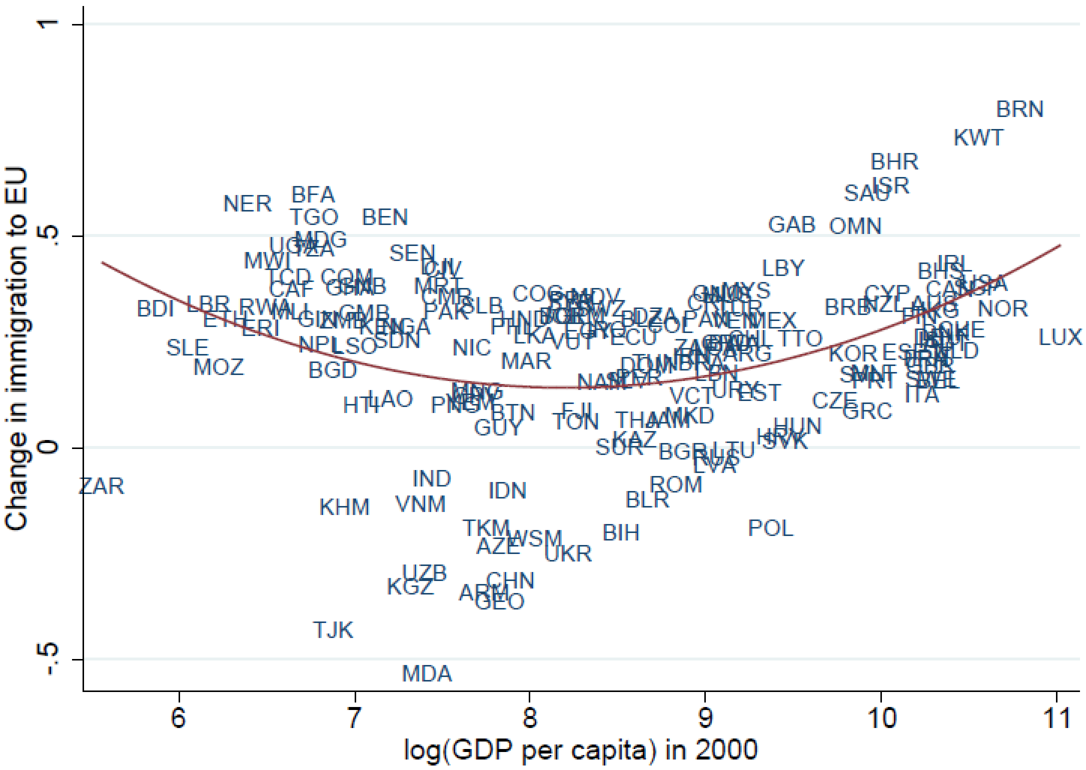
With respect to migration, however, more is at stake than just the sheer number of migrants arriving from a sending country, since the structure of migration in terms of ethnicity and education can also have an important impact on economic development. A substantial literature discusses the potential impact of an increasing diversity of migrants on regional development. In this literature it is on the one hand argued that increasing diversity may have substantial positive effect on an economy by increasing productivity and innovation (Brunow and Brenzel, 2012; Niebuhr, 2010; Huber and Tondl, 2012), while others (Easterly and Levine, 1997; Alesina et al., 2002) have emphasized the increasing costs of decision-making (and the potential for ethnic conflicts) associated with increasing diversity. Furthermore, a related paper in research Area 5 of the WWWforEurope project (Horvath and Huber, 2013) finds that a larger diversity (in terms of sending countries) in the structure of migration leads to inferior integration of foreign-born persons. According to the results in this paper, in regions where many migrants of the same ethnicity reside, the foreign-born have lower unemployment and higher employment rates, while in more ethnically diverse regions, all else being equal, unemployment among the foreign-born is higher and employment lower. This may imply that increasing the ethnic diversity of migrants leads to new demands on social Welfare States over and above those resulting from an increase in migration, on account of the greater effort required to integrate an increasingly diverse migrant population into host countries’ economies (see also European Commission, 2008).

Similarly, migration experts (e.g. Chiswick, 2005) have also often argued that developed countries such as the EU countries should strive to attract more highly educated migrants, and quite a few studies have shown that highly skilled migrants can have a substantial positive impact on the competitiveness of an economy in terms of innovation, the founding of enterprises and exports and foreign direct investments (Hunt and Gauthier-Loiselle, 2008; Peri, 2007; Anderson and Platzer, 2006; Wadhwa et al., 2007; Combes, Lafourcade and Mayer, 2005 and Girma and Yu, 2002). However, many studies (e.g. Hierländer et al., 2010; OECD, 2008 and Belot and Hatton, 2008) also indicate that the European Union as a whole is not as successful at attracting highly skilled migrants as other major receiving regions, such as Canada, Australia and the USA.

4.1.1 Future migration trends

While a large body of literature is therefore devoted to understanding the impact of the structure of migration flows on Welfare States, much less is known about the likely development of the country and educational structure of migration in terms of forecasts. The reason for this is that available data sets only cover immigration flows for receiving industrialized countries. Crespo Cuaresma, Moser and Raggl (2013, Annex II) therefore propose a method for assessing global migration flows based on the fact that available net migration rates are nonlinear aggregates of bilateral migration flows. They show that a quasi-maximum likelihood method performs well for underlying bilateral specifications with good explanatory power for migration flows.

Figure 4 **Change in immigration to the EU until 2060 by countries and GDP per capita (in percent of current flows)**



Source: Crespo Cuaresma, Moser and Raggl (2013).

Using a simple projection exercise for bilateral migration flows to Europe based on a realistic scenario for population and income dynamics, they exemplify how the method can be used to monitor future trends in migration and inform policy makers of changes in the composition of migrants by country of origin. The specification used in the analysis has an illustrative character and can be further extended to account for parameter heterogeneity across world regions. The results of this exercise in comparison to other major migration-receiving countries are rather illustrative for the challenges faced by the EU in the international division of labour. They indicate that the large increases in immigration to Europe will be experienced by low-income countries and countries that are expected to have a large share of less educated population in 2050. In particular, as shown in Figure 1, the predicted increase in migration follows an inverse U-shaped pattern with respect to GDP per capita in 2000. Aside from migration among rich countries – which is primarily driven by increased migration among EU countries – substantial additional migration from poor, developing countries where education systems seem to be less developed can be expected. From a policy perspective, this therefore highlights the challenges that will be posed by the aim to attract highly qualified workers to the EU.

4.1.2 Policies to attract highly skilled migrants

Nowotny (2013, Annex II) analyses the economic, labour market and institutional factors that make regions and countries attractive to highly skilled migrants. Aside from revealing some differences between the skill groups in factors that are difficult to influence by policy (such as networks increasing the attractiveness of a region for highly skilled migrants and distance having a smaller negative effect for highly skilled migrants), Nowotny also finds that welfare and tax system variables as well as different aspects of migration policy provide some scope for interventions that could help improve the skill structure of immigration: for example, compared to low-skilled migrants, highly skilled migrants prefer countries with more favourable regulation of access to the labour market, political participation and access to nationality, while more favourable rules for family reunion can make a country more attractive to less-skilled migrants. Similarly, the highly skilled place a lower value on the generosity of the welfare system than less-skilled migrants and may be more concerned about the implicit tax price of welfare provisions. The progressiveness of the income tax system also has a stronger effect on the highly skilled, reflecting the impact of the design of the tax system on returns-to-skill.

These results suggest that countries aiming to increase the share of highly skilled immigrants should therefore focus on facilitating labour market access and political participation, as well as facilitating access to citizenship, while limiting the role for family reunion. This applies in particular to countries which currently still admit a large portion of foreigners under family reunion regulations. These countries could profit from a switch to a more labour-market oriented migration system favouring highly skilled migrants, for example, via a system that awards points for educational attainment.

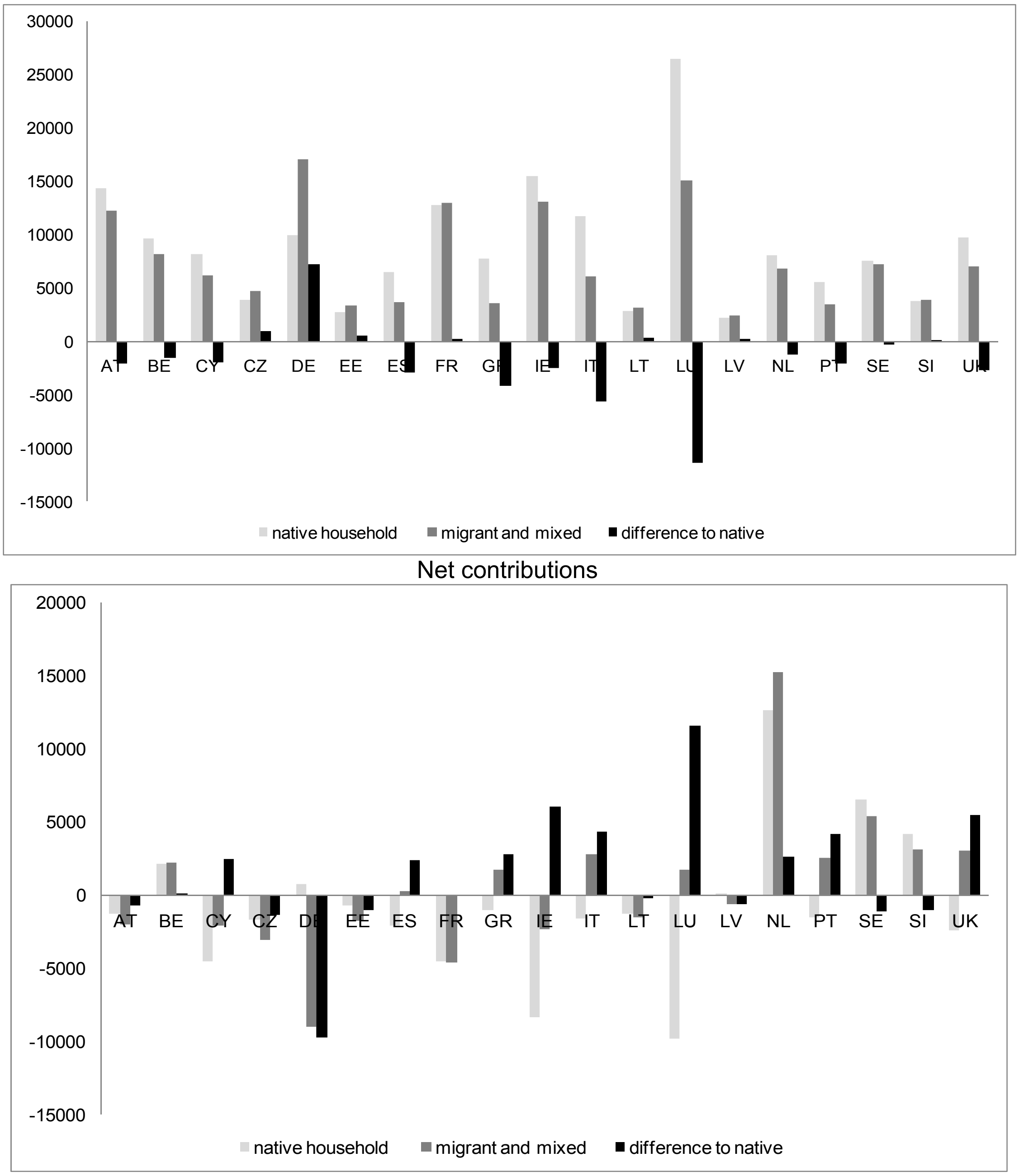
Concerning labour market effects and the welfare system, by contrast, the results show that highly skilled migrants are repelled by more generous welfare provisions and a high progressivity of the tax system and that a higher unemployment rate only decreases the attractiveness of a region for less-skilled migrants. The results for the less-skilled, however, are not clear cut. Although the results for unemployment benefits support the welfare magnet hypothesis, the results for pension payments do not. Whether the welfare system should be more or less generous to attract more highly skilled migrants relative to low-skill migrants therefore remains an open question to be addressed by future research.

4.1.3 Migrants net position vis-a-vis the Welfare State

A further issue often raised with respect to the potential challenges migration poses to the Welfare State is the potential cost of migrants, which may arise despite positive aggregate effects on the economy. Here, previous literature often arrives at contradictory results. While comparative studies such as OECD (2013) suggest that migrants are usually not a burden on the Welfare State, the results of individual country studies, which mostly focus on countries with very recent migrants (in need of more support than established migrants) and generous welfare systems, point in the opposite direction. As a consequence, a recent survey by Barret and

McCarthy (2008) summarizing the European country study literature concludes that "the general picture to emerge is one of higher immigrant use"' of welfare programmes. The contribution by Huber and Oberdabernig (2013, Annex II) therefore sets out to analyse whether migrants receive more benefits and deliver lower net contributions to the Welfare State than native households and asks which factors account for the differences found.

Figure 5 **Average benefits received and net contributions made by native and foreign-born households in EU Countries (2009, before accounting for observed characteristics, in €)**



Source: EU-SILC. Huber and Oberdabernig (2013).

The study finds substantial heterogeneity in the transfers of native and migrant households from and to the Welfare State across the EU. Not controlling for observed characteristics, in about half of the 19 EU countries analysed, migrants received more benefits than natives. Similarly, in about half of the countries, migrants provided a greater net contribution to the Welfare State than natives (see Figure 5). In most of the countries (irrespective of whether migrants or foreign-born persons contributed more), differences between the groups tended to be small, and amounted to less than 10% of receipts by natives.

Once individual household characteristics and income are controlled for, however, these differences disappear in all countries but Germany and the Baltics. This implies that the differences found can be fully explained by differences in social status and individual and household characteristics in most countries. Furthermore, among the differences in characteristics contributing most strongly to this effect, the differences in age, education and marital status of the head of the household, as well as differences in household sizes between native and migrant households, contribute most to the explanation of differences in benefit receipt. In addition, in a number of countries, the lower incomes of migrant households – which may be a result of labour market discrimination – also contribute significantly.

For net contributions to the state budget, by contrast – even after controlling for observable characteristics, migrant households contribute less to the budget than native households in substantially more countries. Significantly negative residual contributions of migrant households are found in 8 countries (Austria, Belgium, Czech Republic, Germany, Estonia, Lithuania, Latvia and Slovenia) and significantly positive ones in only 5 (Ireland, Italy, Luxembourg, Portugal and the UK). In countries in which positive residual net contributions of migrant households are found, however, migrants – given their income – pay higher taxes than natives.

Based on these results, in the face of a continued increase in the migrant population in Europe, selective migration and sound integration policies, as well as avoiding the marginalization of migrants into informal and black market activities, would probably be the most effective policy measures to avoid detrimental fiscal effects of increased migration on state budgets, even in countries in which migrants receive more from and pay less to the Welfare State than natives. In addition to these policies, however, given the expected changes in sending country structure, the issue of what to do with those who are already here and will continue to arrive is also of importance. Here, the challenge is to make them an important source of human capital by appropriately integrating them into training programs and identifying and acknowledging their competencies.

4.2 Challenges related to ageing

Similarly, ageing poses a number of challenges to European Welfare States. It, too, has far-reaching implications for economic development, and financial sustainability. In the ageing literature there is some debate on whether older cohorts are less productive than younger ones, with quite a number of studies indicating an inverse U-shaped relationship between age and productivity (Brunow and Hirte, 2006; Prskawetz, 2005; Lindh and Malmberg, 1999), according to which productivities peak at the age of between 30 to 44 years.[11]

In addition, some authors have argued that ageing – via its impact on consumption – may have an impact on the savings rate as well as the production structure of economies. In this literature Martins et al. (2005) and Lindh, Malmberg and Petersen (2010) have found that economies with a comparatively large older population (over 60 or 75, respectively) also tend to have lower savings rates[12] and show that the share of consumption expenditures for health and housing increase with age, while those for entertainment, transport and education decrease with age. Furthermore, quite a few studies have simulated the effects of ageing on consumption structures. Based on these results, Martins et al. (2005) for the OECD, Foot and Gomez (2006) for the UK and Lehmann (2004) for Germany all predict a substantial increase in the aggregate share of health expenditures on account of ageing.

A further strand of the literature has focused on the potential impacts of ageing on labour markets with rather mixed results. While Shimer (2001) finds a strong relationship between the share of youths and unemployment rates in the US, with a larger share of young persons increasing aggregate unemployment rates, Summers (1986), Foote (2007) for the US, as well as Nordström-Skans (2002) and Ochsen (2009) for Germany and Sweden, find that changes in the age structure of the population have no significant impact on aggregate unemployment rates in an economy.

The major challenges posed by demographic ageing are, however, associated with the fiscal sustainability of Welfare States and old age pension systems. Thus, for instance, the European Commission's recent Ageing Report (European Commission, 2012) estimates that strictly age-related budgetary expenditure in the EU will increase by 4.1 percentage points of GDP until 2060 and by 4.5 percentage points of GDP in the Euro Zone, with countries such as Belgium, Cyprus, Luxembourg, Malta, the Netherlands, Slovenia and Slovakia experiencing increases in excess of 7 percentage points.

4.2.1 Life cycle deficits

Given these projections, Hammer, Prskawetz and Freund (2013, Annex II) reassess the reallocation of resources across age and gender groups in a large sample of EU countries (Austria, Germany, Hungary, Italy, France, Finland, Slovenia, Spain, Sweden and the UK) using data from National Transfer Accounts (NTAs). Their argument is that the consequences of population ageing for the overall economic development and in particular for public finances not

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[11] Note that while here we refer to macro-economic studies, there is also a substantial literature that focuses on the link between ageing and innovation or productivity at the micro-economic or meso-economic level. This literature in general concludes that age-productivity profiles are strongly sector-specific and that certain skills (e.g. physical strength) are more age dependent that others (e.g. tacit knowledge and organisational knowledge) (see Mahlberg et al., 2013 and Staudinger, 1999).

[12] This has led some authors to forecast relatively sizeable effects of ageing on the savings rate in economies. For instance, based on older population forecasts Miles (1999) suggests that the savings rate in European countries may decline by more than half until 2030 and Park and Hewings (2007) predict a reduction of the savings rate from 14.5% to 3% in 2035 in Chicago on account of ageing.

only depend on the extent of demographic change, but are to a large extent also determined by the design of the economic life cycle, i.e. by the relation between the age of individuals and their economic activities.

Table 1 **The Aggregate Life Cycle Deficit and Surplus by Gender in Percent of Total Labour Income**

		In % of Total Labour Income			Age Borders	
		Life Cycle Deficit[1)]	Life Cycle Surplus[2)]	Life Cycle Deficit[1)]	Life Cycle Deficit	
Country	**Sex**	**Young**	**Working Age**	**Old**	**Positive until**	**Positive from**
Austria	Women	12	6	18	25	57
	Men	11	33	11	20	61
	Total	**22**	**38**	**28**	**21**	**59**
Finland	Women	14	11	17	26	59
	Men	13	22	12	24	62
	Total	**27**	**33**	**29**	**25**	**61**
France	Women	15	8	17	26	54
	Men	14	28	12	23	60
	Total	**29**	**36**	**28**	**23**	**59**
Germany	Women	12	5	20	26	57
	Men	11	33	12	24	63
	Total	**23**	**37**	**31**	**25**	**61**
Hungary	Women	13	13	19	23	59
	Men	12	27	13	22	58
	Total	**25**	**40**	**32**	**23**	**58**
Italy	Women	17	3	20	27	56
	Men	16	28	12	24	61
	Total	**33**	**30**	**31**	**25**	**60**
Slovenia	Women	15	20	17	25	57
	Men	14	28	11	23	61
	Total	**29**	**48**	**28**	**24**	**59**
Spain	Women	15	8	17	24	56
	Men	14	28	11	23	63
	Total	**29**	**35**	**27**	**24**	**61**
Sweden	Women	13	14	16	24	64
	Men	13	30	10	26	65
	Total	**25**	**44**	**26**	**25**	**64**
UK	Women	14	2	20	30	54
	Men	13	27	12	23	62
	Total	**27**	**28**	**30**	**25**	**60**

Source: Hammer, Prskawetz and Freund (2013). Young = population aged 25 or younger, Old = population aged 56 or older, Working age = population aged 26 to 55. 1) Since in all countries the old and young are net receivers of the welfare system, they have a life cycle deficit in these ages. 2) Since in all countries persons of working age are net contributors to the welfare system, they have a life cycle surplus in this age.

In contrast to the commonly used demographic dependency ratios that apply fixed age limits to separate life cycle stages of dependency and the working age, Hammer, Prskawetz and Freund introduce economic dependency ratios that are built on data of age-specific averages of consumption and labour income extended by the time used for unpaid work. As a measure of economic dependency they calculate the so-called life cycle deficit (the difference between consumption and labour income at a particular age - LCD). By multiplying the LCD with the population they receive the aggregate life cycle deficit (LCD) and the aggregate life cycle surplus (LCS). The LCD is a measure for the total consumption of children, and respectively of elderly persons, which cannot be covered out of their own labour income. The aggregate life cycle surplus (LCS) is in turn a measure for the labour income of the working age population that is not used for own consumption. To make the values comparable across countries, the aggregate life cycle deficit and the aggregate life cycle surplus is measured in per cent of total labour income.

Table 2 **The Aggregate Life Cycle Deficit and Surplus for Paid and Unpaid Work**

		LCD and LCS in % of Total Income (paid and unpaid work)		Age Borders	
		Life Cycle Surplus	Life Cycle Deficit	Life Cycle Deficit	
Country	**Sex**	**Working Age**	**Old**	**Positive until**	**Positive from**
Austria	Women	11	8	21	59
	Men	19	7	21	61
	Total	**30**	**14**	**21**	**60**
Finland	Women	13	8	26	62
	Men	14	7	24	62
	Total	**27**	**15**	**25**	**62**
France	Women	13	8	26	60
	Men	16	8	23	60
	Total	**29**	**16**	**23**	**60**
Germany	Women	10	9	26	59
	Men	18	7	24	62
	Total	**28**	**16**	**25**	**61**
Italy	Women	11	7	27	61
	Men	12	8	24	61
	Total	**24**	**16**	**25**	**61**
Slovenia	Women	19	6	24	60
	Men	16	7	23	61
	Total	**31**	**13**	**24**	**60**
Spain	Women	16	5	24	64
	Men	12	7	23	62
	Total	**28**	**12**	**24**	**63**
UK	Women	9	9	23	59
	Men	15	6	24	62
	Total	**23**	**15**	**23**	**60**

Source: Hammer, Prskawetz and Freund (2013). To facilitate the comparison across countries, a standard population is applied for all countries.

The authors find large differences across countries. When controlling for the age structure of the population, the LCD for young people lies between 20% of labour income in Austria and 29% in Italy; in old age it amounts to values between 21% in Sweden and 30% in Hungary (Table 1). Regarding the ages at which people on average consume less than they produce, Sweden constitutes an extreme case: In Sweden people generate an economic surplus from age 26 to 63, thereby generating a 38-year life cycle surplus. In Slovenia, Italy, Finland and the UK, in contrast, the life-cycle surplus lasts only 32 years.

This indicates that the design of the economic life cycle plays an important role in the redistribution of resources. For instance, the low value of the LCD in youth for Austria is driven by early entry into the labour market, while the low value of the LCD in old age for Sweden can be explained by a late exit from the labour market. In consequence, reforms of Welfare States directed at increasing the fiscal sustainability of pension systems will have to take into account the interactions between various institutional arrangements and life cycle surpluses and deficits.

4.2.2 Gender differences

Furthermore, Hammer, Prskawetz and Freund (2013) also find important gender differences in the life cycle surplus (LCS). The aggregate LCS (a measure for the resources which are produced but not consumed by the population of working age) ranges from 24 percent in the UK and Italy to 39 percent in Slovenia and 41 percent in Sweden (table 1). These differences can largely be explained by the differences in the share of total income generated by women. In Slovenia and Sweden the contribution of women to total labour income is among the highest within Europe, resulting in an LCS of 16% and 12% of total labour income for women in Slovenia and Sweden, respectively. The low value for the UK is due to a low contribution of women and a high overall level of consumption relative to labour income.

Extending the analysis to account for unpaid work, the authors find that for all countries and all age groups, the time devoted to unpaid work by females exceeds the corresponding values of males. The gender difference is particularly high in France, Spain and Italy. Unpaid work peaks at childbearing age for women, reflecting the time devoted to child care. For both men and women, there is another peak in old age, as part of the reduction in time devoted to paid work is replaced by household production. However, the measure for the consumption of goods and services emerging from non-market production activities generally also increases with age, indicating that in most of the countries these goods and services are consumed by older age groups themselves. A larger transfer of goods and services through non-market production activities from elderly persons to younger age groups can only be observed in Spain, Italy and Slovenia. In these three countries quite a high share of people in older age groups live with their children. The rather large amount of time devoted to unpaid work in old age, together with the moderate consumption in Slovenia, is an indicator that these age groups provide considerable transfers through non-market production to younger age groups, thereby supporting the high labour participation of women (table 2)[13].

In consequence, a reform of the welfare system needs to take into account not only public transfers but also private transfers, in particular those which relate to services produced within the household for own consumption, and in particular when addressing gender issues. For instance, an increase in the female labour force participation, which is commonly argued to be a means of reducing the pressure on public finances in ageing populations, needs to be accompanied by substituting private intra-household transfers accordingly and may thus have important repercussions on the overall transfer system of the Welfare State.

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[13] Note table 2 shows the life cycle surplus of those of working age and the life cycle deficit in old age by using the total income from market and non-market production (the life cycle deficit of young people is not reported in table 2, since the non-market consumption of young people cannot be estimated from available data).

5. Social acceptance and implementation of Welfare State reforms

European Welfare States face enormous reform challenges. On the one hand, governments are confronted with the political demands of addressing the old and new social risks rooted in globalisation, migration, ageing, technological change, revised patterns of work, shifting family structures and other forms of social modernisation and general changes in life style. On the other hand, advanced Western countries are confronted with a serious economic imperative to improve competitiveness and consolidate public finances. Aside from making it difficult to maintain current welfare levels and arrangements, the pursuit of these objectives usually not only requires a minor re-organisation, but in many cases a substantial overhaul of established Welfare State structures (i.e. either large parametric reforms or encompassing structural reforms). Most probably, such changes can only be managed if they are supported by a significant retrenchment of costly and inefficient policies, which may be particularly relevant in the case of large-scale reforms, where substantial changes in receipts from and payments to welfare states may be expected.

Implementing the required policy changes in advanced Welfare States is therefore not just an economic challenge, but – and maybe even more importantly – a source of inherently political problems. In democratic systems, the interactions of voters, politicians, vested interest groups and the public bureaucracy give rise to numerous impediments to reforms and (seeming) irrationalities.

5.1 Political supply side impediments and drivers of Welfare State reform

Over the last 20 years, a substantial academic literature has contributed to the understanding of obstacles and pathways to reforms in democratic regimes. Policy persistence is often said to be rooted in institutional factors of the political decision-making process, whereas successful implementation of Welfare State reforms is often attributed to a crisis-type culmination of economic problems. Conventional wisdom, in particular, states that cuts in social benefits and welfare services, an increase of the retirement age or the easing of strict labour market regulations carry with them huge electoral risks for an incumbent government (Pierson, 1996; 1998; Allan and Scruggs, 2004; Buti, Turrini, Van den Noord and Biroli, 2010). The main argument is that resistance to reform stems from concerns about its asymmetric distributional effects.

Welfare State reforms are never neutral in that respect, but create groups of winners and losers. The unpopularity of certain reforms which experts expect to be beneficial for the long-run economic and social prospects of a society, thus, is mainly attributed to the fact that the potential winners from a policy change are often large and heterogeneous societal groups, whose members are neither informed about gains that will pertain in the future, nor politically well-organised. On the contrary, losses from Welfare State reforms are mainly concentrated on a well-defined constituency, and potential losers are frequently well-informed beneficiaries and insider groups, including the welfare bureaucracy. These ‘loser’ groups are also able to organise effective and vocal opposition to a policy change.[14] As a consequence, voters who expect to lose from reforms will dominate at the ballot box over the larger but diffuse group of potential winners, making substantial retrenchment policies highly unlikely. The central question is therefore: “under which circumstances are governments able to pursue unpopular and politically risky reforms of the Welfare State?” Over the past two decades, the Political Economy approach has contributed to a better understanding of impediments to structural reforms.

A first finding is that the adverse electoral effects of such reforms may simply be overstated. In an analysis of structural reforms in OECD countries, Buti, Turrini, Van den Noord and Biroli (2010) find that market-oriented Welfare State reforms are not automatically associated with a loss of the acting government during the following elections. However, the electoral impact of such retrenchment policies differs strongly, depending on the specific type of reform considered. Policy measures that are likely to hurt large groups of insiders, such as changes in the pension system or a reduction of employment protection legislation, seem to reduce the electoral chances of the implementing government. Especially in countries with rigid product and labour markets, where policy reform needs appear to be most pressing, reform-oriented governments tend to be voted out of office.

Another strand of the literature has developed the idea that governments facing both electoral constraints and severe welfare retrenchment requirements tend to follow a strategy of “blame avoidance” (Weaver, 1986; Pierson, 1996). The main idea is that governments aim to mitigate the negative electoral consequences of economically necessary austerity programmes and welfare benefits cuts through “scape goating” (e.g. reforms that appear to be imposed by international organisations), or reducing the visibility of reforms (“obfuscation”) or restricting the losses to certain segments of the voting population (“division”), or through the development of direct and indirect schemes and political bargains to compensate the (potential) losers of reforms (Pierson, 1996; Hood, 2011). Such a policy strategy will, at best, produce incremental policy changes, but will not enable ruling governments to push through substantial reforms (Bonoli, 2011).

The role of partisan politics for Welfare State (retrenchment) reforms is disputed. Against the background of increasing fiscal consolidation pressures in many Western European countries, partisan differences seem to have become less important for Welfare States reform (Castles, 2001; Huber and Stephens, 2001). More recently, Giger and Nelson (2010) have argued that some governments or parties within ruling coalition governments, depending on their ideological background or partisan positions, can even claim credit for retrenchment policies. Cuts in social policy may be tolerated or supported by some voter groups, and retrenchment policies are politically rational under certain circumstances, especially for religious or liberal parties. Results by Van Vliet, Caminada and Goudswaard (2012) indicate that left-oriented governments may provide higher unemployment protections than their non-leftist counterparts, but this effect

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[14] Under some circumstances austerity measures may even lead to violent protests and civic unrest (Ponticelli and Voth, 2011).

appears to depend on the economic background situation. Rising unemployment rates which exert increasing budgetary pressures reduce left-wing governments' inclination to increase unemployment protection.

While such political difficulties in implementing Welfare State and other economic policy reforms are almost universal in Western democracies, the ability of reform-oriented governments to overcome impediments to change probably also depends on the institutional framework of the country. Constitutionally fixed decision-making rules and governance structures are of extraordinary importance to reform implementation and can prove to be a major obstacle to wide-ranging policy changes. The persistence of inefficient policies is often explained by formal institutional arrangements that generate gridlock and veto positions of powerful political players (Tsebelis, 1995; Ganghof, 2003; König, Tsebelis and Debus, 2011). Most prominently, Tsebelis (2002) argues that increasing the number of veto actors impedes decisive political action in a sample of Western parliamentary democracies. Political systems that create numerous veto points may then be less suited to implementing significant reforms. Applied to questions of Welfare State reform, it follows that a large number of institutional and non-institutional veto players (like trade unions) with strongly opposing partisan interests tend to inhibit both an expansion of benefits and an implementation of new services as well as radical Welfare State cutbacks (Bonoli, 2001). In line with these hypotheses, Ha (2008) reports that over the 1960 to 2000 time period globalisation exerted an upward pressure on welfare spending in 18 industrial countries (the "compensation hypothesis"), but the extent to which governments have responded to rising welfare demands is negatively related to the number of political veto actors and their ideological distance. The magnitude of potential policy changes thus appears to be very limited, especially in political systems with numerous checks and balances.

The implementation of "more than just incremental" policy reforms is then frequently attributed to a crisis-type culmination of economic problems, which will finally lead to a substantial shift of the previous political equilibrium (Rodrik, 1996; Korpi and Palme, 2003; Pitlik and Wirth, 2003; Heinemann, 2004; Duval and Elmeskov, 2006; Høj, Galasso, Nicoletti and Dang, 2006; Starke 2006; Pitlik, 2007; Vis and van Kersbergen, 2007; Campos, Hsiao and Nugent, 2010). In the wake of a crisis, status-quo-preserving interest groups are more likely to accept uncertainties associated with substantial reforms, and governments also have a higher propensity to bear the higher risks of temporary economic hardships associated with structural changes. Crises may also stimulate change by policy learning of government officials, interest groups and the electorate. Revealing that the current policy model has failed, an economic downturn may convince policy makers and voters of the inferiority of policy strategies in the status quo, and generate incentives for implementing fundamental alternatives.

Scharle and Váradi (2013, Annex II) contribute to the existing literature by identifying barriers to institutional change in European welfare systems. The authors focus on rehabilitation services for the disabled within Social-democratic welfare regimes. As far as disability benefits are concerned, there is evidence that a carefully calibrated combination of cash benefits, active labour market programmes and behavioural conditions can curb growing inactivity without sacrificing income maintenance, and are now part of the standard labour market policy toolkit advocated by the EU and the OECD (European Commission, 2013).

Comparing policy developments in Finland, Norway and Sweden in the past twenty years, Scharle and Váradi identify fiscal constraints, historical commitment to equal rights, policy making capacity and decentralisation as important drivers of change. While some of these factors are, at least in the short run, beyond the control of policy makers, some can be strengthened by governments wishing to promote the long term performance of the welfare system. In particular, Scharle and Váradi argue, governments can strengthen the capacity of public administration to commission and communicate empirical evidence supporting the case for reform. They can also strengthen its capacity to design adequate policy changes and monitor the implementation of these changes at the local level. Setting up more or less independent agencies to monitor policy implementation at the central and local levels can also help in strengthening the reform commitment of governments and defend their case in the face of opposition from social partners or other actors.

5.2 Origins of reform resistance and reform support from the political demand side

Against this background, the paper by Heinemann and Grigoriadis (2013, Annex II) deals with general reform obstacles and the particular challenges of institutional change under the conditions of Southern Europe. As possible drivers of reform resistance the authors identify very different qualities of approaches, ranging from classical economics and political-economic reasoning to more innovative explanations linked to behavioural economics. Such a classifying approach to potential reform obstacles is novel with respect to its broadness and systematization, in addition to offering a basis for measurement and empirical testing.

Heinemann and Grigoriadis direct the attention beyond a focus on narrow self-interests, i.e. the extent to which an individual has a material advantage or disadvantage from a particular reform. Behavioural economics insights stress that such a narrow view is hardly sufficient for a full understanding and that other preferences play a role. For example, citizens also form their reform preferences based on their perceptions of the procedural and distributive fairness of available reform options (e.g. Alesina and Angeletos, 2005; Heinemann, Bischoff and Hennighausen, 2009). The survey on possible drivers of reform preferences and the existing empirical literature shows that certain overriding factors could, in addition or alternatively to manifest economic crises, impact positively on reform acceptance. Trust is an important driver of reforms because it lowers societal transaction cost on all types of compromises and compensation mechanisms conducive to a successful crisis strategy. And reform examples in comparable and/or neighbouring countries can help overcome information problems of all sorts.

The subsequent part qualitatively and quantitatively analyses the extent to which the “Southern European regime” may imply a particular relevance of some of the reform obstacles previously classified. While a generalisation of common factors is always at risk of oversimplification, the literature clearly points towards some relevant similarities which contrast the Southern EU Member States with the rest of Europe. For example, in Southern Europe the Welfare State is characterized by a low effectiveness of poverty protection in spite of a strong increase in welfare spending over recent decades. Obviously, this spending has not been effectively targeted to provide functioning insurance mechanisms against the poverty risk associated with unemployment or other disadvantageous events. Furthermore, clientelism – e.g. through privileged recruitment into public service – is particularly common in Southern European countries. Equally, international indicators for the quality of public administration indicate a very low efficiency. The combination of party patronage, prevalence of corruption and inefficient public administration undermines trust in the acting politicians and bureaucrats. This is a severe handicap to any reform process, since it can even set in motion a vicious cycle of eroding trust and reform failure.

In a micro-econometric analysis based on Eurobarometer survey data, Heinemann and Grigoriadis (2013) show that several of the reform obstacles identified in theory are also empirically correlated with the individual inclination to accept reforms. The perception of procedural fairness (i.e. satisfaction with the way a democracy works) together with trust are the keys to the acceptance of reforms. Not only does trust in national institutions foster reform acceptance, but a strong correlation also exists for trust in EU institutions and reform acceptance. Outsiders, although they most likely bear large costs from a standstill, do not push for reforms in a particularly active way.

Further handicaps for reforms originate from high societal discount rates in ageing societies, causing overemphasis of up-front reform adjustment costs to long-run reform benefits (see the paper of Lechthaler and Mileva, 2013, Annex II), from poor economic knowledge about the future benefits of a policy change, or from behavioural phenomena which tend to favour the status quo (Kahneman, Knetsch and Thaler, 1991; Heinemann, 2004). Finally, the status quo bias is often so strong because those outsider groups which are most likely among the winners of change do not form pro-reform pressure groups but are hardly different from the population in general in their caution against change.

The specific insights related to the crisis countries confirm the relevance of these general reflections. The EU Member States in Southern Europe are characterized by features which have been identified as reform-relevant in general: high inter-temporal discounting and uncertainty avoidance, a poor information level of the population and deeply shattered trust in national institutions. Moreover, low effectiveness in poverty-protection is a severe obstacle, as the Welfare State fails to offer credible insurance against the individual risks of reforms.

The second paper of this report, which deals with the fundamentals of Welfare State reform demand, is concerned with key informal institutions determining individual attitudes towards Welfare State policies (Pitlik and Kouba, 2013, Annex II). Research on public opinion formation shows that, aside from narrow individual self-interest, Welfare State preferences are usually shaped by relatively stable cultural and social norms, conventions, moral values or personal traits – in short, by informal institutions (e.g. Blekesaune and Quadagno, 2003; Bénabou and Tirole, 2006; Alesina and Giuliano, 2009; Margalit, 2013). Highly persistent core beliefs could hence be at the heart of explanations for a lack of willingness to introduce fundamental Welfare State reforms. Pitlik and Kouba follow a comprehensive concept of the Welfare State, measuring personal attitudes towards income equalisation and government intervention within the context of the perceived quality of a country's institutional framework. Their main hypothesis is that people are only willing to confer an important role to government if this is in line with their core beliefs *and* if the quality of the public administration is perceived as rather high (see also Rothstein, Samanni and Teorell, 2011).

The standard literature emphasises the relationship between cultural factors, and Welfare State size points out the importance of social trust. While Bergh and Bjørnskov (2011) and Bjørnskov and Svendsen (2012) claim that higher social trust levels are a main cause of Welfare State expansion due to the reduced transaction costs of dealing with free riding, Aghion, Algan, Cahuc and Shleifer (2010) argue that individuals distrusting others are more likely to demand stronger and more intense regulation. Employing individual data from the World Values Survey and the European Values Study over the 1990 to 2009 time period for a sample of 37 EU and OECD Member States, Pitlik and Kouba show that trust in people is generally associated with higher support for redistribution and government intervention only if the perceived quality of administration is high and confidence in companies is low.

The authors also suggest employing Rotter's (1990) concept of a "locus of control" in order to identify the main driver of Welfare State attitudes. An "internal locus of control" is considered to be a general way of thinking which is characterized by strong features of individualism, such as self-confidence, initiative and optimism. The authors find that the feeling of individual life control is strongly negatively related to attitudes for income equalisation and government intervention (see also Bavetta and Navarra, 2012). However, the higher the confidence in government is in relation to confidence in major companies, the smaller is the individual opposition to redistributive and interventionist policies, given the level of life control. Among the people who do not believe in the ability to control their own lives, both a high perceived quality of public administration and low confidence in major companies enhance preferences for redistribution and intervention. With regard to the external locus of control, Pitlik and Kouba focus on religiousness or belief in God. Nevertheless, the results are ambiguous. People who assert themselves as religious seem to be less in favour of income equalization. This result indicates a proximity to the substitution theory of religion and state as two possible types of insurance against adverse events (e.g. Scheve and Stasavage, 2006).

Belief in oneself, or more generally, behavioural traits, are determined by a knotty mix of factors formed mainly in childhood, which are both genetically and socially transmitted, partially transferable between parents and children (Verme, 2009). The authors conclude that, in order to affect Welfare States' demand, a meaningful strategy could be to focus on education systems and (complementarily) on social policy in a long term perspective. In a society with a higher share of independent, self-confident, active people it is easier to introduce reforms which require a substantial overhaul of the Welfare State, setting the focus more on personal responsibility and provision.

Interestingly, both empirical settings of Heinemann and Grigoriadis (2013) and Pitlik and Kouba (2013) find that women have a lower acceptance of Welfare State retrenchment or stronger positive attitudes towards redistribution and government intervention than men. A lower reform preparedness of women compared to men is consistent with the experimental literature which indicates a greater degree of risk aversion among women. If this is behind the gender effect, the message would be that compensation mechanisms and an effective protection of the losers of reforms is of particular importance to winning the reform support of women.

Social capital also plays a decisive role in the analysis of Andréasson, Elert and Karlson (2013, Annex II). The starting point of their analysis is the wide-spread view of social cohesion as a basis for promoting the social acceptance of reforms (Easterly, Ritzen and Woolcock, 2006; Heller, 2009), the general idea being that in cohesive societies, with high levels of horizontal and vertical solidarity, it would be easier to overcome reform resistance. In a first step, the authors investigate whether social cohesion is a coherent concept by using a principal-component factor analysis covering 16 indicators used to measure social cohesion in the previous literature for 40 different countries. Their results suggest that social cohesion is a multidimensional concept, consisting of no fewer than five orthogonal components, they labelled "social divisions", "modern values", "traditional nationalism", "institutional commitment", and "fairness as merit". In the next step, Andréasson, Elert and Karlson study to which extent social cohesion or components of the concept affect a country's capability to introduce reform. Regressing market-oriented reforms, quantified as a five-year change in the Economic Freedom of the World Index (Gwartney, Lawson and Hall, 2012), on each of the five dimensions of social capital, the results indicate that, in fact, most dimensions of social cohesion do not influence the occurrence of reforms. However, fairness as merit, in contrast to equality, is shown to have a positive effect on policy changes. Moreover, a certain degree of social divisions actually seems helpful in handling a crisis.

One possible interpretation of these somewhat surprising results is to consider social cohesion as a double-edged sword, and especially so when it comes to economic reforms in an efficiency-enhancing, free-market direction. If indeed social cohesion, according to many of the previously used definitions in the literature, is strong in a given society, then the status quo and barriers to reform are most likely equally strong. In a society in which people stick together, characterized by strong solidarity within its social community, to use Durkheim's expression, established interests and cognitive biases may block beneficial changes in existing institutions. From this perspective, social cohesion does not promote reforms at all. Only if social cohesion is based on an understanding of fairness as merit, supporting incentives, the value and reward of hard work and achievement, and an acceptance of the resulting income inequalities, is it indeed beneficial to efficiency-enhancing reforms.

6. First tentative policy conclusions and directions of future research

In summary, the results of the analytical phase of the work packages of research Area 1 condensed in this report address several of the Central Questions (see Annex I) posed in the WWWforEurope project. Clearly, research devoted to Welfare State reform primarily contributes to improving our understanding of how social inclusion can be achieved in a new European growth strategy, minimising the risks of detrimental effects on incentives and maintaining the openness of society (Question 2). Question 4, which asks how institutions of modern market economies can be changed so as to internalise the current social and ecological externalities, is deeply intertwined with Question 2. Our results on the issues of new social risks, the effects of globalisation on Welfare State equilibriums and the demographic challenges to the Welfare

State therefore relate to both of these questions. Area 1 also deals with the political problems associated with the implementation of Welfare State reform. It thus specifically addresses Question 5 of the project, which asks how the general public, third sector actors and vested interests can be motivated to support reforms towards a new growth path.

On a very general level, the results indicate that to the extent to which policies in Welfare States are directed at removing social inequalities based on inequality of opportunity, re-distributional policies which follow a social investment approach are more likely to be conducive to growth than not. Therefore, the often postulated trade-off between efficiency and equality does not generally apply. Countries looking for growth-friendly social policies should therefore primarily focus on policies to provide equal opportunities and avoid exclusion or discrimination on the basis of gender, ethnicity or other characteristics. While this may seem a rather trivial conclusion, the empirical evidence on differences in economic outcomes between genders, ethnicities and excluded groups documented in the contributions of this volume (and in many other contributions) suggest that many EU Member States still have some room to improve with respect to providing equal opportunities to all of their residents.

Realistically, a policy based on removing inequalities in opportunities alone is unlikely to meet the changing demands on the Welfare State. Some form of "traditional" redistribution and social insurance against risks of unexpected income losses will also have to be a feature of any European Welfare State of the future. In this respect, our results (in particular the contributions by Leoni and Eppel, and Hammer, Prskawetz and Freund) suggest that an analysis of the redistribution over the life cycle and the impact of life cycle events as well as a more detailed analysis of unpaid work is required in order to design effective polices. This particularly applies to areas in which gender aspects enter the analysis. In spite of the strong convergence between men and women in labour market participation rates, and even more so in educational levels, gender continues to represent a distinct dimension of any future welfare development and will have to be explicitly addressed in reform processes. Gender differences are not confined to the incidence of social risks, such as poverty and social exclusion, but also extend to the causation processes that underlie the occurrence and distribution of these risks. For instance, Vandecasteele (2011) has highlighted how poverty among men is strongly related to employment-related events, whereas in the case of women it is life-course events such as family formation (childbearing) and partnership dissolution that trigger poverty risks.

In addition to these rather general points, the individual contributions of the study also provide a number of further policy-relevant findings, which will require further scrutiny in the course of the project. Thus, for instance, Leoni's and Eppel's results provide some important evidence to justify increased social policy intervention, especially for women at the childbearing age with the aim to facilitate the convergence of family and continuous employment. Similarly, Crespo Cuaresma, K.C. and Sauer, observing the large gender differences in educational attainment between Southern European countries in particular, point to the potential positive growth effects of policy efforts aimed at providing equal access to education for young cohorts and women. By contrast, the papers considering the potential challenges to the Welfare State arising from globalization point towards the important role played by policies that support workers in their regional, sectoral and occupational mobility, as well as the value of training low-skilled workers and subsidising workers to take up employment.

Finally, the demographic aspect of WWWforEurope suggests that increased migration and the increased ageing of European populations are linked processes. These will, however, pose quite distinct challenges for European Welfare States. This therefore contradicts the simplistic view often held in public policy debates, based on which migration is an automatic remedy to the fiscal consequences of ageing. Instead, the results suggest that, even if increased migration can prevent population ageing and a decline in the workforce from a demographic viewpoint, the economic consequences of migration are strongly dependent on the skills and ethnic structure of migrants. To cope with the challenge of increased migration, more highly skilled migration to the EU would therefore be desirable. This goal is, however, somewhat at odds with the forecasts presented in this study, which suggest that increased migration will primarily originate from low-income countries with a large population of low-skilled workers. One way to react to this challenge would be to increasingly target highly-skilled migrants in immigration laws. Most EU-27 countries have undertaken major steps towards changing immigration in this direction in recent years, and this has resulted in an increased share of highly-skilled migrants settling in the EU by increasing the selectivity of migration regimes by narrowing the entry criteria for migrants to European labour markets to highly skilled migrants (e.g. byfocusing on points-based systems that have been recently been put in place in a number of EU countries).

To be fully effective, such measures have to be accompanied by increased efforts at making the European Union more attractive as a destination for highly-skilled migrants. As shown in the papers collected in this report, this may also entail a change in migration policy in terms of facilitating labour market entry for highly-skilled migrants as well as political participation among migrants. Furthermore, it has also been argued that the still fragmented nature of EU labour markets, which make both the mutual recognition of qualifications and the transparent portability of entitlements to social security systems difficult, even for intra-EU migrants, also act as an impediment to attracting high skilled migrants from abroad. Aside from focusing on the institutions attracting high-skilled migrants, future work will therefore have to consider the institutions facilitating the labour market integration of migrants. In addition to these policies, however, given the expected changes in sending country structure, the issue of what to do with those who are already here and will continue to arrive is also of importance. Here, the challenge is for Member states – in particular those which experience substantial immigration flows – to design programs that appropriately integrate both first and second generation migrants into training programs as well as schools, and to identify migrants skills as well as to work on improving existing methods of skill recognition.

Furthermore, the results suggest that with respect to ageing of the society and establishing gender equality in the resource reallocation system entailed by the Welfare State, policy makers will have to take into account the complex interactions of institutions and life-cycle reallocation as well as private reallocation mechanisms.

In any case, Welfare State reforms not only entail economic questions on the design of optimal policies, but also the problem how the general public, third sector actors and vested interests can be motivated to support reforms. Theoretical reasoning and empirical results jointly suggest that a theory of Welfare State reform resistance is severely flawed if it is simply based on the view of reform-resistance driven only by narrow self-interest. The micro-evidence of Heinemann and Grigoriadis and Pitlik and Kouba underlines the role of core beliefs in the process of attitude formation, and in particular procedural fairness considerations. Voters need a minimum confidence in their democratic institutions in order to accept the uncertainties involved in far-reaching institutional change. Interestingly, trust in European institutions can to an extent act as a substitute for trust in national institutions.

These findings are not only helpful to understanding the difficulties and constraints of designing sustainable reform strategies. They may also support the development of more convincing crisis strategies. Reforms cannot be successful if they only address market inefficiencies and weaknesses of the social and economic system. In addition, a promising reform strategy must also aim at building up faith in governmental institutions and public administration. Lack of credibility is one of the serious bottlenecks for a successful and comprehensive recovery of the region. For countries in which the trust in national elites, public administration and the democratic system are almost fully eroded, a strong European involvement in guiding the reform process may be a (transitory) substitute and foster acceptance. Of course, this only holds as long as the EU institutions have a trust advantage over national institutions – which empirically seems to be the case for some Southern European countries.

Irrespective of these general observations, it should also be acknowledged that different Member States of the European Union have largely different experiences with reforms and are also characterized by different reform needs. Some have addressed employment and social challenges far more effectively than others and, of equal importance, some have used more gradual means of adjustment, often following a major reform step, while others seem only be able to adjust in the form of a radical break. Similarly, Member States differ vastly with respect to the reform requirements and readiness within different subsystems of their welfare states, such as the education, health care or the pension system. Hence, it is difficult to identify one reform pattern for all EU Member States.

This suggests that, aside from the general level analysis conducted in the current study, there is also a substantial need for more in-depth country level analysis. And in order to arrive at valid conclusions, a much more detailed analysis of national systems than is currently available is required. While we are skeptical that at the given level of abstraction such work will be completed in the course of the current WWWforEurope project, the results highlighted in the more theoretical papers in the current project, as well as those presented in other research areas devoted to welfare reform, warn against taking an overly simplistic “benchmarking approach” in such research. Given the substantial complementarities of institutions (see Sachs and Schleer, 2013) and the path dependencies and non-linearities involved in such reforms, similar reform packages in one area could lead to rather different outcomes in different countries.

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Annex I: Central Questions

Overarching question for the Project

What kind of new European growth and development strategy is necessary and feasible, enabling a socio-ecological transition to high levels of employment, well-being of its citizens, social inclusion, resilience of ecological systems and a significant contribution to the global common goods like climate stability.

5 central questions

1. Can the EU at the same time participate more strongly in world growth, guarantee a maximum well-being of its population and reduce energy and material input?
2. How can regional cohesion and social inclusion be achieved in such a growth strategy minimising risks of detrimental effects on incentives and maintaining the openness of society?
3. How can social and technological innovations be supported (and the focus of technological trends be shifted) so that they contribute to social and ecological sustainability?
4. How can institutions of modern market economies be changed so as to internalise the current social and ecological externalities and to decrease volatility and divergence in Europe?
5. How can the general public, third sector actors and vested interests be motivated to support reforms towards a new growth path?

Annex II: Working Papers

Women's Work and Family Profiles over the Lifecourse and their Subsequent Health Outcomes. Evidence for Europe

Working Paper no 28

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Women's Work and Family Profiles over the Lifecourse and their Subsequent Health Outcomes. Evidence for Europe*

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Abstract

The reconciliation of family and work is one of the "new social risks" contemporary welfare states are challenged to address. This paper contributes to a better understanding of the roles of work and family in women's life trajectories, shedding light on determinants and welfare outcomes of different combinations of motherhood and employment. We identify and compare distinctive life-course employment profiles of mothers across 13 European countries. After analyzing selection patterns, we investigate the possible link that exists between these work-family profiles up to the age of 50 and subsequent health outcomes. We embed our empirical investigation in a comparative welfare state framework and differentiate between four geographical areas that can be associated with different types of European welfare state regimes.

Keywords: welfare state, gender, family and work, health
JEL classification: I1, J2

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1 Introduction

The strong increase in female labour force participation, fuelled by a big leap in women's educational attainment, is the most important trend in labour markets of the 20th century (Goldin, 2006) and one salient trait of post-industrialization. It reflects on the one hand an expansion of women's opportunities to pursue their individual self-fulfillment, to choose between different combinations of family and career involvement and to achieve economic independence. On the other hand, this momentous shift has created new tensions and needs, and difficulties with reconciling family and work can be identified as one of the "new social risks" contemporary welfare states are challenged to address (Bonoli, 2007).

Since the increase in female employment has neither resulted in an equal gender division of unpaid work nor an equivalent externalization of household activities to public or private service providers, it is primarily women who are exposed to the risk of experiencing some sort of work-family conflict. A rapidly increasing body of literature is scrutinizing the opportunities and constraints associated with the multiple exigencies of family and working life as well as the outcomes that result from different individual strategies and policy settings (see, e.g., Misra et al., 2011; Del Boca et al., 2009; Janus, 2012).

We contribute to a better understanding of the roles of work and family in women's life trajectories, by shedding light on both determinants and welfare outcomes of different combinations of motherhood and employment. More specifically, we identify and compare distinctive life-course employment profiles of European mothers across welfare state groups. After analyzing selection into these employment patterns, we examine a possible link between women's work-family profiles up to the age of 50 and their health outcomes later in life.

Previous studies provide evidence that stable employment is generally associated with superior health outcomes. Intuitively, this finding seems plausible as stable and steady employment is conducive to achieve economic security and is demonstrably one of the most effective protective factors against poverty. At the same time, however, high workloads, poor working conditions and difficulties with the reconciliation of dual roles may have detrimental effects on health and well-being. Moreover outcomes may differ by country and country group as work and family choices as well as health outcomes are shaped by different institutional settings.

We construct a comprehensive health index to assess the relationship between mothers' life-course employment profiles up to the age of 50 and their health outcomes at later stages in life. Within this analysis, we draw attention to the role played by the gender distribution of work and care within the household as well as to the way in which socio-economic background, early childhood conditions and the situation in early adulthood shape choice and pursuit of different employment profiles. In contrast to earlier studies that investigate the relationship between work pathways and health for single countries (f.i. Frech and Damaske, 2012), we embed our empirical investigation in the framework of comparative welfare state analysis and differentiate between four geographical areas that can be associated with different types of European welfare state regimes. For this purpose, we use data from the first three waves of the Survey of Health, Ageing and Retirement in Europe (SHARE) – a cross-country longitudinal survey with the main aim to understand patterns of ageing across Europe. This dataset provides information spanning the whole lifetime of a representative sample of persons aged 50 and above in 13 European countries.

Clearly, the choice of employment patterns is not random. We find that women with favourable initial conditions, such as good childhood health, high cognitive skills and advantageous socio-economic conditions of parental home, are more likely to reconcile care for their children with continuous employment over the life-course. Those who combine motherhood with stable employment tend to be endowed with above-average health status. Working only marginally or with interruptions is associated with less favourable health outcomes. On the contrary, the observed statistical difference in health status between homecentred and full-career mothers disappears once we control for differences in age, education and income. Southern Europe is an exception in this respect, where health does not vary significantly by the work-family profile. Our general finding holds, when we apply a multinomial treatment model to control for selection into careerpath on both observable and unobservable characteristics.

2 Literature review

2.1 Work, multiple roles, and health

Women have long reported worse self-related health than men. However, women's health is found to have improved in the past decades and the gender gap has narrowed over the last two decades. Rising educational attainment and labour force participation may have contributed to this upward trend. Even if such benefits may be increasingly threatened by a variety of other important changes such as growing difficulties with balancing family and work, some evidence suggests that the increase in education and employment might even result in a reversed gender gap in self-related health in the near future (Schnittker, 2007).

Earlier research finds that women and also mothers with steady employment careers are healthier than their peers who do not work or are employed intermittently. For example, Frech and Damaske (2012) find for US mothers that full-time, continuous employment following a first birth is associated with significantly better physical and mental health at age 40 than part-time work, paid work repeatedly interrupted by unemployment, and staying at home without engaging in paid work. Part-time workers with little unemployment report significantly better health at age 40 than mothers experiencing persistent unemployment. These relationships remain after adjusting for pre-pregnany and at-birth characteristics and accounting for other selection. The authors find proof of the hypothesis that mothers more advantaged prior to pregnancy in terms of education and work experience as well as cognitive abilities select into full-time, continuous employment, whereas those from disadvantaged backgrounds, young mothers or black and Hispanic ones, are more likely to follow interrupted working careers or staying at home. These selection results are interpreted as evidence that early life-course disadvantages accumulate over time, as the more disadvantaged women are less likely to experience the work pathways associated with the greatest health benefits at age 40. Results obtained by Tubeuf et al. (2012) for Britain seem to support this claim: Early-life conditions are found to be important predictors of adult health, accounting for almost 20% of explained health inequality. Noticeably, the absence of a father at the time of birth and experience of financial hardships represent the lead factors for direct effects on health. Thus, there is evidence of a cumulation of disadvantage. However, taking other studies – such as Elman and Orand (2004), Ferraro and Kelley-Moore (2003), Hamil-Luker and O'rand (2007), Hayward and Gorman (2004) and O'rand and Hamil-Luker (2005) – into account, there is not yet a consensus regarding the extent to which the experience of early disadvantage influences later health outcomes.

Theory and empirical evidence indicate that paid work is generally beneficial for physical and mental health, and that employed persons enjoy better health relative to the non-employed or underemployed. Studies by Pavalko and Smith (1999) and Ross and Mirowsky (1995) show that the positive relationship between paid work and health persists across race, marital status, and life course stage and is strongest among full-time working women, who report a lower increase in physical limitations relative to their unemployed or intermittently employed peers. In a meta-study, Klumb and Lampert (2004) do not find consistent results across different health outcomes such as psychological distress, subjective health, cardiovascular risks and disease, and mortality. They do however conclude that "methodologically sound longitudinal studies confirm the findings of cross-sectional research showing that employment has either beneficial or neutral effects on women's health" (p. 1016).

Several investigations provide evidence that situations in which the combination of work and care activities results in work overload and work-family conflict represent negative health determinants. For instance, Muffels and Kemperman (2011) find that women gain in well-being when combining work and care, but only up to a particular limit or ceiling in terms of hours spent after which subjective well-being declines strongly due to the time pressure they face. In line with this finding, Roxburgh (2011) provides evidence for a significantly positive association between parental time strains and depression that is largely explained by job demands. Well-off parents are, however, significantly less depressed by parental time strains than less affluent parents. Moreover, it seems that negative outcomes resulting from work-family conflict are not necessarily confined to women.

The influence of mothers' employment on their health may depend on the gender division of labour within the household. Economic theory argues that specialization enhances mental health and wellbeing, whereas other, more psychological theories argue that equity matters most. Kalmijn and Monden (2012) combine information on the time spent on household and paid labour in order to study the effect of the division of labour within households on husbands and wives depressive symptoms, thereby considering separate and partly independent measures of equity and specialization. They find clear evidence for the equity hypothesis: When hours spent on paid and household labour are more equally distributed between husband and wife, both report fewer depressive symptoms. The authors find only weak and inconsistent support for a positive effect of specialization.

2.2 Work-family models in a comparative welfare state perspective

Despite a general increase in Europe, labour force participation of women and particularly mothers varies markedly across countries. Possible reasons for these differences are manifold, since labour market behavior is influenced by a host of factors that include individual and household-related characteristics, economic and labour market conditions as well as cultural values, traditions and norms such as the prevailing notions of gender roles. Moreover, empirical studies attribute a significant explanatory power to the design of welfare state policies that shape women's engagement in employment and child care as well as the gender distribution of unpaid work.[1]

Children in need of care are found to hardly influence the work career of men, but normally have a significant negative effect on both the probability of labour force participation of women and their working hours. The lower the age and the higher the number of children in a household, the higher is the probability of women being non-employed and the lower are their actual working hours in a job.[2] As shown in the literature, this impact of motherhood is mitigated by social policy measures that facilitate the combination of family and work. The most important policy areas in this respect concern childcare facilities, parental leave, working-time regulations and other flexible work arrangements as well as gender equality.[3] The extent of women's labour market participation is influenced also by other institutional features, such as the design of the tax system and the organisation of old age care. It is the particular mix of these institutional arrangements that influences mothers' (and women's) employment over the lifecourse.[4]

In our analysis we examine a possible heterogeneity in the relationship between women's work-family profiles and subsequent health across welfare state types. The classical distinction in welfare state regimes goes back to the seminal work by Esping-Andersen (1990) and was later expanded to incorporate the principle of de-familization, i.e. the extent to which welfare states weaken individuals' reliance on the family and facilitate their economic independence (Esping-Andersen, 1999, 2002).[5] In both cases, European countries

[1] Cf. Berninger (2009), Cipollone and D'ippoliti (2011), Del Boca et al. (2009), Stadelmann-Steffen (2008), Steiber and Haas (2009) and Misra et al. (2011).

[2] See, e.g., Uunk et al. (2005) for 13 EU countries, Del Boca et al. (2009) for 15 European countries, Steiber and Haas (2009) for 26 industrialised countries.

[3] See, e.g., Del Boca and Locatelli (2007), Jaumotte (2003), Del Boca et al. (2008), Stadelmann-Steffen (2008).

[4] In general, a neutral, individual taxation regime, leave schemes with job protection, a high wage replacement level, sufficient but moderate length and incentives for fathers to take up leave (or individual-based rights to leave) as well as a demand-meeting supply of good-quality childcare are found in the literature to be essential ingredients of a policy supportive of women's employment (cf. Bock-Schappelwein et al., 2009).

[5] The original regime-typology was based upon the principles of de-commodification,

are sorted into three groups: a "Social democratic regime" (Nordic countries), a "Conservative regime" (Continental European countries), and a "Liberal welfare regime" (Anglo-Saxon Countries). Following the work of Leibfried (2000), Ferrera (1996) and others, it has meanwhile become standard practice to add a separate "Mediterranean" type (Southern European countries) to this three-fold typology and to include Eastern European countries in the analysis.

More recent cross-country studies show that welfare states can be clustered into distinct groups according to the way work-family policies shape men's and women's commitment in paid work and care.[6] It is however important to note that these classifications reflect the current or recent situation and are not necessarily accurate with respect to earlier periods of time. The youngest women in our SHARE sample were born in 1957 (see section 3.2) and our analytical sample consists of respondents who completed their education between the early 1950s and mid-1970s and started their first work experience immediately or shortly afterwards. Only very few of the policies that we currently associate with work-family balance were already in place in those years. Even in the Scandinavian countries, which in many ways played a pioneering role, support to parents of young children started to be developed mainly from the late 1960s onwards. According to Bonoli (2007), the reorientation of the Nordic welfare states in function of the conciliation of employment and family life began in the 1970s and did not precede, but rather follow the expansion of female employment.[7] Until the late 1960s and early 1970s, the life of working mothers in Nordic countries was still dominated by "juggling and by reliance on informal care" (Bonoli, 2007, p. 505).[8]

social stratification and the public-private mix. Esping-Andersen (1999) added the dimension of de-familization after being criticised for neglecting the gender-dimension and especially the role of women as providers of unpaid care work.

[6]See, e.g., Bambra (2004), Sainsbury (1999), Leitner (2003), Bettio and Plantenga (2004), Gornick and Meyers (2004), Guo and Gilbert (2007) and Thevenon (2011).

[7]In Sweden, for instance, the decision of a massive expansion of childcare facilities, with the aim to provide public child care for all pre-school children, was taken in the mid-1970s. At the beginning of the 1970s there were only 80,000 childcare places available, far less than the demand. Between 1970 and 1980 the supply of childcare places grew by some 250 percent, from 80,000 to 406,000 (Naumann, 2005).

[8]Although, at least in Sweden, some elements of policies to combine family and em-

For the purposes of our research, we have to take into account this historical dimension. As we can see from Table 9 in the Appendix (restricted to countries that are part of our SHARE sample), female labour force participation rates in Europe differed markedly in the 1960s and early 1970s and – even more importantly – they experienced different growth rates in subsequent years. These differences in level and growth rate can not be explained solely by differences in work-family policies, but have to be related to a broader socio-economic and institutional context. Taking Esping-Andersen's original classification as a reference and focusing particularly on the 1960s and 1970s, we therefore distinguish between the following country groups, associated to different welfare state regimes:[9]

(1) In the Nordic countries (Sweden, Denmark), female participation rates began to rise considerably in the 1960s and attained very high levels by the early 1980s. A mix of financial allowances, leave facilities and an extensive public provision of day care encouraged a work-family household setting close to the 'dual-earner/dual-carer'-model (Crompton, 1999). The large increase in public services directed to child care (besides extensive services related to care for the elderly and the disabled) implied that women were able to leave the home and enter the labour market, often employed in the public sector in care jobs but now for a salary instead of doing unpaid housework.

(2) In Continental Europe, female labour force participation stagnated at a low to intermediate level throughout the 1960s and 1970s. The expansion of female employment started much later than in Scandinavia. The main responsibility for the care of young children was (and partly still is) relegated to the family. With the notable exception of France, levels of public expenditure on care services were very low compared to the Nordic countries. Families were supported primarily in the form of (unconditional) financial transfers and work-family policies conducive to a modified version of the 'male breadwinner-model', in which men are working full-time and women adapt their work efforts to family needs by withdrawing from the labour

ployment date back to the 1950s and 1960s (see Sundstrom and Stafford, 1992).

[9] We omit the Anglo-Saxon countries typically subsumed under the Liberal welfare state regime, because our data do not include any of those countries.

market or switching to part-time work ('dual-earner/female part-time carer model', Crompton (1999)).

(3) Women's labour force participation in Southern Europe (Spain, Italy, Greece, Portugal) was and still is markedly lower than in other parts of the continent. By the early 1980s, participation rates in these countries were at least 10 percentage points below those in Continental Europe and at least 20 percentage points below those in Northern Europe. The dominant gender ideology was that of a 'male breadwinner and a female carer': Women were not encouraged to engage in paid work, but to care for their children at home without support by the state. Legislation to support female employment and work-family flexibility (such as the right to part-time work) did not develop or developed only slowly. Particularly in those countries that returned to democracy only in the 1970s, gender equality legislation was very fragmentary.

(4) Under communist rule, Eastern Europe was characterised by a gender regime that – on the surface – had strong resemblances with the Scandinavian one, while at the same time traditional gender roles dominated in the private sphere (Pascall and Lewis, 2004). High female employment rates were a rule and differences between countries before the fall of communism seemed to be smaller than they were in the West during that period Van der Lippe and Van Dijk (2002).[10] Having the combination of strong female labour market participation, legal equalities and persistent gender inequality within households in common, the countries belonging to the former Communist block can be regarded as a distinct welfare state typology.

In spite of the usefulness and heuristic relevance of this classification, it would be wrong to lose sight of the differences that existed and still exist between countries associated with the same welfare state regime. In this respect, the cluster of Continental countries is the largest and also most heterogeneous one. France, for instance, developed its family policies following a different path than Germany or Austria, particularly with respect to out-

[10] At the point of transition, women's labour market participation rates in CEE were very high, between 70 and 80% depending on the country.

of-family childcare institutions. Also the Netherlands, which had very low levels of female employment until the 1980s, can be singled out from the other countries in this group. Differences with respect to female employment levels and the development of work-family policies can be found also in the other clusters, for instance by comparing Poland with other Eastern European countries or by opposing Italy to Greece. We will discuss some of these national specifities in the subsequent sections.

3 Empirical research design

3.1 Research questions and empirical strategy

In this work, we investigate the relationship between women's work-family profiles over the lifecourse and their subsequent health outcomes Our analysis involves three steps:

(1) First, we identify different work-family profiles and describe their distribution as well as the characteristics of women associated with them. We focus on women with children and distinguish between mothers with hardly any paid work experience (homecentred mothers), mothers with limited work experience (mothers with marginal employment), mothers who crafted their work careers around their family obligations (mothers with intermittent careers) and mothers who pursued parallely family and career (full-career mothers). Using longitudinal information on the lifetime careers of women in 13 European countries, we construct indicators for the number of years in paid employment until the age of 50 as well as for the number of years with both work and care responsibilities, identified through the presence of young children (below the age of 10) in the household.

(2) In a second step, we investigate the selection of women with children into different work-family profiles, conditional on circumstances in childhood ('initial conditions') and on the situation at time of first childbirth ('childbirth situation'). The first set of circumstances comprises indicators for the socio-economic status (SES) of parents, for living conditions, childhood health,

and cognitive abilities. To control for unobserved factors related to the time and place in which respondents grew up, we include country- and cohort-dummies in our analysis. The second set of circumstances refers to the time when women made their first choices with respect to education, labour market participation, partnership and child-bearing. It includes information on the educational level attained by respondents, the age at birth of the first child, as well as the labour market situation and the partnership situation at that moment in time. We employ multinomial logit models using the work-family profiles as dependent variable, and sequentially include information on initial conditions and childbirth situation as explanatory variables in our estimations to shed light on the mechanisms that influence the later lifecourse of women.

(3) The final and most important step is to test whether women who choose different combinations of work and family committment display systematic differences in health outcomes at later stages in life. We start with a multivariate regression analysis to show whether observed differences in health status between women with different work-family profiles persist after accounting for compositional effects, such as differences in education and income level. Specific attention is thereby given to indicators for the intensity of dual committment to family and paid employment.

An identification of the effect of different work-family-combinations on health is complicated by the potential correlation between the choice of a specific work-family profile and the outcome of interest. We account for the endogenous selection of women with different characteristics into work-family profiles, by employing an econometric model that jointly estimates two components: a reduced-form profile choice equation and an outcome equation with endogenous profile categories.[11] Following Frech and Damaske (2012) we estimate this joint model to adjust for the non-random selection

[11]This multinomial treatment model and the corresponding STATA routine have been developed by Deb and Trivedi (2006) and Deb and Trivedi (2006b). Examples for its utilisation can be found in Shane and Trivedi (2012) and Frech and Damaske (2012). This last study is of particular interest, because the authors use this approach to investigate the relationship between mothers' work pathways and health.

of women into work-family profiles based on observed 'initial conditions' and 'childbirth situation'. The second stage equation evaluates the relationship between work-family profiles and health, adjusting for the unequal selection into profiles. The model allows for correlated unobserved heterogeneity between its two components.[12] The model specification is provided in the Appendix (section A.1). Further information on the estimation procedure can be found in Deb and Trivedi (2006) and Deb and Trivedi (2006b).

3.2 Data sources and sample characteristics

We combine data from the first three waves of the Survey of Health, Ageing and Retirement in Europe (SHARE) for the empirical analysis.[13] SHARE is a multidisciplinary and cross-national panel database of micro-data on health, socio-economic status and social and family relationships of individuals aged 50 or over.[14] Eleven countries contributed to the 2004/5 SHARE baseline study. Three more European countries joined the survey in the second wave (2006/7). SHARELIFE, the third wave of the project, was conducted in 2008-09 over the same population who took part in the two previous waves. This time, the respondents were interviewed about their life history. Different fields such as childhood health, education, job career, family life, housing, etc. were surveyed. The data include information on initial conditions and lifecourse. For their collection, a life grid or calendar was utilised to help respondents recall major events of their work and family life.[15]

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[12]This unobserved selection is handled by introducing latent factors. The values for these latent factors are drawn using simulation and the model is estimated using maximum simulated likelihood methods (Shane and Trivedi, 2012).

[13]We use data from the release 2.5 for waves 1 and 2 of SHARE, and release 1.0 for SHARELIFE.

[14]For more details on SHARE see the "First Results Books" by Börsch-Supan et al. (2005) and Börsch-Supan et al. (2008), as well as the "Methodology Books" by Börsch-Supan and Jürges (2005) and by Schröder (2011).

[15]This type of data may be problematic especially if the period of recall spans decades (e.g. Bound, Brown and Mathiowetz, 2001). Studies by Smith (2009) and Haas and Bishop (2010) have validated retrospective data from other studies, the Health and Retirement Survey (HRS), the Panel Study of Income Dynamics (PSID) and the Wisconsin Longitudinal Study (WLS), with objective records for data. Their results are encouraging and point to the general validity of this data generation process. Ex post analysis checking

The longitudinal dataset comprises 25,678 individuals from 13 European countries surveyed in SHARELIFE at least once in waves 1 and 2 respondents, 14,391 (56%) of them are women. As a general rule, the target population of individuals surveyed by SHARE is aged at least 50. A small part of the sample consists, however, of younger individuals, because partners of the target population were interviewed as well, irrespective of their age. Since we are interested in the lifecourse of women who have already reached mature age, we eliminate observations from respondents who were younger than 50 when surveyed by SHARELIFE. This leaves us with 14,030 observations.

As SHARE was designed to provide information representative of the European population aged 50 and above, this full sample is useful to investigate the work-family profiles of European women and their evolution over time. The drawback is that it spans a large number of cohorts, comprising women who reached adulthood before or during World War II. To create a more homogenous sample that is conducive to explore the lifecourses of Europeans in the post-war period, we additionally define a restricted sample of younger women, aged between 50 and 65 years (working age) when first surveyed by SHARE, in wave 1 or 2. This sub-sample consists of 8,089 women (comprising cohorts born between 1938 and 1957) and is our preferred analytical sample, particularly for the multivariate analysis.

The present work focuses on Europe and aims to shed light on differences across welfare state types, that differ with respect to the institutions and policies that affect female fertility and labour market participation decisions. We group the countries present in the SHARE data in clusters linked to welfare characteristics discussed in section 2.2 and loosely associated with the typology of Esping-Andersen. Our data do not contain countries associated with the Anglo-Saxon welfare regime, which leaves us with four broad geographical areas: Nordic Europe (Sweden, Denmark), Continental Europe (West Germany, the Netherlands, Belgium, France, Switzerland, Austria), Southern Europe (Italy, Spain, Greece) and Eastern Europe (Poland, Czech

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for internal consistency of SHARELIFE data, as well as comparisons of recall information with external cross-country historical information confirm the high data quality provided by SHARELIFE (Mazzonna and Havari, 2011; Lyberaki et al., 2013).

Republic, East Germany).[16]

Table 8 in the Appendix shows how respondents in the working-age sample are distributed by country and welfare groups, as well as descriptives for selected variables. These descriptives reveal some substantial heterogeneity within country groups. This applies particularly to the Eastern and Continental country groups. Women in the Netherlands, for instance, have worked on average three years less than their counterparts in Belgium, France and West Germany.[17] French women are characterised by a comparatively high fertility rate, whereas in both Switzerland and the Netherlands we observe a part-time share and a number of job changes that are substantially higher than in the other Continental countries. These differences reflect underlying differences in the extent but also in the modality of combining family and employment in these countries. We can find large differences also between Poland, where women have much shorter worker careers and higher fertility rates, and the other Eastern European countries. Variation is however more substantial between groups than within groups.

3.3 Variables of interest

Categorisation of work-family profiles: To reduce the complexity represented by heterogeneous biographies, we draw a first distinction between mothers and childless women. The more important and also more difficult exercise is however to distinguish analytically between mothers with different types of work-family profiles. We employ a methodology that combines two approaches that are present in the literature. Lyberaki et al. (2013) employ a classification proposed by Hakim (2000), with a distinction between "home-centred women", i.e. those for whom family and children are the main

[16]The SHARE sample contains information on the part of Germany in which respondents lived before 1989. Given that the career of East German older women was affected by GDR institutions, for the purpose of examining family and employment patterns it makes sense to include Eastern Germany with the Czech Republic and Poland (Lyberaki et al., 2013).

[17]For a long time, the Netherlands used to have a low level of female employment, only in more recent decades the number of working women increased at a faster rate than in most other Western countries (Van der Lippe and Van Dijk, 2002).

priorities throughout life; "work-centred women", who are either childless or mothers who have continued to work and to give much space to paid employment in their lifetime careers; and "adaptive women", a diverse group composed of women who combine work and family relying heavily on maternal leave periods and part-time employment. As key indicator, the authors use the years of work of each respondent until she reached the age of 50 - regardless of current age.[18] Second, we draw on an approach chosen by Frech and Damaske (2012), with a stronger focus on the career choices made by women in presence of children. The authors restrict their analysis to mothers only and classify women's work pathways into "working", "intermittently working", or "not working".

In our analysis, we combine elements from both the abovementioned approaches. First, we divide women in groups with different intensity of labour market participation using the sum of years spent in paid employment until the age of 50. This way, we differentiate between mothers who did not work, those who worked for some years and those who worked throughout most of their adulthood. As a second indicator we use the number of years with dual committment in paid employment and child care as a share of all years with young children in the household. Based on the two measures, visual data inspection and sensitivity analysis, we distinguish the following categories of women:

- home-centred mothers who have been active on the labour market for one year or less;
- mothers with marginal employment biographies, who have been in paid employment for at least two but no more than 19 years;
- mothers with at least 20 years of work experience, but (longer) spells of economic inactivity during times in which their children were young (intermittent employment);

[18] Using this indicator, the authors distinguish work-centred women (with more than 30 years' work), family-centred women (with no links to the labour market), and two types of adaptive career women (those who have between 1 and 19 years and those who have between 20 and 29 years of work experience).

- and full-career mothers, with at least 20 years of work experience and a high share of dual committment in work and care (defined as working at least 90% of the time when one or more children in the household were aged below 10 years).

Health outcome(s): SHARE contains rich information on respondents' health status and provides a broad range of health measures, including self-rated health status (SRH), self-reported diagnosed chronic conditions, functional limitations, mental health as measured by two alternative depression scales (CES-D and Euro-D) as well as physical measurements (hand grip strength and walking speed). General self-rated health (SRH), which is usually measured on a five-points scale, is probably the most widely used health indicator in studies that are based on survey data. In fact, SRH has proven to be a good measure of an individual's health and a powerful predictor of individual mortality (see for instance Idler and Benyamini (1997)). At the same time, there has been growing concern that the comparability of self-reported measures across population groups and countries might be problematic because of group-specific differences in health self-assessment and country-specific differences in reporting. This is the case because respondents might have different reference levels of health in mind when they assess their own status and because response categories might have different connotations across countries and cultures.[19]

To overcome these limitations, we choose as our main health measure a computed health index that can be interpreted as a proxy for "true health". This "true health" index, scaled between 0 (near dead) and 100 (perfect health) has been designed following a methodology proposed by Juerges (2007). It accounts for a large number of (diagnosed) physical and mental conditions as well as measurements such as grip strength and the body-mass index. The index is computed using generalised ordered probit models and

[19]For a discussion of this issue see Juerges (2007). For instance, older respondents tend to have a "milder" view of their health, i.e. they tend to rate their health as better than otherwise comparable younger respondents (van Doorslaer and Gerdtham, 2003; Juerges, 2007). Dowd and Zajacova (2007) find evidence for differences in the relationship between SRH and objective health-risks across groups with different SES.

it accounts for country-specific differences in reporting style. Further details on the computation are presented in the Appendix, section A.2.

In the context of our research, the health index has the specific advantage to overcome the potential differences in reporting style of SRH across countries. It therefore represents our main health outcome variable. To add further insights and to check the robustness of our results, in most of our analyses we use additional health indicators, measured at different points in time (i.e. SHARE waves), namely SRH (expressed as binary variable with value '1' for less than 'good' health) and an indicator for depressive symptoms based on the twelve items of the EURO-D scale.

Selection variables: For the selection equation of our multinomial treatment model we need variables that are expected to select women into work-family profiles, but have no direct association with health. Due to the pervasivity of health as both a determinant and an outcome of human behaviour, the demands on such selection variables are high. Ideally, we would want to observe exogenous factors that push otherwise very similar women randomly into different work-trajectories. Given the available information, we include as determinants of the work-family profile variables for age and partnership status at childbirth as well as a dummy variable for partner loss (due to divorce or death) when the first child was young. In addition, we include two "macro" indicators, the generosity of maternity leave benefits and the availability of the contraceptive pill at first childbirth, as explanatory variables.[20] These two indicators are exogenous to individual health and to respondents' choices, but they have the limitation of offering only a small amount of variation. In light of these limitations, our estimates of the effect of different work-family profiles on health outcomes have to be interpreted with some caution.

Covariates: In our analysis, we include personal characteristics such as age, years of education and marital status. With respect to employment, we use information on the number of unemployment spells (of at least six

[20]These variables have been used by Brugiavini et al. (2013) to investigate the impact of maternity benefits on leave taking. We would like to thank the authors and particularly Elisabetta Trevisan for making these data available to us.

months), the number of jobs held by the respondents and on the distinction between part-time and full-time employment. The set of initial conditions includes an indicator for parental cultural capital and SES (the number of books in the household)[21] and two indicators for the housing quality – the number of persons per room and an index constructed as sum score of five accomodation amenities such as living in a house with central heating, running water etc. – which can also be interpreted as proxies for SES. Furthermore, it contains a dummy indicator for cognitive ability (coded to '1' if the respondent stated to be better or much better at school than other children in language, maths or both) and a dummy variable set to '1' if the respondent did not grow up with both biological parents. All this information was asked with reference to the time when the respondent was 10 years old.[22] With respect to early adulthood and the moment when women started a family, we construct indicators of the age at (first) childbirth, the number of work years before childbirth as well as a dummy set to '1' if the woman had no cohabiting partner when becoming a mother. Another dummy variable indicates whether a woman lost her partner (due to death or separation) before her first child turned 10 years old.

The individual work-family trajectory might have been influenced by health problems that have arisen in adulthood and were not related to initial conditions. For instance, women might have followed a intermittent or marginal employment career because health problems interrupted their work careers. SHARELIFE asked respondents to provide information on injuries that led to disability as well as on all illness episodes that lasted for more than one year. Those individuals who suffered from severe illness periods were additionally asked if the health problem led to significant consequences, such as limiting opportunities for paid work. We condense the information on injuries and illnesses into a dummy variable that takes the value '1' if the respondent had either an illness that led to limitations for paid work or a disability resulting

[21] Although this variable is ordinal in scale, Brandt et al. (2012) have carried out a test for linearity and shown that it can enter regression analysis as continuous variable. The same is true of the housing quality index described next.

[22] Similar variables and indicators have been used in other studies based on SHARE, such as Deindl (2013) and Havari and Peracchi (2011).

from an injury, before she turned 50.

We are particularly interested in understanding if the extent of dual committment in work and childcare has long-term repercussions on women's health. SHARE respondents were asked whether they experienced periods of particular stress in their lives and, if so, to provide start and end year of these periods. We use this information to prove whether stress periods have a negative effect on health. Moreover, respondents were asked some questions about the household division of tasks with respect to household chores and childcare. We created a dummy indicator, that is coded '1' if the responding woman was mainly or solely responsible for both household and care, and '0' that her partner shared this tasks at least in equal measure. Unfortunately the relevant questions are not included in the main SHARE questionnaire, but are part of a drop-off section that was not completed by all respondents. Use of the indicator on household division of tasks therefore reduces sample size substantially.[23] Additional indicators that provide proxy information on the amount of paid and unpaid work carried out by women are the number of children and the share of part-time work on total employment years.

Figure 1 indicates that in Southern Europe there is a very strong presence of women who have never been in paid employment. In our weighted sample, which is representative of women aged 50 and above, we find that 30% of mothers have never been in paid employment. This is in stark contrast to the corresponding shares in the other country groups, where less than 7% (Eastern and Continental Europe) and 2% of women (Continental and Southern Europe) have never entered the labour market. Even if we restrict the sample to women who were part of the working age population when entering SHARE for the first time, the share of economically inactive women still totals 25% in Southern Europe (and at most 4% in the remaining country groups, see Figure 7 in the Appendix).

The defining trait of Continental European countries lies in the compara-

[23]To check whether the response rate to this question was biased, we test for deviations between responses and missings in terms of age, educational level, income, and association with work-family profile. We do not find any systematic difference between those who completed the drop-off section and those who did not.

tively high concentration of women with moderate levels of employment. The employment profiles of Nordic and Eastern European women, where mothers with long employment careers are the rule rather than the exception, display greater similarities. As we can see from Figure 2, similar differences emerge when we look at the share of time women spent in paid employment while having young children at home. Continental Europe displays a bi-modal pattern, with a comparatively high concentration of women with high and low degrees of dual work-family committment. In Eastern and Nordic Europe, the majority of mothers have been employed most of the time when their children were young. In Southern Europe, not surprisingly, the picture is exactly the opposite.

4 Results

4.1 Distribution and characteristics of work-family profiles

Our first battery of results gives an overview of the distribution of different work-family combinations across country groups and cohorts, and provides information on the characteristics of women associated with these profiles. The following two figures show how European women – grouped by welfare areas – allocated their time to paid employment up to the age of 50, and to what extent they continued to work in the presence of young children in the household.

Based on a classification in work-family profiles, Figures 3 and 4 present information on the distribution of our two central indicators for numbers of years worked and the share of years worked with young children in the household. By definition, home-centred women are those who have no work experience. Women with marginal employment have worked some years, in most cases not when their child or children were young. Both women with intermittent employment and those with steady employment have had at least 20 years of work experience before reaching age 50. As can be seen in the figures, the distribution of years worked is skewed further to the right for women with steady employment. However, the main difference between the two groups comes to the fore when we look at the second indicator: By definition, full career mothers are those who have worked at least 90% of the time when their child or children were young. Mothers with intermittent employment shaped their career around familial committments, with longer breaks from paid employment in concomitance with child-rearing.

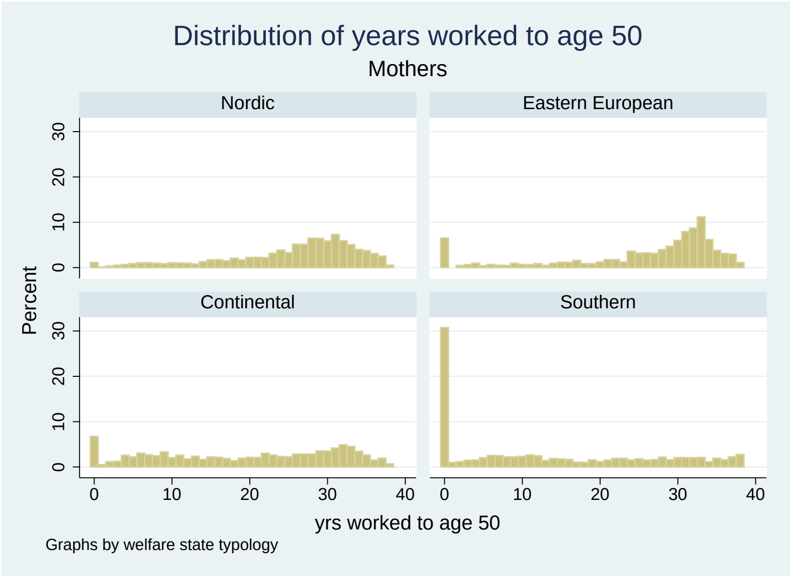
As we would expect, there is a high correlation between welfare areas and particular work-family profiles. Table 1 presents this information in a disaggregation by number of children.[24] The distribution of work-family profiles varies greatly by area and is fairly consistent across families of different size. Not surprisingly, the share of women with long careers in paid employment decreases with the number of children in all country groups. Changes in the profile distribution according to the number of children vary however between welfare areas. In Southern and Continental Europe, women with more than two children were much more likely to stay at home and less likely to be continuously employed than those with only one or two children. Even in Eastern Europe, the share of home-centred women increases substantially with the number of children.

By contrast in the Scandinavian countries it is very uncommon to find women who did never participate in the labour market, even when they had more than three children. In Nordic Europe, the most substantial shift across profiles that occurs as the number of children increases, is that between women with intermittent and those with marginal employment. The share of full-career mothers decreases with family size, but significantly less than in the other European areas.[25]

[24]In our sample only 17% of mothers have more than 3 children, the number drops to 13% if we look only at the sub-sample of younger women.

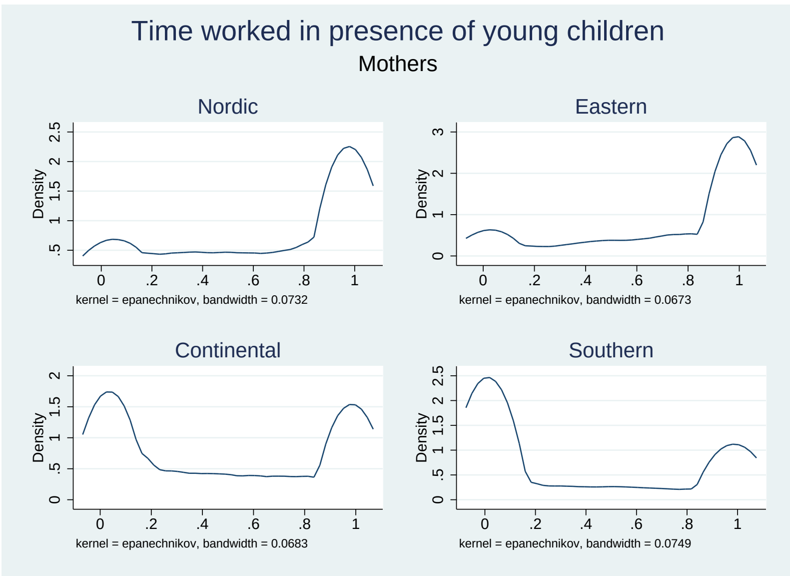
[25]It is interesting to note that – compared to differences in the extent of female labour force participation and of work-family committment – differences in fertility patterns across country groups are less pronounced. The major difference lies in the share of women with four and more children, which is significantly lower in Northern Europe than in the other regions. The share of childless women is highest in Southern Europe, followed by Continental Europe, and lowest in Eastern and Nordic Europe.

Figure 1: Distribution of years worked, by welfare area



Note: Weighted. Full sample. The indicator shows the total number of years in paid employment up to the age of 50.

Figure 2: Time worked in the presence of young children, by welfare area

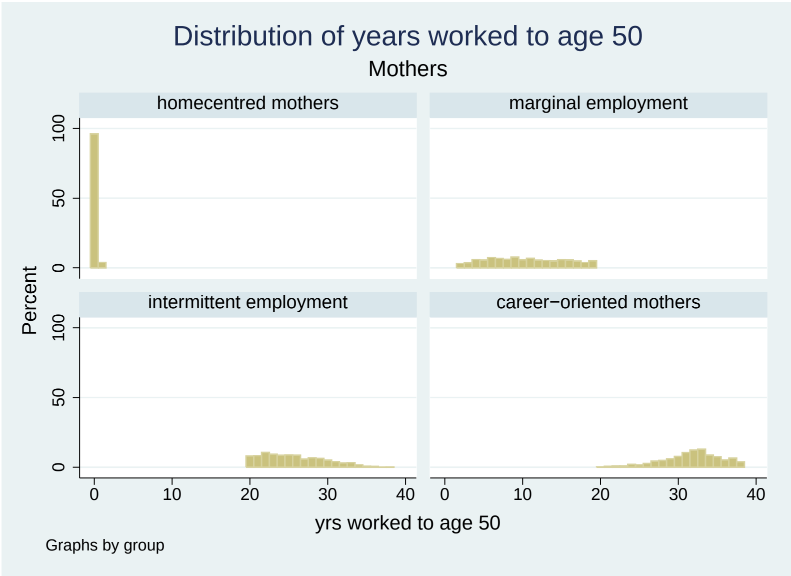


Note: Weighted. Full sample. The indicator expresses the number of years in which a women was in paid employment and had children aged below 10 in the household, as a share of all years with young children in the household.

Within country groups, we find a very high degree of homogeneity in the Nordic welfare states and more variation in the other groups. As we would expect, France has a high share of mothers who pursued continuous employment (44%), whereas the Netherlands are characterised by a much higher incidence of marginal employment than the remaining Continental countries. Among Eastern European countries, Poland stands out with a comparatively high share of homecentred mothers (6.5%) and of women with only marginal employment careers (21.2%). In the Southern European group, Greece has by far the highest share of homecentred mothers (40% against 22% and 23% in Italy and Spain). In spite of this within-group heterogeneity, we find that "outliers" within one group would still not fit well into one of the other clusters, as intra-group differences are less pronounced than inter-group differences. As a case in point, the share of full-career mothers in Poland still lies ten percentage points higher than in France, and the shares of homecentred women in Italy and Spain are higher by a multiple than those in any Continental, Eastern or Northern European country.

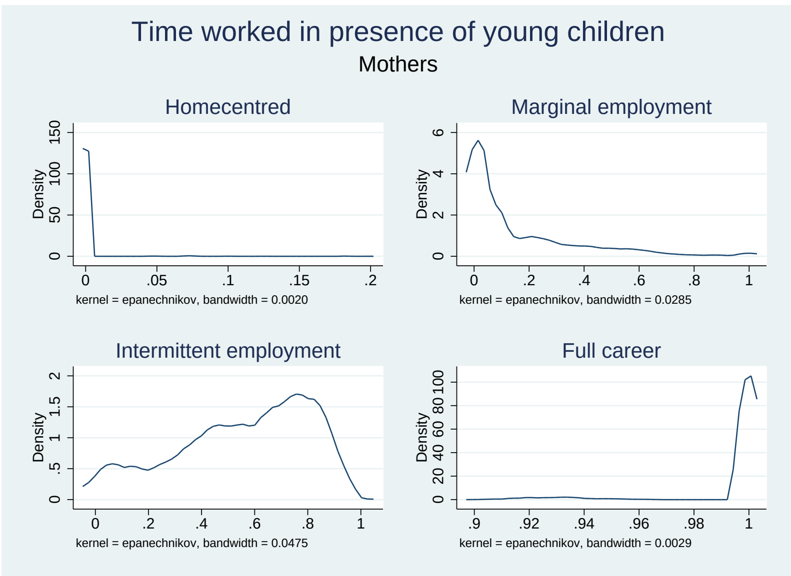
When we plot the profile distribution along the birthyear cohorts available in SHARE (Figure 5), we observe a similar combination of convergence and dissimilarity: Younger cohorts display a pronounced tendency of stronger labour market participation, across all welfare areas. The speed of change as well as the prevalence of specific profiles do however vary substantially between country groups. In the Scandinavian countries we observe a strong and steady trend towards more full-career mothers and less women with marginal employment careers. The Eastern Europan countries start with higher levels of female labour force engagement, but experience less change over time. A look at the development within groups (data not displayed here) reveals that the distribution of work-family trajectories evolved rapidly in East Germany (with a strong increase of full-career mothers) and Poland (with a decline in the share of home-centred mothers), but remained virtually

Figure 3: Distribution of years worked, by work-family profile



Note: Weighted. Full sample. The indicator shows the total number of years in paid employment up to the age of 50.

Figure 4: Time worked in the presence of young children, by work-family profile



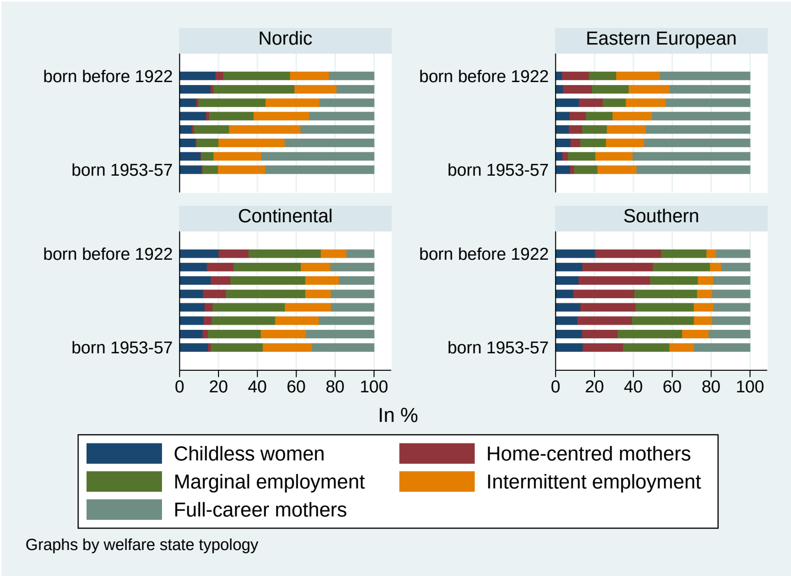
Note: Weighted. Full sample. The indicator expresses the number of years in which a women was in paid employment and had children aged below 10 in the household, as a share of all years with young children in the household.

Table 1: Distribution of work-family profile, by welfare area and number of children

	Number of children				Total
	1	2	3	>3	
Nordic Europe					
Home-centred	0.8	0.8	2.3	1.6	1.2
Marginal employment	12.3	14.7	26.6	44.6	17.4
Intermittent employment	31.3	35.4	28.1	22.6	32.6
Career-oriented	55.6	49.1	43.0	31.2	48.8
	100	100	100	100	100
Eastern Europe					
home-centred	2.9	3.3	11.9	10.8	5.5
marginal employment	9.9	9.5	18.0	25.6	11.8
intermittent employment	15.8	23.6	19.6	22.3	20.9
career-oriented	71.4	63.6	50.5	41.4	61.8
	100	100	100	100	100
Continental Europe					
home-centred	3.1	4.2	8.6	18.0	5.2
marginal employment	26.3	35.6	45.7	52.0	36.2
intermittent employment	26.4	25.5	22.8	16.8	25.0
career-oriented	44.2	34.6	22.8	13.3	33.6
	100	100	100	100	100
Southern Europe					
home-centred	23.3	29.6	37.5	37.1	30.6
marginal employment	26.5	32.9	34.0	41.1	32.0
intermittent employment	15.8	11.1	9.7	8.5	11.6
career-oriented	34.4	26.5	18.8	13.3	25.8
	100	100	100	100	100

Note: Weighted. Full sample.

Figure 5: Distribution of work-family profile, by birth cohort and welfare area



Note: Weighted. Full sample.

unchanged in what is today the Czech Republic. In Southern Europe, we observe only a mild increase in the number of full-career mothers, taking place among the youngest cohorts which are present in the sample. The reduction in the share of homecentred mothers is – on the contrary – pronounced, and can be traced back mainly to developments in Spain and Italy.

Details on the employment trajectories of mothers with different work-family profiles are presented in Table 10 and Table 11 in the Appendix. The literature on female labour force participation stresses that the first child birth is a decisive event for subsequent employment pattern and that cross-national differences in total participation rates are mirrored in differences in employment rates after the birth of the first child (Del Boca and Locatelli, 2006). Indeed, our clustering of family and employment patterns reflects substantial differences in participation behaviour following the birth of the first child, both in terms of likelihood and length of work interruptions. Further differences in the characteristics of women associated with different family and employment profiles come to the fore in the descriptive statistics (mean and coefficient of variation) collected in Tables 12, 13 and 14 in the Appendix. For convenience, we provide tables only for the more homogeneous sample of younger women (see average age across work-family profiles).

Home-centred mothers are on average older, less educated and live in poorer housholds than those who have combined paid work and motherhood. As we would expect, full-career mothers have on average the highest number of years in paid employment (31.4 years). They are also more educated than women associated with the other profiles, have a higher household income and are more likely to live as single. Women with intermittent careers are very similar to this group in terms of household income as well as age and marital status. In spite of having worked on average less (26.2 years), they did change job more often and experienced more unemployment spells. In addition, they display the highest share of part-time work among all groups, a further indication for the fact that these women have adapted their employment career to their familial needs. When we look at indicators related to children and to household activities, we find larger differences between mothers with no or limited employment histories on the one hand (home-centred and marginal employment), and those with more intensive labour market participation on the other hand (intermittent and full-career). Home-centred mothers and those with only limited labour market experience have on average a larger number of children and were more likely to be – mainly or solely – responsible for household chores and child care. home-centred mothers stand out as those who are least likely to report retrospectively a stress period in their lives (48%). Interestingly, the share of women who report stress periods in concomitance to the time when their children were young does not vary much between mothers with different degrees of employment intensity.

The descriptives on initial conditions (Table 14) suggest that full-career mothers have enjoyed more favourable childhood conditions than their peers: They lived in better accomodations, had parents with more cultural capital, enjoyed a better health status as children and were more likely to have above-average cognitive skills. Childless women are those that show the greatest similarity in terms of initial conditions (with the exception of childhood health) to those who combined family and steady employment. Of the other groups, home-centred women can be singled out as those who had the least favourable environment and starting conditions as children. This finding is not driven by compositional effects due to the uneven distribution of work-family profiles across countries: Descriptive statistics disaggregated by welfare area display exactly the same patterns.[26]

4.2 Determinants of work-family profiles

The next set of results sheds light on the selection of women into different work-family profiles. To provide evidence on the relevance of specific factors in a multivariate setting, we estimate multinomial logit models, using full-career mothers as the base group. The analysis is restricted to women with children. In a first step, we include in our specification only variables related to 'initial conditions'. As we can see from the first, third and fifth columns in Table 2, factors such as cultural capital of parental household, childhood health and cognitive abilities at age 10 have some predictive power with respect to the subsequent selection of women into different combinations of family and employment profiles. This is particularly true for the distinction between full-career mothers and those who had none or only comparatively short careers in paid employment. In line with theoretical expectations, we find that women who combine motherhood with steady employment come from households with more cultural capital, were healthier and had higher cognitive skills as children than women who remained at home or were only marginally employed after starting a family. As indicated by the size of coefficients, the difference between full-career mothers and those with intermittent employment is less accentuated. In this case too, we observe that high cognitive skills are associated with a stronger selection in steady employment, whereas poorer childhood health and housing conditions (which can be interpreted as proxy for SES) increase the likelihood of selection into

[26] To save space, these tables are not displayed separately, but they are available from the authors upon request.

the intermittent employment profile.[27]

The second specification of our model (columns two, four and six) includes a set of variables that capture the life circumstances of respondents at the moment when they became mothers for the first time. At this stage of their lives, a number of possible outcomes such as the educational level have been realised. Consequently, the explanatory power of the model increases substantially. The additional variables on circumstances at first childbirth are in part substitutive (and not purely complementary) to those on initial conditions: For instance, there exists a positive correlation between SES and cultural capital in parental home on the one side and respondents' educational attainment on the other side. The variable on years of schooling is therefore bound to capture some of the information previously embodied in the indicators for housing quality and cultural capital.

The coefficients on age, partnership status and employment at birth of first child as well as the indicator on years of schooling are all sizeable and highly significant. They indicate that the moment in which women have reached adulthood and start a family represents a crossroad with respect to their future employment career. We observe that the likelihood of staying at home, and also to have a career with only marginal or intermittent employment is significantly higher in cases where a woman was not employed before giving birth to her first child. This finding holds after accounting for the respondents' educational level which, not surprisingly, is positively correlated with a higher degree of labour market integration. Full-career mothers are also more likely to have had their first child later in life than mothers with marginal or intermittent employment (although not with respect to home-centred mothers). Motherhood without a cohabiting partner ('child out of wedlock') is also associated with mothers' continouus employment. This indicates that some women have pursued full-career profiles because they were the only breadwinner in the household.[28]

[27] Tests with additional explanatory variables such as information on main breadwinner's occupation (based on ISCO nomenclature and grouped to proxy SES) and on the geographical setting (urban vs. rural) yield the same results.

[28] In fact, the share of lone mothers is higher among full-career women than in the other

Table 2: Work-family profile determinants

	Multinomial logit model, ref. category: Full-career mothers					
	Homecentred		Marginal		Intermittent	
	(1)	(2)	(1)	(2)	(1)	(2)
Birthyear	-0.065***	-0.015	-0.047***	-0.035***	-0.015*	-0.006
Housing index	-0.047	0.01	-0.044	0.005	-0.083***	-0.043
Both parents	-0.038	-0.003	-0.065	-0.081	0.015	-0.019
Good at school	-0.797***	-0.354*	-0.463***	-0.319***	-0.190**	-0.072
Poor childhood health	0.413*	0.746**	0.534***	0.513***	0.300*	0.260*
Number childhood illn.	-0.07	-0.096	-0.037	-0.05	0.02	0.014
Number books	-0.223***	-0.121	-0.089**	0	-0.034	0.046
Yrs schooling		-0.148***		-0.097***		-0.081***
Child out of wedlock		-0.941**		-0.659***		-0.397***
Age first birth		0.064***		-0.032***		-0.052***
Working first birth		-7.403***		-1.490***		-1.345***
Constant	125.006***	30.689	91.572***	71.002***	29.096*	14.699
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Cohort dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	7002	7002	7002	7002	7002	7002
R-sq	0.145	0.259	0.145	0.259	0.145	0.259
LogLi	-7718.1	-6700.2	-7718.1	-6700.2	-7718.1	-6700.2
BIC	15967.5	14037.9	15967.5	14037.9	15967.5	14037.9

To sum up, our results confirm findings from previous research and ex-ante expectations: Advantageous initial conditions, such as good childhood health, above-average cognitive skills and favourable socio-economic background promote a lifecourse profile that combines motherhood with steady employment. As the findings for our second set of indicators show, by the time women have their first child, they have already laid the foundations of their subsequent employment history. To test for the relevance of these associations within welfare typologies, we carry out separate regressions by country group. In a first step, we apply the first specification to the full sample of respondents (see Table 15 in the Appendix) and then we estimate the full specification to our baseline sample (Table 16)[29]. The results confirm the general picture that emerged from the sample with pooled data. None of the welfare areas can be singled out with respect to the others. Due to the reduced sample size, coefficients are in general less statistically significant than for the full sample but – with a few exceptions – have the expected sign and magnitude.

This suggests that personal characteristics and life-course circumstances play a very similar role, irrespective of the welfare state regime in which a person lives. As we can see, the explanatory power of our model for profile selection based exclusively on initial conditions is rather low (Table 15). Not surprisingly, indicators that refer to the situation at the moment of first childbirth, such as attained educational level, age at childbirth, etc., are stronger predictors of the subsequent work-family trajectory. Here too, we find rather similar and homogeneous effects (in terms of coefficient size and magnitude) across country groups (Table 16). In our view, this does however not necessarily indicate that these characteristics and circumstances matter more for the work-family profile choice than institutions and policies related to the welfare state regime. Factors such as the women's educational level and their age and occupational situation at the moment of family formation are in fact not exogenous, but co-determined by national institutions and

groups, see Table 13.

[29] We omit home-centred mothers from this second step because of the small size of this group in these areas

policies. Although individual characteristics and circumstances have similar effects on the combination of family and employment across different country groups, it is plausible to assume that institutions and policies influence the incidence and distribution of these characteristics and circumstances in the population.

4.3 Health outcomes

4.3.1 Work-family profiles and health status

This final part of our empirical section is dedicated to an exploration of the connex between work-family profiles and subsequent health outcomes. Table 3 shows that in a bivariate setting women associated with the full-career profile are on average healthier than the other groups: They have higher "true health" indexes, are less likely to rate their health as poor and have lower scores on the depression scale.[30] Childless women are those which in terms of health status display the greatest resemblance with full-career mothers (at least with respect to the "true health" index and SRH, not the depression index), whereas home-centred mothers and those with marginal employment careers have on average the lowest health status. As the previous descriptives have shown, however, mothers with steady employment careers tend to live in more affluent households, to be younger and to be better educated than the other groups of women. This raises the question whether the positive relationship between mothers' employment intensity and their health status is in fact capturing the well-documented correlations of health with age, income and education.

In a next step, we test whether the observed bivariate associations between lifecourse profiles up to the age of 50 and subsequent health outcomes are robust to the inclusion of covariates. Table 4 presents an output overview

[30] Note that the classification into work-family profiles is based on retrospective information provided by respondents in SHARELIFE, i.e. wave 3. Table 3 includes health indicators measured at different points in time (waves 1 to 3), but in all cases at a time when respondents had already reached age 50 and therefore completed the life period on which the profile typology is based.

from linear regressions for the same set of health indicators displayed in the previous table. As after controlling for age, years of schooling, household income and maritals status (as well as country dummies), we can still find a systematic positive link between the intensity of labour market integration of women with children and their subsequent health status.[31] All coefficients for marginal and intermittent employment indicate a negative deviation of these groups from the health status of full-career mothers. With the exception of indicators measured in wave 1 (for which less observations are available and standard errors are large), all coefficients are highly significant. In contrast, differences between home-centred women and full-career mothers in terms of health disappear once we control for age and socio-economic status.

To improve our understanding of the characteristics associated with good health at mature age, we estimate another battery of regressions, including additional explanatory variables and paying particular attention to indicators that describe the household situation and intensity of work and care committments of respondents prior to age 50. Due to the inclusion of an indicator for the intra-household division of tasks (a dummy variable that is set to 1 for women who were mainly or solely responsible for both household chores and childcare), our sample size is now considerably reduced.[32]

After inclusion of this expanded set of covariates, marginal and intermittent employment continue to be associated with inferior health status when compared to full-career mothers. The strength of this link – which is fairly robust as long as we look at the sample with data pooled for all countries – becomes more nuanced once we look at individual welfare types separately. Tables 17 to 19 indicate that the positive association between the extent of mothers' employment and their health status is strongest in the Nordic and Eastern countries, less robust in Continental Europe and hardly detectable in Southern Europe. This indicates that in the Southern countries, where

[31] Coefficients on age, education and income (not displayed in the table for convenience) have the expected sign and are clearly statistically significant.

[32] The information on which this indicator is based was provided only by a part of respondents in a drop-off questionnaire, see section 3. For this reason, coefficient sizes and post-estimation statistics can not be compared between Table 4 and Table 5.

full-career mothers represent a minority, observable characteristics such as education and income are sufficient to explain the existing difference in health status between groups.

The evidence on the link between intensity of household committments and health is mixed. Some of the indicators suggest that – after controlling for work-family profile – women who faced higher familial committments (measured by the number of children and responsibility for chores and care) display a poorer health status than their peers at later stages in life. The evidence is however not clear-cut. The most robust findings concern the "true health" indicator, where number of children and intensity of household activities show sizeable and statistically significant negative effects. It has to be noted, however, that the negative relationship between the number of children and health might be the result of long-term consequences of childbearing on health.

The existence and duration of stress periods in respondents' lives is associated with inferior health status, although the fact that stress periods coincided with the presence of young children in the household does not seem to represent an aggravating factor for health outcomes.[33] Widowhood and divorce are consistently associated with inferior health outcomes.

4.3.2 Accounting for selection

To sum up the evidence gathered so far, women who have combined family and continuous employment (full-career mothers) display a better health status in mature age than women with marginal or intermittent careers. It is however not clear whether this positive association is the consequence of a selection on (observed and unobserved characteristics) of healthier women into full-career motherhood, or whether combining family and long, steady careers in paid employment is by itself conducive to healthy ageing. The

[33]Quite to the opposite, results suggest that, once we control for the duration of stress periods, the overlap of stress periods with childcare responsibilities tends to be linked with a positive effect on health. This could be explained by the fact that stress periods that go back to the time when respondents' children were young belong to the more remote past and are of less relevance for health than more recent stress periods.

Table 3: Characteristics of women, by work-family profile - Outcome indicators

Profile	Health index wave2	Health index wave1	Poor SRH wave 3	Poor SRH wave 2	Poor SRH wave 1	Depress scale wave 2	Depress scale wave 1
Childless women							
mean	87.7	86.3	0.32	0.27	0.23	2.5	2.6
cv	0.115	0.125	1.450	1.645	1.845	0.916	0.887
Home-centred moth							
mean	86.6	85.7	0.39	0.34	0.31	2.5	2.8
cv	0.116	0.125	1.261	1.397	1.490	0.978	0.893
Marginal employm							
mean	86.7	85.2	0.39	0.34	0.29	2.7	2.7
cv	0.125	0.137	1.255	1.407	1.581	0.852	0.833
Intermittent emp							
mean	86.8	85.8	0.38	0.32	0.22	2.5	2.5
cv	0.122	0.130	1.289	1.470	1.859	0.883	0.864
Career-oriented							
mean	88.5	87.5	0.31	0.25	0.18	2.3	2.4
cv	0.109	0.119	1.486	1.726	2.113	0.909	0.888
Total							
mean	87.5	86.2	0.35	0.29	0.24	2.5	2.6
cv	0.117	0.128	1.361	1.550	1.795	0.899	0.871

Note: Sample of women in working age at SHARE waves 1 or 2. Unweighted. Health index is scaled 0-100 (where 100=perfect health), SRH is measured as binary variable (0=good, very good or excellent health, 1=1=poor or fair health), and the depression scale is scaled 0-12 (where high=depressed).

Table 4: Health outcomes, specification (1)

Reference category: Full-career mothers

	Health index	Poor SRH wave3	Poor SRH wave2	Poor SRH wave1	Depr. score wave2	Depr. score wave1
Home-centred	-1.755	0.119	-0.411	-0.806	-0.846*	-0.648
	-2.268	-0.508	-0.596	-0.778	-0.486	-0.546
Marginal	-1.763***	0.290***	0.337***	0.261**	0.288***	0.145
	-0.34	-0.077	-0.081	-0.108	-0.073	-0.092
Intermittent	-1.710***	0.258***	0.317***	0.165	0.206***	0.115
	-0.33	-0.074	-0.078	-0.115	-0.071	-0.093
Constant	94.650***	0.889	-0.823	-0.84	3.707***	2.967***
	-2.602	-0.585	-0.608	-0.813	-0.56	-0.702
R-sqr	0.083				0.094	0.069
BIC	42978	7115	6576	3487	24936	14559
N	5787	5777	5783	3372	5740	3354

Note: * p<0.10, ** p<0.05, *** p<0.01. Sample of women in working age at SHARE waves 1 or 2. Results for Health index and Depression score are based on OLS, those for Poor Self-rated Health on Logit regressions. Other covariates: age, years of schooling, household income and country dummies. Robust standard errors.

Table 5: Health outcomes, specification (2)

Reference category: Full-career mothers

	Health index	Poor SRH wave3	Poor SRH wave2	Poor SRH wave1	Depr. score wave2	Depr. score wave1
Home-centred	-1.639	0.338	-0.951	-0.282	-0.764	-0.238
	-3.406	-0.831	-1.121	-1.154	-0.722	-0.927
Marginal	-1.248***	0.223**	0.289***	0.267*	0.160*	0.026
	-0.44	-0.104	-0.107	-0.138	-0.093	-0.114
Intermittent	-1.390***	0.215**	0.226**	0.12	0.053	0.051
	-0.426	-0.1	-0.105	-0.149	-0.09	-0.116
Poor childhood health	-4.633***	1.092***	0.725***	0.821***	0.563***	0.668***
	-0.673	-0.131	-0.128	-0.165	-0.132	-0.157
Single	1.292**	-0.06	-0.360**	0.123	0.12	0.218
	-0.623	-0.142	-0.142	-0.197	-0.128	-0.164
Divorced/widowed	-2.105***	0.252**	0.287**	-0.057	0.331***	0.245*
	-0.507	-0.126	-0.122	-0.17	-0.107	-0.132
Nr children	-0.423***	0.036	0.01	-0.075	0.01	0.031
	-0.162	-0.038	-0.038	-0.052	-0.034	-0.043
Stress periods	-0.142***	0.029***	0.019**	0.030***	0.039***	0.035***
	-0.033	-0.008	-0.008	-0.01	-0.007	-0.009
Part-time share	0.01	-0.001	0	-0.001	0	0.003**
	-0.006	-0.001	-0.001	-0.002	-0.001	-0.001
Care & chores	-0.712**	-0.039	0.017	0.104	0.325***	0.212**
	-0.344	-0.081	-0.084	-0.115	-0.073	-0.092
R-sqr	0.133				0.138	0.194
N	3410	3449	3446	2209	3428	3437

Note: * p<0.10, ** p<0.05, *** p<0.01. Sample of women in working age at SHARE waves 1 or 2. Results for Health index and Depression score are based on OLS, those for Poor Self-rated Health on Logit regressions. Other covariates: age, years of schooling, household income, stress periods with young children, and country dummies. Robust standard errors.

results presented in Table 6 are based on the estimation of a multinomial treatment model with the aim to identify the effect of different lifecourse profiles on health, after accounting for the unequal selection into lifecourse trajectories.

The first part of the table shows the output for the selection equations, with a focus on the identifying variables that were not included in the outcome equation. As previously shown (see section 4.2), age and partnership status at first birth are good predictors of subsequent lifecourse trajectories. Their coefficients in the selection equations display the expected signs and magnitudes. Information on partner loss (due to death or separation) when the first child was young, which represents a more exogenous determinant of lifecourse profile selection, is likewise very relevant for identification of the selection process: As we would expect, partner loss leads to a strong drop in the likelihood of mothers to stay at home, and a similar but smaller effect on the probability to pursue only marginal employment. There is no such effect in the selection between intermittent employment and full-career trajectories.

The indicator on disability, which identifies instances in which women suffered from an illness or injury that led to a disability or limited their occupational opportunities in other ways, is of partial relevance for the selection process: we find that health problems or disabilities increased substantially the probability to attain only marginal instead of continuous employment, but the coefficients for the selection into home-centred and intermittent employment trajectories are not statistically significant. This indicates that women with intermittent employment careers chose this path primarily for familial reasons, whereas marginal employment careers could also be the consequence of severe health problems that occurred in adulthood. The coefficients on the generosity of maternity benefits and on the availability of the contraceptive pill (at first childbirth) are of less straightforward interpretation. Maternity benefits do not add to the explanatory power of the selection equations, whereas the availability of the contraceptive pill is associated with a positive effect on the selection into marginal employment and a negative effect on intermittent employment (with respect to the base category, i.e. the full-career profile).

The outcome equation shows a positive link between the full-career profile and subsequent health, after accounting for selection. The effect is particularly strong in a comparison between full-career mothers and those who had intermittent employment careers. Home-centred mothers do not differ significantly in health from full-career mothers. The effect for mothers with marginal employment careers is less pronounced than for those with intermittent employment. As indicated by the latent factors (λ_1 to λ_3) displayed in the bottom section of the table, there exists some correlated unobserved heterogeneity between the two components of the model (selection and outcome equation).[34] The selection on unobservables, which concerns primarily the marginal and intermittent employment profiles, is however of very limited magnitude. For robustness, we estimate the same model without the 'macro' indicators on maternity benefits and contraceptive. This has the additional advantage to increase sample size (because information on these indicators is missing for Eastern European countries). Results for the outcome equation (displayed in Table 20) confirm the positive effect of full-career trajectories on health.

[34]The λ's express factor loadings associated with the unobserved characteristics that influence both work-family profile choice and health outcome.

Table 6: Multinomial treatment model: Joint estimation of work-family profiles and "true health" index.

	Selection equation (Profile)		
	Home-centred	Marginal	Intermittent
Poor childhood health	0.502	0.528***	0.160
Yrs schooling	-0.158***	-0.092***	-0.084***
Out of wedlock	-0.792*	-0.627***	-0.404**
Age at first child	-0.109***	-0.089***	-0.078***
Lost partner young	-1.688**	-0.657***	-0.011
Disability	-0.062	-0.537**	0.197
Benefit	0.111	-0.044	-0.008
Contraceptive	-0.070	0.406*	-0.456**
Country dummies	yes	yes	yes
		Outcome equation (Health index)	
Treatment: Home-centred		-0.009	
Treatment: Marginal		-0.010*	
Treatment: Intermittent		-0.015***	
Poor childhood health		-0.054***	
Yrs schooling		0.005***	
Single		-0.014***	
Nr children		-0.006***	
Stress periods		-0.020***	
Disability		-0.085***	
Country dummies		Yes	
λ_1: Home-centred		0.001	
λ_1: Marginal		-0.002*	
λ_1: Intermittent		0.004**	
N		5147	
LogLi		-24613.4	
BIC		50107.0	

Note: * p<0.10, ** p<0.05, *** p<0.01. Reduced sample size because no information on benefit level and contraceptive pill is available for the Eastern European countries. Further covariates in selection and outcome equations: age, good at school, housing index, number of books, indicator for injury or illness with occupational repercussions. In outcome equation only: household income.

5 Summary and discussion

In this paper, we identify different work-family profiles of European women in their life trajectories up to the age of 50 and examine their possible link with subsequent health outcomes. Based on two indicators - the number of years in paid employment and the number of years with both engagement in paid work and care for a child aged below 10 -, we distinguish between childless women, mothers with hardly any paid work experience (home-centred mothers), mothers with limited work experience (marginal employment), mothers who crafted their work careers around their family obligations (intermittent careers), and mothers who pursued simultaneously family and career (full-career mothers). Home-centred mothers as well as those with marginal work experience have, on average, more children, are less educated and live in poorer households than those with more employment. Mothers with intermittent employment profiles exhibit similarly high levels of education and household income as full-career mothers, but are characterised by a higher number of job changes and unemployment spells, as well as by a higher incidence of part-time employment.

Clearly, the choice of work-family profile is not random. We find that women with favourable initial conditions, such as high socio-economic status of parental home, good childhood health conditions and high cognitive skills, are more likely to reconcile care for their children with continuous employment over the life-course. We estimate multinomial treatment models to account for this selection when analyzing the influence of the work-family profile on subsequent health. Once we control for observable and unobservable characteristics, the statistical difference in health status between full-career mothers and home-centred mothers we observe in a bivariate setting disappears. However, we find that women who combined motherhood with continuous employment are healthier at mature age than those who were only marginally or intermittently employed. The difference is most pronounced when we compare full-career mothers with those who followed an intermittent career-path. This finding is robust to the inclusion of a large number of covariates and suggests that among all mothers who opt for participation in the labour market a steady employment pattern favours health.

Our analysis covers 13 European countries. We find strong variation in the distribution of work-family profiles across welfare state regimes. There is a general tendency for younger cohorts of European women to combine care for a dependent child with an increasing amount of labour market participation, but the speed and form of change in work-family profiles is far from being homogeneous across country groups. Whereas members of the Southern Europen welfare regime (Italy, Spain, Greece) are characterised by a very strong presence of women who have never been in paid employment, the majority of women with and without children is continuously employed in the Nordic (Sweden, Denmark) and Eastern European regime (Poland, Czech Republic, East Germany). Even in the presence of more than three children, it is very uncommon in Northern Europe to withdraw from the labour market. The defining trait of Continental European welfare states (West Germany, the Netherlands, Belgium, France, Switzerland, and Austria) lies in a comparatively high concentration of women with moderate levels of employment. Among mothers, there is a considerable degree of polarization between a low and a high level of engagement in employment.

The positive link between the extent of mothers' employment up to age 50 and subsequent health seems to be strongest in the Nordic and Eastern European countries. It is weaker in Continental Europe and insignificant for Southern Europe. This result indicates that in Southern Europe, where full-career mothers represent a minority, observable characteristics such as education and income are sufficient to explain the existing differences in health between groups. In the rest of welfare regimes where employment of mothers is much more common, health effects possibly depend on the opportunities to reconcile family with paid work. We find the clearest evidence of a positive nexus between mothers' employment and health for exactly the Northern European countries, in which work-family combination is facilitated most by the institutional context.

Welfare policies and particularly work-family-reconciliation policies have transformed substantially over the past two decades. More specifically, they have been in a process of being redirected so as to adjust to the needs of mothers and fathers who struggle with the complex task of combining family and career (Bonoli and Natali, 2012; Mätzke and Ostner, 2010). We have witnessed the development of a "growing, even if still somewhat haphazard, infrastructure of supports for women with family responsibilities" (Hegewisch and Gornick, 2011). Such work-family supports include care-related leaves, policies that increase the quality or prevalence of flexible work arrangements and the creation of out-of-home childcare. In particular, we see an increase in policies and incentives to strengthen take-up of leave periods by men and to address the imbalanced gender division of care activities and household tasks. These reforms have not affected (or affected only marginally) the work-family trajectories of the women surveyed in our study. Our findings can however represent useful benchmarks to investigate the career choices and the well-being of younger generations.

Morevoer, in the aftermath of the global financial crisis of 2008, European welfare states experience a "stress test". Policy-makers face considerable increases in fiscal deficits and public debt that prompt them to consider cuts in welfare services (Hemerijck, 2012). Previous research has emphasised the growth potential of child-centered social investment policies as well as their importance for social mobility and social inclusion (Esping-Andersen, 2002). Our findings may be taken as another argument in favour of continuous efforts to expand policies in support of work-family reconciliation even in times of tight budgets. They suggest that circumstances and choices at the time of first birth largely predetermine consequent work trajectories. Hence, this stage of life is crucial for public policy intervention.

We recognise as a limitation of our work the difficulty to fully account for the endogeneity of the work-family profile and thus to properly identify health effects. Additionally, we caution that our findings for women aged at least 50 in the first years of the new millennium cannot necessarily be generalised to younger cohorts. Clearly, more research is needed in this field, also to determine the role played by specific circumstances such as the intra-household division of tasks and other determinants of family-work reconciliation or conflict. One possible extension of our work could be an assessment of the role of working conditions as health determinants for the subsample of women who worked most of the time during prime age. SHARE contains information that could be exploited for such research. Furthermore, it would be interesting to shift the focus of analysis from individual women to couples and to examine possible spill-over effects between partners.

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A Methodological notes

A.1 Specification of the multinomial treatment model

Each individual i chooses one treatment from a set of different choices j, implying a multinomial choice model. Let l_{ij} be the latent factor that incorporates unobserved characteristics common to individual i's treatment choice and outcome and d_j be binary variables representing the observed treatment choice. Then the probability of treatment can be represented as:

$$\mathtt{Pr}(d_i, |\mathbf{z}_i, \mathbf{l}_i) = g(z'\alpha_1 + \delta_1 l_{i1}, z'\alpha_2 + \delta_2 l_{i2}, ..., z'\alpha_J + \delta_J l_{iJ}) \tag{1}$$

where g is an appropriate multinomial probability distribution and where z_i denotes exogenous covariates that are predictors of women's work-family profiles. The model first adjusts for the nonrandom selection of women into profiles:

$$\mathtt{Pr}(d_i, |\mathbf{z}_i, \mathbf{l}_i) = \frac{exp(z'\alpha_j + \delta_j l_{ij})}{1 + \Sigma_{k=1}^{J} exp(z'\alpha_k + \delta_j l_{ik})} \tag{2}$$

This equation produces variables λ, which are added to the second-stage regression to adjust for mothers likelihood to enter into different profiles based on observed characteristics. A second stage equation evaluates the relatioships between profiles and health. The expected outcome equation for individual i is:

$$\mathtt{E}(y_i|\mathbf{d}_i, \mathbf{x}_i, \mathbf{l}_i) = \mathrm{x}_i'\beta_1 + \sum_{j=1}^{J} \gamma_j d_{ij} + \sum_{j=1}^{J} \lambda_j l_{ij} \tag{3}$$

The health outcome is affected by unobserved characteristics that also affect selection into treatment. When λ_j, the factor-loading parameter, is positive (negative), treatment and outcome are positively (negatively) correlated through unobserved characteristics; i.e., there is positive (negative) selection(Deb and Trivedi, 2006b).

A.2 Computation of the Health index

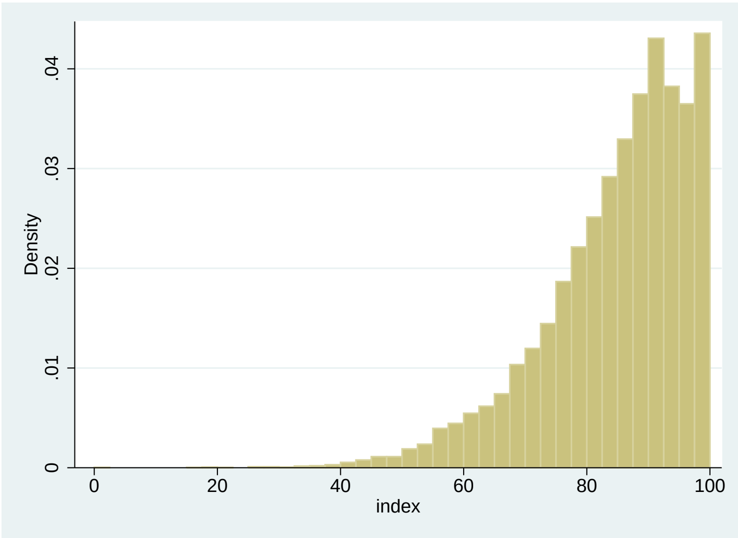
Juerges (2007) has investigated the reliability of SRH as a "true health" variable in the SHARE dataset, and computed a health measure that is adjusted for cross-cultural biases. The methodology of this computation is based on a decomposition of differences in self-assessed health into parts that are explained by differences in "objective" health indicators and parts not explained by such differences. We are interested in the explained part, which provides synthetic information on individual health status while avoiding the possible biases due to reporting differences between countries, cultural areas and socio-economic population groups.

Following Juerges (2007), we construct a 0 to 100 health index that describes as accurately as possible the whole spectrum of health states, from "near death" to "perfect health". Health states between near death and perfect health are given an index value between 0 and 100. The presence of a condition reduces the health index by some given amount or percentage, the so-called disability weight. The disability weight of each condition or symptom is assumed to be the same for each respondent.

Disability weights are computed from within the sample by estimating generalised ordered probit regressions of self-reported health (SRH) on a set of health variables. In SHARE waves 1 and 2 respondents were asked about the presence of chronic conditions diagnosed by doctors (heart disease, cholesterol, stroke, diabetes, lung disease, asthma, arthritis, osteoporosis, cancer, cataracts and fractures) as well as symptoms such as pain, breathlessness and sleeping problems. These informations, together with information on (medically treated) depressions and measures for grip strength, walking speed and the BMI (derived from self-reported height and weight) are used as explanatory variables. In the generalised ordered probit model, thresholds are modelled with country dummies to account for country-specific reporting styles. While thresholds are allowed to vary across countries, disability weights are constrained to be the same in each country.

The health index is computed as the linear prediction from the ordered probit regression (the latent variable), normalised to 0 for the worst observed health state and 100 for the best observed health state.

Figure 6: Distribution of Health index



Note: Weighted. Sample restricted to women who were aged 50 to 65 when first surveyed by SHARE.

B Figures and Tables

Table 7: Sample descriptives (means)

	Age (wave3)	Years school	Single (wave3)	Years work	Number jobs	Share parttime	Number children	Age at 1st birth	Frequency N	%
Sweden	61.6	11.8	34.3	27.3	4.0	22.7	2.0	25.0	591	7.3
Denmark	59.7	13.4	27.6	26.8	4.6	20.1	2.0	24.3	666	8.2
Czechia	59.7	12.2	37.1	31.0	3.2	2.7	2.0	24.4	627	7.8
Poland	58.7	10.2	36.7	23.9	2.2	2.7	2.5	22.9	598	7.4
East Germany	60.2	13.8	36.2	29.7	3.7	12.1	2.0	22.5	147	1.8
France	61.0	10.2	29.8	22.2	2.6	14.1	2.2	24.6	739	9.1
Austria	62.7	10.4	41.2	22.4	2.4	14.7	2.1	23.4	239	3.0
West Germany	60.1	13.3	29.6	22.7	2.7	28.2	1.9	25.1	454	5.6
Netherlands	61.1	11.5	30.9	19.4	3.2	36.8	2.1	25.1	742	9.2
Switzerland	59.9	11.6	32.4	21.3	3.9	35.2	1.9	25.8	396	4.9
Belgium	60.3	10.6	28.2	22.2	2.2	15.4	2.1	24.4	804	9.9
Spain	61.3	7.7	26.3	14.4	1.4	8.0	2.5	24.8	469	5.8
Italy	61.2	7.9	25.1	17.0	1.5	10.7	2.0	24.7	764	9.4
Greece	60.0	9.7	34.4	13.8	0.9	5.7	1.7	25.6	853	10.6
Nordic	60.6	12.6	30.8	27.1	4.3	21.3	2.0	24.6	1,257	15.5
Eastern European	59.3	11.4	36.7	26.6	2.8	5.2	2.3	23.1	1,372	17.0
Continental	60.7	11.3	30.3	22.1	2.7	20.9	2.1	24.8	3,374	41.7
Southern	61.0	8.1	27.2	15.6	1.4	9.0	2.1	24.9	2,086	25.8
Total	60.5	10.5	30.7	21.5	2.5	15.3	2.1	24.5	8,089	100

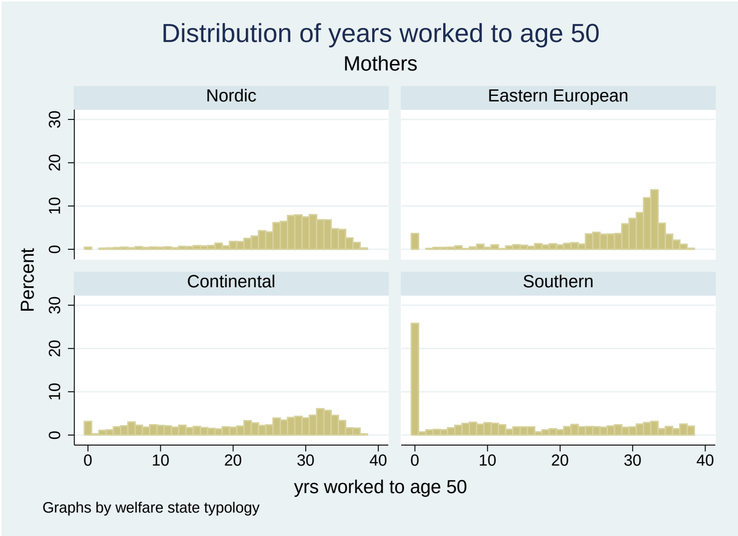
Note: Weighted (with exception of the last two columns, that show sample composition). Sample restricted to women who were age 50 to 65 when first surveyed by SHARE. Values for share of singles and part-time share expressed in percent, the others in respective units.

Table 8: Sample descriptives (means) - part II

	Health index	Health index(W1)	Health index(W2)	Poor SRH(W3)	Poor SRH(W2)	Poor SRH(W1)	Depress score(W2)	Depress score(W1)	Frequency N	Frequency %
Sweden	88.2	88.6	86.2	32.7	24.4	10.6	2.0	2.2	591	7.3
Denmark	88.0	88.0	86.4	28.0	20.7	19.2	2.0	2.0	666	8.2
Czechia	85.4	85.4	.	37.2	31.9	.	2.1	.	627	7.8
Poland	83.1	83.1	.	59.9	53.4	.	4.0	.	598	7.4
East Germany	88.2	88.3	86.1	47.6	26.2	29.9	2.2	2.1	147	1.8
France	86.4	86.3	85.7	31.2	25.9	23.6	3.3	3.2	739	9.1
Austria	87.1	87.3	85.7	40.1	26.4	23.2	2.0	2.2	239	3.0
West Germany	88.5	88.6	86.5	36.2	30.9	31.7	2.3	2.4	454	5.6
Netherlands	88.4	88.5	87.8	32.4	28.8	23.5	2.2	2.3	742	9.2
Switzerland	91.4	91.3	90.6	18.0	13.3	13.4	2.1	2.2	396	4.9
Belgium	87.7	87.8	85.7	29.5	24.0	21.2	2.7	2.7	804	9.9
Spain	84.4	84.5	81.9	53.8	44.8	39.5	3.3	3.5	469	5.8
Italy	86.4	86.5	84.2	43.5	41.8	38.3	2.9	3.1	764	9.4
Greece	89.3	89.3	87.9	22.1	16.9	20.7	1.9	2.4	853	10.6
Nordic	88.1	88.3	86.3	30.2	22.3	13.9	2.0	2.2	1,257	15.5
Eastern European	84.8	84.8	86.1	52.7	42.7	29.9	3.2	2.1	1,372	17.0
Continental	87.4	87.4	86.2	32.5	27.0	25.4	2.8	2.7	3,374	41.7
Southern	86.3	86.5	84.1	42.6	38.1	35.6	2.8	3.1	2,086	25.8
Total	86.7	86.7	85.5	38.8	32.8	28.2	2.8	2.8	8,089	100.0

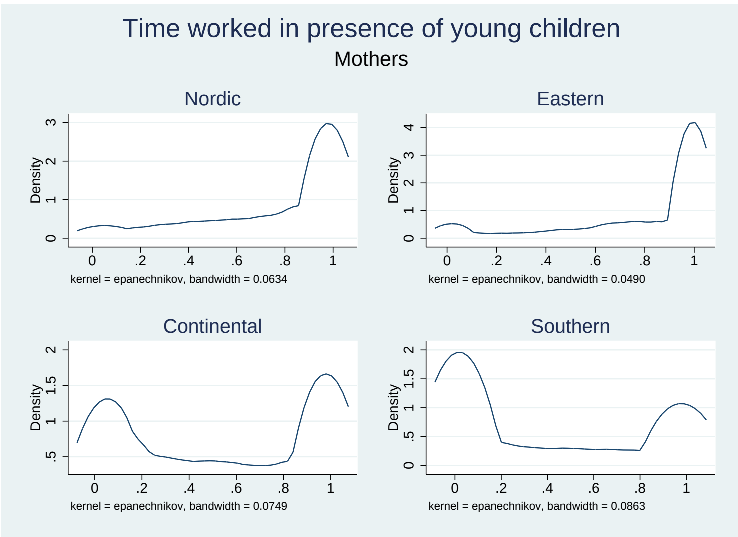
Note: Weighted (with exception of the last two columns, that show sample composition). Sample restricted to women who were age 50 to 65 when first surveyed by SHARE. Health index expressed on a scale from 0 to 100, depression score on a scale from 0 to 12 and poor SRH as percentage of respondents who rated their health only “fair” or “poor”.

Figure 7: Distribution of years worked, by welfare area.



Note: Weighted. Sample restricted to women who were age 50 to 65 when first surveyed by SHARE.

Figure 8: Time worked in presence of young children, by welfare area.



Note: Weighted. Sample restricted to women who were age 50 to 65 when first surveyed by SHARE.

Table 9: Female labour force participation rates (Population 15-64)

	ø 60/67	ø 68/73	ø 74/79	ø 80/86
Austria	52.1	50.5	53.9	53.5
Belgium	37.8	40.8	45.3	49.7
Denmark	48.1	58.9	65.1	73.5
France	46.5	48.6	52.4	54.7
West Germany	48.9	48.4	49.5	50.1
Greece	38.6	32.1	33.0	38.7
Italy	36.4	33.5	36.5	40.5
Netherlands	26.6	28.3	31.7	39.3
Spain	27.1	29.2	32.5	32.7
Sweden	53.5	59.9	69.2	76.4
Switzerland	52.1	52.6	52.3	53.7

Note: Historical Statistics 1960-1986, OECD 1988. Value for Denmark 74/79 originally missing in the OECD publication, amended on the basis of OECD data from more recent publications. No data available for Eastern European countries.

Table 10: Employment decision after birth of first child, by work-family profile

Full sample	Interruption after birth of first child?				
	Stopped temporarily	Not worked again	No interruption	No work before child	Total
Home-centred mothers	3.5	3.0	5.7	87.7	100
Marginal employment	22.5	18.4	9.7	49.4	100
Intermittent employment	53.2	5.0	12.7	29.0	100
Full-career mothers	59.7	0.5	35.2	4.6	100
Total	39.6	7.2	18.9	34.4	100

Age 50-65	Interruption after birth of first child?				
	Stopped temporarily	Not worked again	No interruption	No work before child	Total
Home-centred mothers	4.0	2.7	4.7	88.6	100
Marginal employment	25.2	20.5	11.0	43.3	100
Intermittent employment	57.2	4.9	12.2	25.7	100
Full-career mothers	62.9	0.6	32.5	4.0	100
Total	45.7	7.1	19.4	27.8	100

Note: Weighted. Full sample. Respondents were asked the following question: Did you temporarily or permanently stop working when the child was born?

Table 11: Duration of leave after first child birth

Full sample	Length of work interruption after birth of first child				
	1-3 mth	3 mth-1 yr	1-3 yrs	>3 yrs	Total
Marginal employment	15.7	22.1	9.4	52.8	100
Intermittent employment	13.9	20.0	19.1	47.0	100
Full-career mothers	32.8	43.5	16.0	7.6	100
Total	24.7	33.3	15.6	26.4	100

Age 50-65	Length of work interruption after birth of first child				
	1-3 mth	3 mth-1 yr	1-3 yrs	>3 yrs	Total
Marginal employment	14.1	24.6	8.7	52.6	100
Intermittent employment	12.8	20.2	19.7	47.3	100
Full-career mothers	30.6	44.5	17.1	7.9	100
Total	23.1	34.6	16.5	25.7	100

Note: Sample consists of those women who said that they stopped to work temporarily after the birth of their first child. home-centred mothers are not displayed because of their small number in this subsample.

Table 12: Characteristics of women, by work-family profile - Socio-economic indicators

Profile	age (wave3)	years schooling	HH income (log)	marital status (1=single)	years worked to age 50	number of jobs	number unempl spells	share parttime work
childless women								
mean	60.3	11.3	9.91	0.50	23.38	2.5	0.15	9.9
cv	0.082	0.368	0.118	0.993	0.498	0.915	2.538	2.314
home-centred moth								
mean	61.4	7.8	9.46	0.21	0.03	0.1	0.03	27.3
cv	0.078	0.489	0.127	1.922	5.848	4.226	6.004	1.671
marginal employm								
mean	61.2	9.8	9.91	0.20	10.76	2.1	0.08	17.5
cv	0.078	0.410	0.097	1.996	0.456	0.682	3.245	1.775
intermittent emp								
mean	60.6	10.8	10.05	0.27	26.20	3.9	0.22	28.4
cv	0.081	0.356	0.088	1.647	0.150	0.597	2.085	1.191
career-oriented								
mean	59.9	11.8	10.08	0.30	31.42	2.8	0.15	12.2
cv	0.079	0.311	0.090	1.522	0.110	0.746	2.645	2.105
Total								
mean	60.5	10.7	9.97	0.29	21.83	2.6	0.14	17.0
cv	0.080	0.376	0.099	1.583	0.535	0.839	2.700	1.748

Note: Sample of women in working age at SHARE waves 1 or 2. Weighted.

Table 13: Characteristics of women, by work-family profile - Child-related indicators

Profile	number of children	age at 1st birth	chores & care (1=alone)	lost partner (1=yes)	lone mother (1=yes)	stress period (1=yes)	stress with child (1=yes)
childless women							
mean	.	.	.	.	.	0.60	.
cv	.	.	.	.	.	0.891	.
home-centred moth							
mean	2.6	24.2	0.57	0.02	0.02	0.48	0.13
cv	0.539	0.186	0.871	7.937	6.557	1.167	2.645
marginal employm							
mean	2.6	24.3	0.53	0.05	0.04	0.63	0.24
cv	0.485	0.173	0.940	4.264	4.983	0.865	1.774
intermittent emp							
mean	2.3	23.8	0.46	0.09	0.06	0.69	0.25
cv	0.467	0.192	1.092	3.091	4.137	0.754	1.803
career-oriented							
mean	2.1	25.2	0.36	0.08	0.06	0.65	0.27
cv	0.433	0.181	1.330	3.282	3.877	0.806	1.799
Total							
mean	2.1	24.6	0.45	0.06	0.05	0.63	0.22
cv	0.622	0.183	1.115	3.835	4.333	0.845	1.991

Note: Sample of women in working age at SHARE waves 1 or 2. Weighted.

Table 14: Characteristics of women, by work-family profile - Initial conditions

Profile	persons per room	housing index (0-5)	both parents (1=no)	poor health in childhood	number childhood illnesses	number books (1-5)	good at school (1=yes)
childless women							
mean	1.77	2.57	0.07	0.13	1.06	2.38	0.53
cv	0.753	0.669	3.693	2.558	0.678	0.547	0.938
home-centred moth							
mean	2.2	1.4	0.07	0.07	0.92	1.52	0.3
cv	0.650	1.053	3.616	3.567	0.676	0.569	1.603
marginal employm							
mean	1.9	2.1	0.10	0.11	1.02	2.00	0.4
cv	0.695	0.812	3.023	2.794	0.588	0.574	1.186
intermittent emp							
mean	1.9	2.4	0.11	0.10	1.07	2.15	0.5
cv	0.721	0.729	2.794	3.058	0.540	0.537	0.972
career-oriented							
mean	1.8	2.5	0.10	0.07	1.05	2.34	0.6
cv	0.674	0.720	2.922	3.709	0.549	0.499	0.882
Total							
mean	1.9	2.3	0.10	0.09	1.04	2.15	0.5
cv	0.696	0.768	3.031	3.145	0.583	0.549	1.021

Note: Sample of women in working age at SHARE waves 1 or 2. Weighted.

Table 15: Determinants of work-family profile, by welfare state group. Specification (1)

Multinomial logit, Ref. cat.: Full-career mothers

	Nordic	Eastern	Continental	Southern
Home-centred				
Birthyear	-0.077**	-0.058***	-0.086***	-0.016**
Housing index	-0.564**	-0.15	-0.106*	0.009
Both parents	-0.277	0.07	-0.438*	-0.272
Good at school	-0.758	-0.590*	-0.558***	-0.766***
Poor childhood health	-0.226	-0.116	0.225	-0.073
Nr books	0.045	-0.376*	-0.04	-0.174*
Constant	146.1**	109.2***	166.1***	31.4***
Marginal employment				
Birthyear	-0.089***	-0.009	-0.043***	0.009
Housing index	-0.041	-0.214**	-0.056*	-0.04
Both parents	-0.117	0.632**	-0.173	0.01
Good at school	-0.442**	-0.616***	-0.313***	-0.305**
Poor childhood health	0.561*	0.604*	0.395**	0.043
Nr books	-0.063	0.06	-0.033	-0.082
Constant	172.2***	14.1	166.1***	-16.7
Intermittent employment				
Birthyear	-0.028***	-0.004	-0.005	0.023**
Housing index	-0.047	-0.104*	-0.081**	-0.029
Both parents	-0.07	0.063	0.087	-0.105
Good at school	-0.171	-0.309**	-0.143	0.021
Poor childhood health	0.616**	0.334	0.368**	-0.112
Nr books	-0.076	0.087	0.002	-0.183*
Constant	54.3***	7.5	9.7	-45.6
N	1883	2071	4951	3392
Ps R-sqr	0.0673	0.0941	0.0614	0.0384
LogLi	-1890.3	-1907	-5820	-4275.9
BIC	3961.6	4020.1	11946.2	8771.4

Note: * p<0.10, ** p<0.05, *** p<0.01. Full sample.

Table 16: Determinants of work-family profile, by welfare state group. Specification (2)

Multinomial logit, Ref. cat.: Full-career mothers

	Nordic	Eastern	Continental	Southern
Home-centred				
Birthyear	.	.	-0.084**	0.037
Housing index	.	.	-0.151	0.134
Both parents	.	.	-0.053	-0.13
Good at school	.	.	-0.168	-0.353
Poor childhood health	.	.	1.083**	-0.067
Childhood illnesses	.	.	0.111	0.125
Nr books	.	.	0.069	-0.242
Yrs school	.	.	-0.137***	-0.154***
Out of wedlock	.	.	-2.035**	0.182
Age at first child	.	.	0.063	0.052*
Work before first birth	.	.	-7.479***	-7.717***
Constant	.	.	164.6**	-68.0
Marginal employment				
Birthyear	-0.067**	0.047	-0.059***	0.008
Housing index	-0.017	-0.167	0.001	0.05
Both parents	0.008	0.838**	-0.22	-0.186
Good at school	-0.369	-0.645**	-0.276**	-0.267
Poor childhood health	1.375***	0.634	0.379*	0.08
Childhood illnesses	-0.09	-0.183	-0.064	0.137
Nr books	-0.058	0.025	0.028	0.016
Yrs school	-0.149***	-0.019	-0.096***	-0.112***
Out of wedlock	-0.917**	-0.174	-0.428*	-0.969*
Age at first child	-0.068*	-0.01	-0.049***	-0.008
Work before first birth	-1.860***	-1.872***	-1.233***	-1.785***
Constant	134.6**	-91.4	119.2***	-12.8
Intermittent employment				
Birthyear	-0.057***	0.027	-0.015	0.025
Housing index	-0.051	-0.139*	-0.032	0.056
Both parents	-0.101	0.051	0.072	-0.357
Good at school	0.024	-0.293	-0.078	0.114
Poor childhood health	0.552	0.34	0.152	-0.054
Childhood illnesses	-0.114	-0.036	0.072	0.072
Nr books	0.029	0.153	0.074	-0.173
Yrs school	-0.086**	-0.077*	-0.091***	-0.041
Out of wedlock	-0.175	-0.169	-0.355	-1.034
Age at first child	-0.129***	0.032	-0.054***	-0.059**
Work before first birth	-0.703**	-2.052***	-1.075***	-1.856***
Constant	115.6***	-51.3	31.5	-46.4
N	1107	1234	2838	1780
Ps R-sqr	0.107	0.139	0.144	0.282
LogLi	-925.3	-884.8	-2927.4	-1701.7
BIC	2032.9	1969	6260.3	3717.7

Note: * $p<0.10$, ** $p<0.05$, *** $p<0.01$. Sample of women in working age at SHARE waves 1 or 2. Category for home-centred mothers omitted for Northern and Eastern European countries due to small number of observations.

Table 17: Health outcomes, results by welfare area

Reference category: Full-career mothers
Dependent variable: Health index

	Nordic	Eastern	Continental	Southern
Home-centred	-0.178	-1.492	-1.63	-0.027
	-6.426	-1.842	-1.024	-0.68
Marginal employment	-2.925***	-2.350**	-1.052**	-0.739
	-0.984	-1.092	-0.472	-0.636
Intermittent employment	-1.768***	-2.350***	-1.063**	-0.512
	-0.644	-0.774	-0.5	-0.813
R-sqr	0.12	0.122	0.106	0.147
BIC	7450	9645	19058	11464
N	1018	1260	2591	1562

Note: * p<0.10, ** p<0.05, *** p<0.01. Sample of women in working age at SHARE waves 1 or 2. Other covariates: age, years of schooling, household income, poor childhood health, marital status, lost partner, stress period, stress period with children, number of children and country dummies.

Table 18: Health outcomes, results by welfare area

Reference category: Full-career mothers
Dependent variable: Poor SRH in wave 3

	Nordic	Eastern	Continental	Southern
Home-centred	.	0.12	0.411*	0.03
	(.)	-0.372	-0.236	-0.165
Marginal employment	0.908***	0.402*	0.247**	-0.08
	-0.238	-0.22	-0.115	-0.155
Intermittent employment	0.443***	0.179	0.125	0.256
	-0.164	-0.152	-0.123	-0.193
BIC	1210	1706	3147	1971
N	1031	1270	2625	1590

Note: * p<0.10, ** p<0.05, *** p<0.01. Sample of women in working age at SHARE waves 1 or 2. Other covariates: age, years of schooling, household income, poor childhood health, marital status, lost partner, stress period, stress period with children, number of children and country dummies.

Table 19: Health outcomes, results by welfare area

Reference category: Full-career mothers
Dependent variable: EURO-D depression score

	Nordic	Eastern	Continental	Southern
Home-centred	-2.253*	1.104***	0.124	-0.013
	-1.269	-0.369	-0.225	-0.166
Marginal employment	0.588***	0.538**	0.083	0.266*
	-0.195	-0.219	-0.103	-0.155
Intermittent employment	0.206	0.175	0.043	0.278
	-0.126	-0.155	-0.109	-0.200
BIC	1210	1706	3147	1971
N	1031	1270	2625	1590

Note: * p<0.10, ** p<0.05, *** p<0.01. Sample of women in working age at SHARE waves 1 or 2. Other covariates: age, years of schooling, household income, poor childhood health, marital status, lost partner, stress period, stress period with children, number of children and country dummies.

Table 20: Multinomial treatment model: Robustness.

	Outcome equation (Health index)
Treatment: home-centred	-0.012*
Treatment: Marginal	-0.011**
Treatment: Intermittent	-0.017***
λ_1: home-centred	0.001
λ_1: Marginal	-0.001
λ_1: Intermittent	0.002
N	6.337
LogLi	-30293.4
BIC	61505.9

Note: * p<0.10, ** p<0.05, *** p<0.01. Outcomes for selection equations and for covariates in outcome equation not shown. Same specification for selection and outcome equations as in Table 6, with exclusion of maternity benefit and contraceptive pill. Sample with all countries, women in working age at SHARE waves 1 or 2.

Two-Country Dynamic Model of Trade with Heterogeneous Firms and Comparative Advantage

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Two-Country Dynamic Model of Trade with Heterogeneous Firms and Comparative Advantage

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We develop a dynamic trade model with comparative advantage, heterogeneous firms and workers and endogenous firm entry to study wage inequality during the adjustment to trade liberalization. We find that trade liberalization increases wage inequality both in the short run and in the long run. In the short run, wage inequality is mainly driven by inter-sectoral wage inequality, while in the long run, wage inequality is driven by an increase in the skill premium. It is not a good idea to exclude certain sectors from trade liberalization, because that greatly reduces the benefits of trade liberalization, while failing to protect vulnerable workers.

Keywords: trade liberalization; wage inequality; adjustment dynamics

JEL Classification: E24, F11, F16, J62

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1 Introduction

Trade liberalization can lead to higher welfare by allowing firms and workers to be put into more productive uses. However, to take advantage of these benefits both firms and workers need to be reallocated from the sectors with comparative disadvantage to the sectors with comparative advantage. This reallocation costs time and resources and is at the heart of popular concern about trade liberalization. In this paper we present a model with firm and worker heterogeneity and study the transitional dynamics after a reduction in trade barriers, with a special focus on two kinds of wage inequality, the wage inequality between skilled and unskilled workers and the wage inequality across sectors.

The increase in wage inequality in many developed countries over the past decades and its sources have been subject to a lively debate in the economic literature. Until recently the dispute seemed to be settled in favor of skill-biased technological change as being the main contributor to rising wage inequality (see Katz and Autor (1999)). However, while traditionally the trade of a developed country was mainly with other developed countries, the recent enormous rise in trade with low-income countries (most notably China and India) has brought a shift in the structure of trade. This shift in the structure of trade is associated with fears that low-skilled workers from developed countries might lose out from competition with workers from developing countries.

And indeed, Autor et al. (2013) show that increased trade with China goes hand in hand with a decrease in the share of manufacturing employment and that local labor markets that are exposed to Chinese imports suffer higher unemployment and lower wages. In a similar vein, Ebenstein et al. (2009) find wages growing more slowly in sectors exposed to more import penetration, thus giving rise to increased wage inequality. Figure 1 shows that for the EU, too, trade with China has increased enormously while manufacturing employment has decreased.[1]

A comprehensive study of wage inequality should, in our view, contain the following features: i) comparative advantage to study the tension between shrinking, comparative disadvantage sectors and expanding, comparative advantage sectors; ii) skilled and unskilled labor to study changes in the skill premium; iii) adjustment dynamics, because the structure of the economy is unlikely to change over night iv) adjustment costs of labor, because it takes time and resources to switch sectors; v) firm heterogeneity, endogenous firm entry and selection into export markets, because these features have been shown to be important ingredients of international trade.

In this paper we present a model that takes account of each aspect. The model of Bernard et al. (2007) (BRS henceforth) consists of two countries, two factors and two sectors, introducing comparative advantage into the heterogeneous firm model of Melitz (2003). It thus offers a framework that is rich enough to capture points i), ii) and v) above. However, their analysis is restricted to the steady state and thus ignores adjustment problems. To be able to model adjustment dynamics we develop a dynamic version of BRS along the lines of Ghironi and Melitz (2005) (GM henceforth).

In our model, entering firms need to pay a sunk entry cost in order to enter either of two sectors (one skill-intensive, one unskilled-intensive). Upon entering they draw their productivity from a Pareto distribution. In contrast to Melitz (2003), but in line with GM, firms do not have to pay fixed production costs, and therefore

[1]The import penetration ratio is defined as the host country's imports from China divided by the total host country's expenditure on goods, measured as host gross output plus host imports minus host exports. The share of working-age population employed in manufacturing is defined as the number of people employed in manufacturing divided by the number of working-age people employed (16-64 years old). The source of data is Eurostat.

all newly entering firms take up production. However, firms have to pay a fixed cost of exporting if they want to serve the foreign market. This results in selection into export markets, as in Melitz (2003), i.e., only the most productive firms take up exporting. Additionally, each firm is subject to an exogenous rate of exit. This gives rise to non-trivial but tractable adjustment dynamics after trade liberalization, because existing firms keep operating and are stuck in their sector, while newly entering firms are more flexible.[2] Thus, the reallocation of firms from one sector to the other takes place via the death of old firms. They are replaced by newly entering firms which tend to prefer the expanding sector over the shrinking sector.

Workers can be either skilled or unskilled and employed in either of the two sectors. Concerning the mobility of workers we distinguish various scenarios: i) workers retire at an exogenous rate and get replaced by newly entering workers who are more flexible in their occupational choices; ii) workers might or might not be allowed to switch sectors after paying a randomly distributed migration cost; iii) unskilled workers might or might not be allowed to become skilled after paying a randomly distributed training cost. By simulating various combinations of these mobility assumptions we are able to highlight the role of labor adjustment costs.

In our analysis we focus on the effects of trade liberalization on wage inequality in the rich country.[3] We mainly concentrate on two measures of wage inequality, the wage differential between workers who are in the same skill class but in different sectors and the skill premium, i.e., the wage differential between skilled and unskilled workers. We find that income inequality increases following trade liberalization. In the short run, this is driven by a rise in the wage differential between the skill-intensive and the low-skill-intensive sectors. In the medium to long run, inequality rises due to the rising skill premium in the exporting sector.

We also find the two inequality measures to have different dynamics: the skill premium reacts only slowly while wage inequality across sectors jumps on impact and then slowly recedes. Take the extreme example of completely immobile factors in the short run. Then the supply of labor cannot react to the changes in relative demand. Thus, wages in the exporting sector have to go up relative to the importing sector. The skill premium, however, does not change, because the marginal productivity of skilled and unskilled labor cannot change if their composition in production does not change. In the long run, when labor is mobile, the wage differential between both sectors must disappear, while the skill premium increases due to higher demand for the skill-intensive good.

The skill premium in the skill-intensive sector goes up after trade liberalization. What happens to the skill premium in the unskill-intensive sector depends on the mobility assumptions. Assuming lower mobility for skilled workers than for unskilled workers, as might be justified on the grounds of sector-specific human capital, the skill premium in the comparative disadvantage sector will go down temporarily and only rise after a long adjustment period.

This discussion demonstrates that it is crucial to use a dynamic model in order to be able to distinguish between short run and long run effects. In the long run wage differentials between sectors must vanish but in the short run they are the more important source of wage inequality. This short run effect is completely ignored when analyzing

[2] Burstein and Melitz (2012) show that positive fixed costs of domestic production would eliminate all transitional dynamics in GM. This is not the case in our model due to the slow adjustment of workers. We nevertheless prefer to use the GM assumption that fixed costs of domestic production are zero, due to tractability and the numerical problems discussed by Chaney (2005).

[3] A recent literature analyzes the effects of trade liberalization on unemployment (see, e.g., Egger and Kreickemeier (2009), Felbermayr et al. (2010), Helpman and Itskhoki (2010) or Helpman et al. (2010)). Given the already complicated structure of our model we concentrate on wage inequality and leave the analysis of unemployment for future research.

steady state outcomes only, while the effect of the increased skill premium is exaggerated since it takes a long time to manifest.

Labor mobility assumptions are also critical for identifying the winners and losers from trade liberalization. The conventional concern is that unskilled workers in the import-competing sectors are the biggest losers. However, our results suggest that skilled workers in the low-skill intensive sector suffer the most because they are stuck in the noncompetitive sector with relatively low wages while the low-skilled workers can move and get relatively higher wages in the exporting sector. This result is reinforced when the low-skilled workers have the option to train.[4] Low skilled workers in the import-competing sector are happy to suffer relatively lower wages for a while as they can move to the exporting sector and train to become highly paid skilled workers there. This leads to a fast rising supply of skilled workers in the exporting sector and a fast drain of low skilled labor from the import-competing sector. Both of these imply falling relative productivity of skilled labor in the shrinking sector and a sharply falling skill premium in the medium run. Actually, when the unskilled workers have the option to train, trade liberalization can lead to a fall in wage inequality in the medium run.

We also find that it is not a good idea to restrict trade liberalization to specific sectors, because that considerably reduces the benefits of trade liberalization, while hardly protecting workers from foreign competition. Protecting vulnerable sectors not only reduces the gains from trade but also hurts vulnerable workers even more. The reduction in trade in the import-competing sector that comes with a liberalization of the exporting sector considerably hurts high-skilled workers who have invested their skills in the 'wrong' sector.

Although the sluggish adjustment after trade liberalization agreements is at the heart of popular concerns, the trade literature is relatively silent on this topic. There is a developing literature on dynamic general-equilibrium adjustment to trade shocks but the existing studies use frameworks less rich than ours. Their analysis focuses on particular aspects of adjustment after trade liberalization and ignores important channels that could affect adjustment. Our model is particularly suited to analyzing the interaction and importance of different channels that have been shown to be important for trade and labor market adjustment.

Some recent notable papers include Artuç et al. (2010), Dix-Carneiro (2010) and Coşar (2013), who analyze labor market adjustments after trade liberalization. None of these papers, however, considers firm dynamics, heterogeneous firms and comparative advantage in a two-country setting. Their analysis is restricted to asymmetric trade liberalization scenarios in a small-open economy setting which cannot appropriately account for shifts in prices. We show that both comparative advantage in skilled labor as well as the type of trade liberalization (symmetric versus asymmetric) are critical not only for the size of the gains from trade but also for their distribution across different workers over time.

There is also a large literature that extends traditional theories of international trade such as the Heckscher–Ohlin models to analyze dynamic adjustment after trade liberalization. More recently, Baxter (1992), Chen (1992), Backus et al. (1994), Stokey (1996), Ventura (1997), Jensen and Wang (1997), Mountford (1998), Acemoglu et al. (2002), Atkeson and Kehoe (2000), Bond et al. (2003), Ferreira and Trejos (2006), Gaitan and Roe (2007) and Caliendo (2010) have combined versions of the standard Heckscher–Ohlin model with the standard Neoclassical

[4] Much of this resembles the effects discussed in Larch and Lechthaler (2011), who analyze the effects of trade liberalization on unemployment in the BRS-model. However, they use a static model and thus the dynamic perspective, which is at the heart of this paper, is missing.

growth model or an overlapping generations model. These, however, focus mostly on growth issues.

There are some papers that show that inter-industry reallocation entails labor market costs. Kambourov (2009) contends in the presence of regulated labor markets with high firing costs, the inter-sectoral reallocation of labor after a trade reform is slowed down. He builds a dynamic general equilibrium sectoral model of a small open economy with sector-specifc human capital, firing costs, and tariffs in order to understand the effect of labor market regulations on the effectiveness of trade reforms. Calibrating his model to Chile, Kambourov (2009) makes counterfactual simulations and finds that if Chile did not liberalize its labor market at the outset of its trade reform, then the inter-sectoral reallocation of workers would have been 30 percent slower and as much as 30 percent of the gains in real output and labor productivity in the years following the trade reform would have been lost.

In terms of distributional effects, Helpman and Itskhoki (2009) develop a dynamic version of the two-country, two-sector model of international trade of Helpman and Itskhoki (2010) in which one sector produces homogeneous products, "outside sector", and the other produces differentiated products. The main finding is that when the two sectors are symmetric in terms of their labor markets trade unambiguously raises welfare in both countries.

In a similar vein, Ishimaru et al. (2013) analyze the welfare and unemployment consequences of trade liberalization by incorporating search and matching frictions into a two-factor, two-sector, two-country Heckscher–Ohlin framework, and developing a dynamic general equilibrium model with comparative advantage to study the entire dynamic path from the original steady state to the new steady state after trade reform. Their numerical simulations reveal a U-shaped steady state unemployment locus along the trade tariff rates. In the presence of labor market frictions, the flow of workers within sectors and across sectors generates wage fluctuations. When more workers are employed at the comparative advantage sector, the aggregate income is higher. Unless the fluctuation in the aggregate supply is large enough, the employment effect is absorbed through prices. In the long run, prices are also U-shaped, so that income inequality increases, with the unemployed consuming less after the trade reform. However, these, except for Helpman and Itskhoki (2009), ignore the effects of intra-industry trade, firm dynamics, selection into export markets and firm heterogeneity on wage inequality. Even in Helpman and Itskhoki (2009) the firm heterogeneity is limited to one sector while our model incorporates heterogeneous firms in both sectors which allows us to analyze the importance of each channel for adjustment in each sector and study the interactions between these mechanisms. Our results indicate that firm heterogeneity and slow adjustment of firms matter for the dynamics of labor market adjustment following trade liberalization for the import-competing sector in particular. The second sector in Helpman and Itskhoki (2009) is a numeraire sector of homogeneous good which implies that there is not specialization in their model and the role of comparative advantage on wage inequality cannot be analyzed. In addition, none of these papers incorporates both skilled and unskilled workers which is a key feature of our model that allows us to analyze how skill premia evolve after trade liberalization.

The following section describes the theoretical model. Section 3 describes the calibration. In section 4 we describe our simulations of the symmetric trade liberalization scenarios, while section 5 shows the asymmetric trade liberalization scenarios. Section 6 provides some robustness checks and tries to disentangle some of the effects, Finally, section 7 concludes.

2 Theoretical model

The world consists of two countries Home (H) and Foreign (F). Each country produces two goods, good 1 and 2 which can be traded internationally. The production of each good requires two inputs, skilled and unskilled labor. The sector that produces good 1 is skill intensive i.e. the production of good 1 requires relatively more skilled labor than production of good 2. H has a comparative advantage in producing good 1 because it has a higher relative endowment of skilled labor. Similarly, F has a comparative advantage in sector 2 because of its higher relative endowment of non-skilled labor. To generate a positive skill-premium, we assume that unskilled labor is more abundant than skilled labor in both countries. [5] In the long run, factors of production are assumed to be perfectly mobile between sectors but not across countries. In the short run, workers are imperfectly mobile and we will discuss various scenarios with different degrees of short-run mobility.

2.1 Households

Consumers maximize the present discounted value of utility that they derive from consumption:

$$\sum_{i=0}^{\infty} \gamma^i log\left(C_{t+i}\right), \tag{1}$$

where γ is the subjective discount factor.

They maximize utility subject to a budget constraint that equates expenditures to income.

$$\begin{aligned} &B_{t+1} + Q_t B_{*,t+1} + \frac{\eta}{2}\left(B_{t+1}\right)^2 + \frac{\eta}{2} Q_t \left(B_{*,t+1}\right)^2 + \widetilde{v}_{1t} N_{h,1t} x_{1t+1} + \widetilde{v}_{2t} N_{h,2t} x_{2t+1} + C_t = \\ &(1+r_t)B_t + (1+r_t^*)Q_t B_{*,t} + (\tilde{d}_{1t} + \tilde{v}_{1t})N_{d,1t}x_{1t} + (\tilde{d}_{2t} + \tilde{v}_{2t})N_{d,2t}x_{2t} + w_{1t}^s S_{1t} + w_{2t}^s S_{2t} + w_{1t}^l L_{1t} + w_{2t}^l L_{2t} + \tau_{h,t} \end{aligned} \tag{2}$$

Households spend their income on purchases of international risk-free real bonds denominated in home currency (B_{t+1}) and in foreign currency ($B_{*,t+1}$), where the foreign bond holdings are adjusted for the consumption-based real exchange rate $Q_t = e_t P_t^* / P_t$ (units of home consumption per unit of foreign consumption; e_t is the nominal exchange rate, units of home currency per unit of foreign) . Households also pay fees for adjusting their holdings of international bonds $\frac{\eta}{2}\left(B_{t+1}\right)^2 + \frac{\eta}{2} Q_t \left(B_{*,t+1}\right)^2$. We assume convex fees for international portfolio adjustment in order to ensure that our model has a unique steady state and is stationary. Households also purchase shares x_{it+1} of ownership in all domestic firms that operate at time t, $N_{h,it}$, at price $\widetilde{v}_{it}$. Note the economy consists of two sectors of production, sector 1 and 2, indexed by i, and households can hold shares simultaneously in both sectors. When deciding how many shares to purchase, households consider all operating firms including incumbents $N_{d,it}$ and new entrants $N_{e,it}$, which implies that $N_{h,it} = N_{d,it} + N_{e,it}$. However, each period a fraction δ of all firms dies. Thus, only $N_{d,it+1} = (1-\delta)N_{h,it}$ will actually produce and generate profits to pay dividends $\tilde{d}_{it}$. The remainder of the household income is spent on aggregate consumption goods C_t.

Consumers obtain income from interest on their holding of home bonds $(1+r_t)B_t$ and foreign bonds $(1+r_t^*)Q_t B_{*,t}$, dividend income $\tilde{d}_{it}$ from owning shares in firms $N_{d,it}$, capital gains if the value of owned firms went up

[5] What matters for comparative advantage are relative endowments, so skilled labor can be scarce in both countries.

in period t, wage income w^s_{it} and w^l_{it} from supplying skilled S_{it} and unskilled L_{it} labor and an international bond fee rebate $\tau_{h,t} = \frac{\eta}{2}\left(B_{t+1}\right)^2 + \frac{\eta}{2}Q_t\left(B_{*,t+1}\right)^2$. The budget constraint is written in aggregate consumption units.

Households choose $C_t, B_{t+1}, B_{*,t+1}, x_{1t+1},$ and x_{2t+1}. The Euler equations for bond and share holdings are:

$$\left(C_t\right)^{-1}\left(1+\eta B_{t+1}\right) = \gamma E_t\left[\left(C_{t+1}\right)^{-1}\left(1+r_t\right)\right] \tag{3}$$

$$\left(C_t\right)^{-1}\left(1+\eta B_{*,t+1}\right) = \gamma E_t\left[\left(1+r^*_t\right)\left(C_{t+1}\right)^{-1}\left(\frac{Q_{t+1}}{Q_t}\right)\right] \tag{4}$$

$$\widetilde{v}_{1t} = \gamma(1-\delta)E_t\left[\left(\frac{C_{t+1}}{C_t}\right)^{-1}\left(\widetilde{v}_{1t+1}+\tilde{d}_{1t+1}\right)\right] \tag{5}$$

$$\widetilde{v}_{2t} = \gamma(1-\delta)E_t\left[\left(\frac{C_{t+1}}{C_t}\right)^{-1}\left(\widetilde{v}_{2t+1}+\tilde{d}_{2t+1}\right)\right]. \tag{6}$$

The economy consists of two sectors of production and households consume a Cobb-Douglass composite of those two traded goods:

$$C_t = C^{\alpha}_{1t}C^{1-\alpha}_{2t}, \tag{7}$$

where α is the share of good 1 in the consumption basket for both H and F. We can obtain relative demand functions for each good from the expenditure minimization problem of the households. They minimize $P_{1t}C_{1t}+P_{2t}C_{2t}$ subject to equation 7. The implied demand functions are:

$$C_{1t} = \alpha\frac{\lambda^1_t}{P_{1t}}C_t \;\; \mathit{and} \;\; C_{2t} = (1-\alpha)\frac{\lambda^1_t}{P_{2t}}C_t, \tag{8}$$

where λ^1_t is the Lagrangian multiplier associated with equation 7. It can be proved that $\lambda^1_t = \left(\frac{P_{1t}}{\alpha}\right)^{\alpha}\left(\frac{P_{2t}}{1-\alpha}\right)^{1-\alpha}$. By the envelope theorem $\lambda^1_t = P_t$, where P_t is the price index that buys one unit of the aggregate consumption basket C_t.

Goods 1 and 2 are also consumption baskets defined over a continuum of goods Ω_i:

$$C_i = \left[\int_{\omega\epsilon\Omega_i} c_{it}(\omega)^{\frac{\theta-1}{\theta}}d\omega\right]^{\frac{\theta}{\theta-1}}, \tag{9}$$

where $\theta > 1$ is the elasticity of substitution between goods. At any given time, only a subset of goods $\Omega_{it}\epsilon\Omega_i$ is available in each sector. The consumption based price index for each sector is $P_{it} = \left[\int_{\omega\epsilon\Omega_i} p_{it}(\omega)^{1-\theta}d\omega\right]^{\frac{1}{1-\theta}}$ and the household demand for each variety is $c_{it} = \left(\frac{p_{it}}{P_{it}}\right)^{-\theta}C_{it}$. It is useful to redefine these in terms of aggregate consumption units. Define $\rho_{it} \equiv \frac{p_{it}}{P_t}$ and $\psi_{it} \equiv \frac{P_{it}}{P_t}$ as the relative prices for individual varieties and for sector baskets respectively. Then, we can rewrite the demand functions for varieties and sector baskets as $c_{it} = \rho^{-\theta}_{it}C_{it}$ and $C_{it} = \alpha\psi^{-1}_{it}C_t$, respectively.

F households face identical decision problems. For brevity they are not described.

2.2 Labor supply

We consider two versions of the model. First, we make the assumption that the overall endowments of skilled and unskilled workers are exogenously fixed. In the long run workers are perfectly mobile between sectors. This resembles the case of BRS. In the short run, however, adjustment of workers will be slowed by adjustment costs: each worker has to pay a random, idiosyncratic mobility cost in order to be able to switch sectors. Second, we relax the assumption of perfect immobility across skill classes by allowing unskilled workers to train and become skilled by paying idiosyncratic training costs. In both scenarios, we add a constant turnover of workers. Old workers retire at rate s and are replaced by newly entering workers. First we describe the scenario without training and then we focus on the scenario with training.

2.2.1 Worker mobility without training

Skilled workers are free to move between sectors but doing so implies a positive idiosyncratic movement cost which is represented by an idiosyncratic ε_t^s drawn each period from a random distribution $F(\varepsilon^s)$. Unskilled workers can also move between sectors but they draw their mobility cost ε_t^l from a different distribution $H(\varepsilon^l)$. Since skilled and unskilled workers face symmetric mobility decisions, only the problem of the skilled workers is described.

In deciding whether to switch sector we assume that each worker compares the value of being employed in a specific sector with her cost of moving. Whenever, the gain in value from moving is greater than the cost of moving, then the worker will move. Let V_{it}^s be the value of a skilled worker of being employed in sector i, defined as

$$V_{it}^s = w_{it}^s + \gamma(1-s)\left[(1-\eta_{ijt}^s)V_{it+1}^s + \eta_{ijt}^s V_{jt+1}^s\right] - \int_{\varepsilon_{\min}^s}^{1/\bar{\varepsilon}_t^s} \varepsilon_t^s \partial F\left(\varepsilon_t\right), \tag{10}$$

where η_{ijt}^s is probability of moving from sector i to sector j and s is the probability of retiring. The integral measures the expected movement cost. The value from being employed as a skilled worker V_{it}^s is a function of the real wage that the worker will get and the expected future discounted value, adjusted for the probability of survival and averaged over the cases that the worker will choose to stay in the same sector or switch to the other sector.

The worker will move from sector j to sector i if his relative value from being employed in sector i relative to sector j is higher than the moving cost:

$$\frac{V_{it}^s}{V_{jt}^s} > \varepsilon_t^s. \tag{11}$$

Vice versa, a worker in sector i will move to sector j if $\frac{V_{jt}^s}{V_{it}^s} > \frac{1}{\varepsilon_t^s}$. Since moving costs are non-negative, only one of the two equations can be satisfied, i.e., workers move only in one direction. Equation 11 defines a threshold, $\bar{\varepsilon}_t^s$, for which a worker is indifferent between switching and not switching the sector

$$\overline{\varepsilon_t^s} = \frac{V_{it}^s}{V_{jt}^s} \tag{12}$$

and the probability of switching sectors is

$$\begin{aligned} \eta^s_{jit} &= F(\max{(\overline{\varepsilon_t}^s, \varepsilon^s_{\min})}) \\ \eta^s_{ijt} &= F\left(\max\left(\frac{1}{\overline{\varepsilon_t}^s}, \varepsilon^s_{\min}\right)\right) \end{aligned}$$

where η^s_{jit} is probability to switch from sector j to sector i and vice versa for η^s_{ijt}. Only one of the two rates can be positive, the other has to be zero. $\varepsilon^s_{\min}$ is the minimum moving cost that the worker has to pay in order to switch sectors.

Additionally, each period a constant fraction s of workers retires and is replaced by new entrants, Se_{it}. We assume that newly entering workers are flexible in their choices upon entering the labor force. They can choose the sector in which they prefer to work. The decision of newly entering skilled workers is based on their relative payoffs between sectors 1 and 2. If the value in sector 1 is higher than the value in sector 2, then relatively more workers will enter sector 1, but we avoid the extreme assumption that all entering workers flock to one sector. To assure stationarity in the steady state, we have to 'weigh' the payoffs of each sector with the number of workers in that sector, so that the ratio of workers entering each sector is given by:[6]

$$\frac{Se_{1t}/S_{1t}}{Se_{2t}/S_{2t}} = \frac{V^s_{1t}}{V^s_{2t}}.$$

Having characterized the exit and entry behavior of workers, we can now write the laws of motion for skilled and unskilled workers in sector i. The number of skilled workers in sector i at the end of period t is equal to the fraction of surviving workers from last period, composed of the incumbents who did not switch sector, the workers who moved from sector j to sector i and the new entrants, such that

$$S_{it} = (1-s)\left[(1-\eta^s_{ijt})S_{it-1} + \eta^s_{jit-1}S_{jt-1} + Se_{it-1}\right].$$

Under this scenario, the country supply of skilled workers is fixed so that

$$S = S_{1t} + S_{2t}.$$

Finally, in equilibrium the total number of workers that retires has to equal the number of new entrants that survive:

$$sS = (1-s)(Se_{1t} + Se_{2t}).$$

Remember that in the long run workers are fully mobile between sectors. This implies that for each skill class the values in both sectors need to be the same, which implies that there is full wage equalization across sectors at the steady state. This implies that in the long-run skill premia are equal across sectors ($\frac{w^s_1}{w^l_1} = \frac{w^s_2}{w^l_2}$). Skill premia differ across countries because by assumption country H has a higher relative endowment of skilled labor than country F, so that the skill premium in country H is lower in the long run.

[6] If we did not weigh the payoffs, then equalization of payoffs and wages across sectors would only be possible if workers were split equally across sectors.

2.2.2 Worker mobility with training

In this section, we relax the assumption of perfect immobility between skill classes. Unskilled workers of each sector can invest in training to become skilled workers in their sector, but doing so requires paying a positive training cost which is represented by an idiosyncratic ε_t^i drawn each period from a random distribution $\Gamma(\varepsilon^i)$. When deciding whether to invest in training, workers compare their training cost to the relative value of being a skilled worker versus being an unskilled worker in sector i. Unskilled workers in sector i will train if their relative value is higher than their training cost, i.e., if

$$\frac{V_{it}^s}{V_{it}^l} > \varepsilon_t^i. \tag{13}$$

Note that if $\frac{V_{it}^s}{V_{it}^l} < \varepsilon_t^i$, the unskilled worker will prefer not to train. Equation 13 defines a threshold-$\bar{\varepsilon}_t^i$ for which a worker is indifferent between training or not:

$$\bar{\varepsilon}_t^i = \frac{V_{it}^s}{V_{it}^l}, \tag{14}$$

and the probability of training is

$$\eta_{it} = \Gamma\left[\max(\bar{\varepsilon}_t^i), \varepsilon_{\min}^i\right]$$

where $\varepsilon_{\min}^i$ is the minimum training cost that incumbent and newly entering skilled workers have to pay in order to become skilled. Note that these minima are equal across sectors ($\varepsilon_{\min}^1 = \varepsilon_{\min}^2$) and they correspond to the skill premium where each country is initialized ($\varepsilon_{\min}^i = \frac{w_i^s}{w_i^l}$).

Again we assume that each period a constant fraction s of workers retires and is replaced by new entrants. Similar equations as in the previous section apply to govern the entry of new workers. Workers are attracted to the sector with the higher wages, so that relatively more workers will choose the sector with the higher wage. However, since in this section we allow for more mobility, we need more equations that also capture the fact that not only the sector but also the skill class is a matter of choice.

Concerning the comparison of sector per skill class, the same equations as above apply. However, newly entering workers also have to choose their skill class. The decision is analogous to the decision about the sector but we need to take account of the cost of training. Assuming that the minimum cost of training applies to newly entering workers implies:[7]

$$\frac{Se_{it}/S_{it}}{Le_{it}/L_{it}} = \frac{V_{it}^s}{V_{it}^l}\frac{1}{\varepsilon_{\min}^i},$$

Having characterized the exit and entry behavior of workers, we can now write the laws of motion for skilled and unskilled workers. The number of skilled workers in sector i at the end of period t is equal to the fraction of surviving workers from last period, composed of last period incumbents, new entrants and new trainees, such that

$$S_{it} = (1-s)(S_{it-1} + Se_{t-1} + \eta_{it-1}L_{it-1}).$$

The number of unskilled workers in sector i at the end of period t is the fraction of surviving workers from last period, composed of incumbents who did not switch sector or train, workers who switched from sector j and new

[7] Again, this assures stationarity in the steady state.

entrants, such that

$$L_{it} = (1-s)\left[(1-\eta^l_{jit}-\eta_{it})L_{it-1}+\eta_{ijt-1}L_{jt-1}+Le_{it-1}\right].$$

Finally, in equilibrium the total fraction of workers that retires has to equal the fraction of new entrants that survive:

$$sENDOW = (1-s)(Se_{1t}+Le_{1t}+Se_{2t}+Le_{2t}),$$

where $ENDOW = S_t + L_t$ is the total endowment of labor in the H country.

It is important to characterize the new employment payoffs that the different types of workers consider when making their entry and switching decisions. Since skilled workers are not allowed to switch sectors anymore, their employment value from working in sector i in period t is just a function of the real wage that they get and the present discounted value of their future value adjusted for the probability of survival, so that

$$V^s_{it} = w^s_{it} + \gamma(1-s)V^s_{it+1}.$$

The value of unskilled workers has to be adjusted to take account of training:

$$V^l_{it} = w^l_{it} + \gamma(1-s)\left[(1-\eta^l_{ijt}-\eta_{it})V^l_{it+1}+\eta_{ijt}V^l_{jt+1}+\eta_{it}V^s_{it+1}\right] - \int_{\varepsilon^l_{\min}}^{1/\bar{\varepsilon}^l_t}\varepsilon^l_t dH(\varepsilon^l_t) - \int_{\varepsilon^i_{\min}}^{1/\bar{\varepsilon}^i_t}\varepsilon^i_t\partial\Gamma(\varepsilon^i_t).$$

2.2.3 Measures for wage inequality

In order to analyze the effect of trade liberalization on wage inequality, we construct a number in income inequality measures. First we have two measures of wage inequality across sectors. They measure the relative difference in cross sectoral wages for skilled and unskilled workers, so that

$$\begin{aligned} IndexS_t &= \left(\frac{w^s_{1t}}{w^s_{2t}}-1\right)100, \\ IndexL_t &= \left(\frac{w^l_{1t}}{w^l_{2t}}-1\right)100. \end{aligned}$$

A rise in either of these indices indicates an increase in cross-sector wage inequality. Note that these indices are zero in steady state but might be different from zero out of the steady state. It is one of the advantages of our dynamic model that it can capture these temporary increases in inequality.

We are also interested in measuring inequality for classes of workers, namely the skill premia per sector and as a country average. The skill premium for sector i is defined as the percentage difference between the wage of skilled and unskilled workers, i.e.,

$$Skill_{it} = \left(\frac{w^s_{it}}{w^l_{it}}-1\right)100.$$

Before constructing the average skill premium for each country, we define the average wages for skilled workers as $w^s_t = \frac{S_{1t}}{S_t}w^s_{1t} + \frac{S_{2t}}{S_t}w^s_{2t}$, and for unskilled workers as $w^l_t = \frac{L_{1t}}{L_t}w^l_{1t} + \frac{L_{2t}}{L_t}w^l_{2t}$. Then, the aggregate skill premium for country H is

$$Skill_t = \left(\frac{w_t^s}{w_t^l} - 1\right) 100.$$

Finally, we measure aggregate wage inequality for each country by constructing a theoretical Gini index, which is a standard measure of inequality used in economics. The Gini index measures the extent to which the distribution of wages among the different groups of workers within each country deviates from a perfectly equal distribution. A Gini index of 0 represents perfect equality, while an index of 1 implies perfect inequality. The Gini coefficient is defined as half the relative mean difference of a wage distribution. Before constructing the Gini index, however, we define the average wage income for country H as $w_t = \frac{S_{1t}}{S_t+L_t} w_{1t}^s + \frac{S_{2t}}{S_t+L_t} w_{2t}^s + \frac{L_{1t}}{S_t+L_t} w_{1t}^l + \frac{L_{2t}}{S_t+L_t} w_{2t}^l$. Then, the Gini coefficient for country H is

$$Gini_t = \frac{1}{2w_t}\left(\frac{S_{1t}}{S_t+L_t}\left|w_{1t}^s - w_t\right| + \frac{S_{2t}}{S_t+L_t}\left|w_{2t}^s - w_t\right| + \frac{L_{1t}}{S_t+L_t}\left|w_{1t}^l - w_t\right| + \frac{L_{2t}}{S_t+L_t}\left|w_{2t}^l - w_t\right|\right).$$

The term in the parentheses is a measure of dispersion which calculates the absolute deviations from the average income and weights those by the population shares.

2.3 Production

There are two sectors of production in each country. The production technology is assumed to be Cobb-Douglass in the two inputs of production:

$$Y_{it} = z_i Z S_{it}^{\beta_i} L_{it}^{(1-\beta_i)}, \tag{15}$$

where z_i is firm specific productivity, Z is aggregate productivity, S_{it} and L_{it} are the amount of skilled and unskilled labor used in the production of output in sector i. β_i is the share of skilled labor required to produce one unit of output Y_i in sector i. Sector 1 is assumed to be skill intensive and sector 2 non-skill intensive which implies that $1 > \beta_1 > \beta_2 > 0$. The labor market is assumed to be perfectly competitive which means that the real wages for both skilled and non-skilled labor are equal to the values of their marginal products of labor. Relative labor demand can be described by the following condition:

$$\frac{w_{it}^s}{w_{it}^l} = \frac{\beta_i}{(1-\beta_i)}\frac{L_{it}}{S_{it}}, \tag{16}$$

which says that the ratio of the skilled wage w_{it}^s to the unskilled wage w_{it}^l for sector i is equal to the ratio of the marginal contribution of each factor into producing one more unit of sectoral output. This condition is valid for both sectors.

Firms in each sector are heterogeneous as they produce with different technologies indexed by relative productivity z. Productivity differences across firms translate into differences in the unit cost of production. This cost measured in the units of aggregate consumption C_t is $\frac{(w_{it}^s)^{\beta_i}\left(w_{it}^l\right)^{1-\beta_i}}{zZ_t}$,where $w_{it}^s \equiv \frac{W_{it}^s}{P_t}$ and $w_{it}^l \equiv \frac{W_{it}^l}{P_t}$ are the real wages as described above.

Prior to entry, firms are identical and face a sunk entry cost f_{et} effective units of skilled and unskilled labor equal to $\frac{f_{et}(w_{it}^s)^{\beta_i}\left(w_{it}^l\right)^{1-\beta_i}}{Z_t}$ units of aggregate H consumption. Note that entry costs can differ between sectors due to different factor intensities and to sectoral wage differentials. Upon entry some firms draw their productivity level z from a common distribution $G(z)$ with support on $[z_{min}, \infty)$. This firm productivity remains fixed thereafter. Since there are no fixed costs of production, all firms produce every period, until they are hit with a death shock, which occurs with probability $\delta\epsilon(0,1)$ in every period. This exit-generating shock is independent of the firm's productivity level, so $G(z)$ also represents the productivity distribution of all producing firms.

Some firms can serve both H and F markets. Exporting goods to F, however, is costly and involves both a melting-iceberg trade cost $\tau_t \geq 1$ as well as a fixed cost f_{xt} (again measured in units of effective skilled and non-skilled labor).[8] We assume that firms hire workers only from their domestic markets to cover these fixed costs. These costs, in real terms, are $\frac{f_{xt}(w_{it}^s)^{\beta_i}\left(w_{it}^l\right)^{1-\beta_i}}{Z_t}$.

All firms face a residual demand curve with constant elasticity in both H and F markets. They are monopolistically competitive and set flexible prices that reflect the proportional markup $\frac{\theta}{\theta-1}$ over marginal cost. Let $p_{d,it}(z)$ and $p_{x,it}(z)$ denote the nominal domestic and export prices of a H firm in sector i. We assume that the export prices are denominated in the currency of the export market. Prices in real terms, relative to the price index in the destination market are then given by:

$$\rho_{d,it}(z) = \frac{p_{d,it}(z)}{P_t} = \frac{\theta}{\theta-1}\frac{(w_{it}^s)^{\beta_i}\left(w_{it}^l\right)^{1-\beta_i}}{zZ_t}, \rho_{x,it}(z) = \frac{p_{x,it}(z)}{P_t^*} = \frac{1}{Q_t}\tau_t\rho_{d,it}(z). \tag{17}$$

The equations for F are similar except for the position of the real exchange rate $\rho_{d,it}^*(z) = \frac{p_{d,it}^*(z)}{P_t^*} = \frac{\theta}{\theta-1}\frac{(w_{it}^{s*})^{\beta_i}\left(w_{it}^{l*}\right)^{1-\beta_i}}{zZ_t^*}$, $\rho_{x,it}^*(z) = \frac{p_{x,it}^*(z)}{P_t} = Q_t\tau_t^*\rho_{d,it}^*(z)$.

Due to the fixed export cost, firms with low productivity levels z may decide no to export in any given period. When making this decision, a firm decomposes its total profit $d_{it}(z)$ (which is returned to households as dividend as specified in the budget constraint) into portions earned from domestic sales $d_{d,it}(z)$ and export sales $d_{x,it}(z)$. All of these profits are expressed in real terms in units of aggregate consumption in the firm's location. Therefore, H firms measure their profits in H consumption C_t units. For an H firm total profits are $d_{it}(z) = d_{d,it}(z) + d_{x,it}(z)$, where

$$d_{d,it}(z) = \frac{1}{\theta}\left(\frac{\rho_{d,it}(z)}{\psi_{it}}\right)^{1-\theta}\alpha_i C_t \tag{18}$$

$$d_{x,it}(z) = \begin{array}{ll} \frac{Q_t}{\theta}\left(\frac{\rho_{x,it}(z)}{\psi_{it}}\right)^{1-\theta}\alpha_i C_t^* - \frac{f_{xt}(w_{it}^s)^{\beta_i}\left(w_{it}^l\right)^{1-\beta_i}}{Z_t}, & \text{if firm z exports} \\ 0 & \text{otherwise.} \end{array} \tag{19}$$

Note that α_i is the share of good i in the aggregate consumption basket where $\alpha_1 = \alpha$ and $\alpha_2 = 1-\alpha$.

A firm will export if and only if it would earn non-negative profits from doing so. For H firms, this will be the case if their productivity draw z is above some cutoff level $z_{x,it} = \inf\{z : d_{x,it} > 0\}$. We assume that the lower bound productivity z_{min} identical for both sectors and low enough relative to export costs that $z_{x,it}$ is above z_{min}. Firms with productivity between z_{min} and $z_{x,it}$, serve only their domestic market and form a non-traded sector.

[8] The Iceberg trade costs are proportional to the value of the exported product and represent a number of different barriers to trade. These include trade barriers which can be influenced by policy, like restrictive product standards or slow processing of imports at the boarder, and which cannot be influenced by policy, like the costs of transportation. We follow the standard in the literature of modeling trade liberalization as a decrease in the Iceberg trade cost.

2.3.1 Firm Averages

In every period a mass $N_{d,it}$ of firms produces in sector i of country H. These firms have a distribution of productivity levels over $[z_{min}, \infty)$ given by $G(z)$. We assume that those distributions are identical across countries and sectors. Among these firms there are $N_{x,it} = [1 - G(z_{x,it})] \, N_{d,it}$ exporters. It is useful to define two average productivity levels, an average $\tilde{z}_{d,it}$ for all producing firms in sector i country H and an average $\tilde{z}_{x,it}$ for all H exporters in sector i:

$$\tilde{z}_{d,it} = \left[\int_{z_{min}}^{\infty} z^{\theta-1} dG(z) \right]^{\frac{1}{(\theta-1)}}, \tilde{z}_{x,it} = \left[\int_{z_{x,it}}^{\infty} z^{\theta-1} dG(z) \right]^{\frac{1}{(\theta-1)}}.$$

These productivity averages summarize all the information on the productivity distributions of firms for a given sector and country.

We can redefine all the prices and profits in terms of these average productivity levels. The average nominal price of H firms in the domestic market is $\tilde{p}_{d,it} = p_{d,it}(\tilde{z}_{d,it})$ and for the export market to F $\tilde{p}_{x,it} = p_{x,it}(\tilde{z}_{x,it})$. The price index for sector i at H reflects prices for the $N_{d,it}$ home firms (with average price $\tilde{p}_{d,it}$) and the F exporters to the H market (with average price $\tilde{p}^*_{x,it}$). Then, the price index for sector i in H can be written as $P_{it} = \left[N_{d,it} \left(\tilde{p}_{d,it} \right)^{1-\theta} + N^*_{x,it} \left(\tilde{p}^*_{x,it} \right)^{1-\theta} \right]$. When written in real terms of aggregate consumption units, this expression becomes $\psi_{it} = \left[N_{d,it} \left(\tilde{\rho}_{d,it} \right)^{1-\theta} + N^*_{x,it} \left(\tilde{\rho}^*_{x,it} \right)^{1-\theta} \right]$, where $\tilde{\rho}_{d,it} = \rho_{d,it}(\tilde{z}_{d,it})$ and $\tilde{\rho}^*_{x,it} = \rho^*_{x,it}(\tilde{z}^*_{x,it})$ are the average relative prices of H producers and F exporters in the H market.

We can similarly define $\tilde{d}_{d,it} = d_{d,it}(\tilde{z}_{d,it})$ and $\tilde{d}_{x,it} = d_{x,it}(\tilde{z}_{x,it})$ such that $\tilde{d}_{it} = \tilde{d}_{d,it} + [1 - G(z_{x,it})] \, \tilde{d}_{x,it}$ is total profits of H firms in sector i adjusted for the share $1 - G(z_{x,it})$ of firms that export.

2.3.2 Firm Entry and Exit

In every period there is an unbounded mass of prospective entrants in both sectors and countries. These entrants are forward looking and correctly anticipate their future expected profits in every period. We assume that entrants at time t only start producing at time t+1 which introduces a one-period time-to-build lag in the model. The exogenous exit shock occurs at the end of the time period after entry and production. Thus, a proportion δ of new entrants will never produce. Prospective entrants in sector i in H in period t compute their expected post-entry value given by the present discounted value of their expected stream of profits $\{\tilde{d}_{is}\}_{s=t+1}^{\infty}$,

$$\tilde{v}_{it} = E_t \sum_{s=t+1}^{\infty} \left[\gamma^{s-t} (1-\delta)^{s-t} \left(\frac{C_s}{C_t} \right)^{-1} \tilde{d}_{is} \right]. \tag{20}$$

This also corresponds to the average value of incumbent firms after production has occurred. Firms discount future profits using the household stochastic discount factor, adjusted for the probability of firm survival $1 - \delta$. Entry occurs until the average firm value is equalized to the entry cost

$$\tilde{v}_{it} = \frac{f_{et} \left(w^s_{it} \right)^{\beta_i} \left(w^l_{it} \right)^{1-\beta_i}}{Z_t}. \tag{21}$$

Finally, we have an accumulation equation for the number of firms:

$$N_{d,it} = (1-\delta)(N_{d,it-1} + N_{e,t-1}). \tag{22}$$

2.3.3 Parametrization and productivity draws

The productivity z is assumed to be distributed Pareto with lower bound z_{min} and shape parameter $k > \theta - 1$: $G(z) = 1 - \left(\frac{z_{min}}{z}\right)^k$. Let $\nu = \left\{\frac{k}{[k-(\theta-1)]}\right\}^{\frac{1}{\theta-1}}$,then average productivities are

$$\tilde{z}_{d,it} = \nu z_{min} \text{ and } \tilde{z}_{x,it} = \nu z_{x,it}. \tag{23}$$

The share of exporting firms in sector i in H is

$$\frac{N_{x,it}}{N_{d,it}} = 1 - G(z_{x,it}) = 1 - \left(\frac{\nu z_{min}}{\tilde{z}_{x,it}}\right)^k. \tag{24}$$

This together with the zero export profit condition for the cutoff firm $\tilde{d}_{x,it} = 0$ imply that average export profits must satisfy

$$\tilde{d}_{x,it} = (\theta-1)\left(\frac{\nu^{\theta-1}}{k}\right)\frac{f_{xt}\left(w_{it}^s\right)^{\beta_i}\left(w_{it}^l\right)^{1-\beta_i}}{Z_t}. \tag{25}$$

2.4 Market Clearing Conditions, Aggregate Accounting and Trade

Equilibrium conditions require that net supply of home and foreign bonds muse equal zero worldwide, so that $B_{t+1} + B^*_{t+1} = 0$ and $B_{*,t+1} + B^*_{*,t+1} = 0$. Shares in firms cannot be traded internationally which implies that $x_{it+1} = x_{it} = 1$. Imposing these equilibrium conditions and aggregating the home and foreign household budget constraints, implies the following expression for the accumulation of net foreign assets,

$$B_{t+1} + Q_t B_{*,t+1} + C_t = (1+r_t)B_t + (1+r_t^*)Q_t B_{*t} + \frac{1}{2}\left(\widetilde{d}_{1t}N_{1t}^d + -Q_t\widetilde{d}_{1t}^*N_{1t}^{*d}\right) + \frac{1}{2}\left(\widetilde{d}_{2t}N_{2t}^d - Q_t\widetilde{d}_{2t}^*N_{2t}^{*d}\right)$$

$$+\frac{1}{2}(w_{1t}^s S_{1t} - Q_t w_{1t}^{*s} S_{1t}^*) + \frac{1}{2}(w_{2t}^s S_{2t} - Q_t w_{2t}^{*s} S_{2t}^*) + \frac{1}{2}(w_{1t}^l L_{1t} - Q_t w_{1t}^{*l} L_{1t}^*) + \frac{1}{2}(w_{2t}^l L_{2t} - Q_t w_{2t}^{*l} L_{2t}^*) \tag{26}$$

$$-\frac{1}{2}\left(\widetilde{v}_{1t}N_{1t}^e + -Q_t\widetilde{v}_{1t}^*N_{1t}^{*e}\right) - \frac{1}{2}\left(\widetilde{v}_{2t}N_{2t}^e - Q_t\widetilde{v}_{2t}^*N_{2t}^{*e}\right) - \frac{1}{2}(C_t - Q_t C_t^*). \tag{27}$$

Note that the current account of the Home country is defined as

$$CA_t \equiv B_{t+1} - B_t + Q_t(B_{*,t+1} - B_{*,t})$$

Finally, total revenue in each sector must equal total expenditure on labor:

$$N_{d,it}\left(\frac{\tilde{\rho}_{d,it}}{\tilde{\psi}_{it}}\right)^{1-\theta}\alpha_i C_t + Q_t N_{x,it}\left(\frac{\tilde{\rho}_{x,it}}{\tilde{\psi}_{it}}\right)^{1-\theta}\alpha_i C_t^* + \tilde{v}_{it}N_{e,it} - \tilde{d}_{it}N_{d,it} = w_i^s S_{it} + w_{it}^l L_{it} \tag{28}$$

$$N^*_{d,it}\left(\frac{\tilde{\rho}^*_{d,it}}{\tilde{\psi}^*_{it}}\right)^{1-\theta}\alpha_i C^*_t+\frac{N_{x,it}}{Q_t}\left(\frac{\tilde{\rho}^*_{x,it}}{\tilde{\psi}^*_{it}}\right)^{1-\theta}\alpha_i C_t+\tilde{v}^*_{it}N^*_{e,it}-\tilde{d}^*_{it}N^*_{d,it}=w^{s*}_{it}S^*_{it}+w^{s*}_{it}S^*_{it}, \tag{29}$$

at H and F respectively.

3 Calibration

We interpret periods as quarters and set the household discount rate γ at 0.99 and the inverse of the intertemporal elasticity of substitution at 1 in accordance with log utility in consumption—both standard choices for quarterly business cycle models. We set the elasticity of substitution $\theta = 3.8$ based on the estimates using plant-level U.S. manufacturing data in Bernard et al. (2003). We set the Pareto shape parameter $k = 3.4$ for productivity draws, which ensures that the variance of log productivity is finite: $k > \theta - 1$.

Changing the sunk cost of entry, f_{ei} re-scales the mass of firms in an industry, and, without loss of generality we set $f^i_e = f_e = 1$. We set the minimum value of productivity draws $z_{\min} = 1$. We set the steady-state fixed export cost f_x to equal 23.5 percent of the per-period, amortized flow value of the sunk entry costs, $[1-\gamma(1-\delta)]/[\gamma(1-\delta)]f_e$. This leads to a steady state share of exporting firms of 21 percent. These choices of parameter values are based on GM.

Exit in the model is completely exogenous. We set the size of the exogenous firm exit probability $\delta = 0.025$ to match the U. S. empirical level of 10 percent job destruction per year

To focus on comparative advantage, we assume that all industry parameters except factor intensity (β_i) are the same across industries and countries. We consider symmetric differences in industry factor intensities ($\beta_1 = 0.6, \beta_2 = 0.4$). However, differently from BRS we set country endowments to be asymmetric for the case without training. The reason behind this parametrization choice is that we are interested in analyzing wage inequality and in order to give rise to a long-run skill premium in each country, we need to assume that both H and F are endowed with relatively more unskilled than skilled labor. However, a key contribution of our analysis is the presence of comparative advantage. Therefore, we assume that the H country is endowed with relatively more skilled workers than the F country, so that $S = 900$ and $L = 1100$ for H and $S^* = 500$ and $L^* = 1500$ for F. Note that, in the case where training is allowed the country supply-specific supplies of skilled and unskilled labor become endogenous and only the total labor endowment is fixed where we have $ENDOW = S_t + L_t = 2000$ and $ENDOW^* = S^*_t + L^*_t = 2000$. In order to avoid asymmetry due to demand effects, we set the share of each good in consumer expenditure to equal a half ($\alpha_1 = \alpha_2 = 0.5$).

Our focus of analysis on cross-sectoral mobility are developed countries. Artuç et al. (2010) find that average cross-industry mobility costs are large and very dispersed. Without loss of generality, we set the scale parameter for cross industry mobility costs to be equal across countries such that $\varepsilon^s_{\min} = \varepsilon^{*s}_{\min}$ and $\varepsilon^l_{\min} = \varepsilon^{*l}_{\min}$ but we consider three different scenarios where we increase the degree of cross-sectoral mobility. The first scenario is with the largest mobility costs where $\varepsilon^s_{\min} = \varepsilon^l_{\min} = 5$. In the second scenario, we assume that unskilled workers are more mobile than skilled workers $\varepsilon^s_{\min} = 5$ and $\varepsilon^l_{\min} = 1$. This is the most realistic case since Artuç et al. (2010) find that on average in the US workers with a college degree face higher mobility costs than workers without one. Finally, we analyze a third case where the cross-industry mobility costs are low for both skilled and unskilled workers such that $\varepsilon^s_{\min} = \varepsilon^l_{\min} = 1$. The scale parameter for sectoral mobility cost distributions is identical across countries and industries and is set to $\kappa = 2$, which implies a highly dispersed distribution.

Finally, we consider a fourth scenario where unskilled workers can pay an idiosyncratic training cost and become skilled workers. We assume that they draw their training cost from a Pareto distribution with a scale parameter $\varepsilon^i_{\min}$ for the H country and $\varepsilon^{*i}_{\min}$ for the F country. These scale parameters are proportional to the long-run skill premia in each country in the case where unskilled workers do not have the option to train. Therefore, $\varepsilon^i_{\min} = \frac{V^s_i}{V^l_i} = 1.30987$ and $\varepsilon^{*i}_{\min} = \frac{V^{*s}_i}{V^{*l}_i} = 2.79926$, where $\varepsilon^i_{\min} < \varepsilon^{*i}_{\min}$ by assumption since the H country is endowed with relatively more skilled labor than the F country. The shape parameter of the training costs is set to $\kappa^{train} = 2$. A full list of the parameters and their values is provided in Table 1.

4 Symmetric trade liberalization scenarios

In this section we describe the dynamic adjustment after a symmetric trade liberalization shock, i.e., the Iceberg trade costs are assumed to decrease for all sectors and countries from 1.3 to 1.2. Naturally, the length of adjustment depends on the ability of workers to move between sectors. In the long run workers are fully mobile so that they have to earn the same wage in both sectors. In the short run, however, adjustment costs can lead to wage differentials between sectors. This effect can only be captured by using a dynamic model that can distinguish between the short run and the long run.

To highlight the role of worker mobility, we will distinguish four different scenarios: i) the first scenario features the slowest adjustment. Here we take the extreme assumption that active workers cannot switch their sectors due to sector-specific skills. In other words, the minimum of the cost function for moving between sectors is assumed to be so high that nobody chooses to switch sector. However, we still have the retirement of older workers who get replaced by newly entering workers. These workers are more flexible because they have not invested in skills yet. ii) In the second scenario we assume that unskilled workers can retrain to switch the sector. We restrict this ability to unskilled workers, because unskilled workers are less likely to have invested in sector - specific skills. iii) In the third scenario we assume that skilled workers can also change the sector. Although the speed of adjustment is different, all of these scenarios will imply the convergence to the same steady state as a static model with perfectly mobile labor between sectors but with perfect immobility between skill classes. iv) In the fourth scenario we relax this assumption by assuming that unskilled workers can invest in training to become skilled workers. In our view scenarios ii) and iv) are the most realistic but the comparison with the other scenarios is useful to understand the role of mobility assumptions. In the following we concentrate on the analysis of the effect of trade liberalization on the country with higher endowment of skilled labor.

4.1 Scenario 1: No active switching

Figure 2 shows the dynamic adjustment of selected variables for the first scenario, where only newly entering workers can choose the sector. After the decrease in trade costs, demand in the import-competing sector goes down, relative to demand in the exporting sector. This increases the wages of workers in the exporting sector relative to the import-competing sector, for both skilled and unskilled workers. This induces an increase in the number of workers in the exporting sector at the cost of employment in the import-competing sector, but the adjustment is very slow, because all active workers are stuck in the sector where they acquired their skills. Only newly entering workers are allowed to choose their sector of occupation.

The reduction of trade costs makes exports cheaper and thus increases the profits that can be gained from exporting. This has two separate implications. On the one hand existing exporters increase their sales on the foreign market (intensive margin of trade). On the other hand, the share of exporting firms increases. because more firms are able to finance the fixed exporting cost (extensive margin of trade). The share of exporting firms jumps up immediately, because the decision to export is not associated with any sunk investment costs, so that active firms can react immediately to the drop in transport costs. In contrast, the total number of active firms takes a long time to adjust. Remember that in our model firms that only serve the domestic market do not have to pay fixed production costs. Therefore, a firm that has paid the sunk entry costs always makes positive profits. Consequently, firms exit the market only when they are hit by an exogenous death shock. This explains why the number of firms in the import-competing sector decreases only slowly.[9]

Surprisingly, however, the number of firms in the exporting sector also decreases in the short, although it increases in the long run. The reason is that the slow movement of workers makes production very inefficient. There are too many workers in the import-competing sector and too few workers in the exporting sector. Consequently wages in the exporting sector are very high, depressing market entry in the early phases of the transition. In general the transition period appears very long. Note, however, that this scenario yields the longest transition since the assumed mobility of workers is the lowest. Recent results from structural estimations (see, e.g., Dix-Carneiro (2010) and Coşar (2013)) also point towards slow adjustment after trade liberalization shocks.

The focus of our analysis is on wage inequality. Due to restricted mobility in the short run, our model allows for wage inequality along two dimensions: i) a wage differential between the two sectors (see $IndexS$ and $IndexL$); ii) a wage differential between skilled and unskilled workers (the skill premium, see $Skill$). The first of the two wage differentials is due to mobility restrictions in the short run and will go away in the long run. The second exists even in the long run (otherwise workers would not have an incentive to invest in skills).

The drop in transport costs increases demand and, thus, raises the price in the exporting sector relative to the import-competing sector. This has an immediate impact on wages, which rise in line with the prices in the exporting sector relative to the import-competing sector. This is, of course, not only true for skilled workers but also for unskilled workers - both earn now higher wages in the exporting sector than in the import-competing sector, while they were earning the same wage in both sectors in the steady state. This implies that newly entering workers prefer the exporting sector, raising the supply of both skilled and unskilled workers in the exporting sector. This diminishes the sectoral wage differential over time, but due to the low worker mobility, the process takes a very long time. In the new steady state workers again have to earn the same wage in both sectors, so that the distribution of workers across sectors can be stationary. Thus, trade liberalization brings along a temporary increase in wage inequality between the two sectors for both skill classes.

[9] Setting the fixed cost of domestic production equal to zero implies that domestic firms cannot be driven out of the market through the competition from foreign firms. However, it is still true that the competition from foreign firms reduces the demand and thereby the market share of domestic firms.

While the wage differential across sectors peaks on impact and slowly recedes over time, the development of the skill premium is the exact opposite. The wage differential between skilled and unskilled workers within one sector is solely determined by the relative productivity of both kinds of labor, which in turn is determined by their relative input shares. In other words, the skill premium in both sectors can only change when the relative input of skilled and unskilled labor changes. In the short run, thus, the skill premium does not change much because the supply of workers is slow to adjust. In the medium and longer run, the increased demand for the skill-intensive exporting good increases the demand for skilled labor and, thus, increases the skill premium. In the process of moving workers from the import competing sector to the exporting sector, the ratio of unskilled to skilled workers rises in both sectors,[10] and with it the relative marginal product of skilled workers.

In the short run wage inequality increases mainly through the first effect, the increase in sectoral wage dispersion for each skill-class. With the movement of workers from the import-competing sector to the exporting sector, the wage inequality from this source decreases, but the skill premium increases. Thus, in the transition we have two counteracting effects on overall wage inequality. It turns out that the second effect dominates the first effect, so that overall wage inequality increases over time.

Another interesting feature can be found in the disaggregated data of wages. The wage of unskilled workers is overshooting quite substantially. This implies that for the most part of the transition real wages of unskilled workers are actually falling. Compared to the old steady state an unskilled worker always earns a higher wage after trade liberalization. But after the initial adjustment (the big jump in the wage on impact), the workers suffer a prolonged period of real wage losses. Assuming that in reality workers and labor unions have a shorter time horizon when evaluating their gains from trade, it is understandable why unskilled workers tend to perceive themselves as losers of globalization. As time progresses, the initial jump in the real wage is 'forgotten' and the prolonged period of wage declines leads unskilled workers to suffer a loss of wage income due to trade liberalization.

It might seem surprising that there are not any 'real' losers from trade liberalization, i.e., workers who suffer lower wages after trade liberalization than before.[11] After all, as described above, demand for labor in the import-competing sector falls. Why does that not lead to wage drops, at least in the short run? The reason is that there are two counteracting effects. The effect just described is a substitution effect, shifting labor demand from the import-competing sector to the exporting sector. This effect indeed tends to decrease wages in the import-competing sector. Note, however, that there is also an income effect. Trade liberalization reduces the costs of trade and makes production more efficient. This effect tends to increase the real wage of all workers.

A note of caution is expedient here. Being a 'real' model, our model can only be used to make inference about real wages. Thus, our model mixes the effects of trade liberalization on nominal wages and on nominal prices. The real wage can rise because the nominal wage rises or because the nominal price drops. The real wage can rise even when the nominal wage drops, if the ensuing drop in nominal prices is even larger. In terms of the income and substitution effects discussed in the paragraph above, the substitution effect tends to lower nominal wages in the import-competing sector, while the income effect tends to decrease the overall price level. In the current scenario the income effect is dominant and so real wages go up in each sector, but we will also see scenarios where this is not

[10] This is not necessarily so, but depends on the relative movement of both types of workers. Depending on the calibration and the scenario the skill premium might decrease in the import-competing sector.

[11] This will change in some of the following scenarios

necessarily the case. Let us stress that real wages are the appropriate measure to look at. Even if some workers would suffer nominal wage cuts, if their real wages go up, their welfare goes up, because they can afford to buy more products.

Note that our model allows for unbalanced trade in the short run. In this scenario with symmetric cuts in trade costs and low mobility of workers, this, however, does not play a role. Trade liberalization does not lead to unbalanced trade, not even in the short run.

4.2 Scenario 2: Active switching of unskilled workers

So far we have assumed that only workers newly entering the labor market can choose the sector where they want to work. We will now relax this assumption for the unskilled workers by assuming that they can switch the sector after paying a sector-migration cost, which is drawn each period from a random distribution. For the moment, we restrict this possibility to unskilled workers, because their sector mobility is less likely to be restricted by sector-specific investments in human capital.[12]

Figure 3 shows the results. Naturally, the assumption of increased inter-sectoral mobility for unskilled workers leads to a faster reduction in the sectoral wage differential for unskilled workers following the initial jump on impact. In contrast, the sectoral wage differential for skilled workers appears even larger now. The reason is that the faster migration of unskilled workers relative to skilled workers implies a stronger shift in their respective shares in the production process. This benefits the skilled workers in the exporting sector because the higher number of unskilled workers there increases their productivity. But it hurts the skilled workers in the import-competing sector because the low number of unskilled workers there reduces their productivity. As a result, the sectoral wage differential for skilled workers is even increasing in the short run and recedes only very slowly.

The asymmetric speed of adjustment has also important implications for the skill premium, which, in the short run, now goes in opposite directions in the two sectors. In the exporting sector the skill premium still goes up, and even more so and more quickly than in our baseline scenario, due to the described movement of unskilled workers, which benefits the skilled workers in the exporting sector. In contrast, the skill premium in the import-competing sector now goes down, although in the long run the skill premium in both sectors must be the same.

The faster sector migration of unskilled workers has also implications for firm dynamics. Due to the smaller increase in the unskilled wage in the exporting sector it pays off more to invest into new firms. The total number of firms in the exporting sector still goes down initially but recovers very quickly. After 20 periods the number of active firms is higher then in the old steady state, while this took almost 100 periods in scenario 1.

4.3 Scenario 3: Active switching of skilled and unskilled workers

This scenario allows both unskilled and skilled workers to pay a randomly chosen migration cost to switch the sector. Results are illustrated in figure 4. The results resemble those of scenario 1, but of course the adjustment is much quicker. The sectoral wage differential is receding much faster and the skill premium is rising much faster.

[12] For empirical evidence see, e.g., Greenaway et al. (2000) or Elliott and Lindley (2006b), who find that unskilled workers are much more mobile across sectors than skilled workers. Elliott and Lindley (2006a) confirm this result and argue that this is due to the significant investments of high skilled workers in their specific human capital.

Our measure of overall wage inequality is lower than in scenario 1 in the first periods but then rises much faster.

Due to the faster movement of workers, the adjustment of firms also takes place much faster. The number of firms in the import-competing sector goes down much faster. The number of firms in the exporting sector drops only very briefly and quickly gets on a rising path.

4.4 Scenario 4: Training

In the model of BRS and in our scenarios 1-3 so far it is assumed that the endowments of skilled and unskilled workers are fixed. Although workers are mobile between the two sectors, it is not possible for unskilled workers to become skilled. This is certainly not realistic, so we want to relax this assumption in our fourth scenario.

We model the training decision in a similar way as the sector-migration decision. Each unskilled worker can invest in training to become a skilled worker. The cost of training is drawn each period from a random distribution. In contrast to the cost of sectoral migration, the training cost has a minimum larger than one which restricts access to become high skilled and in this way assures that the skilled wage is higher than the unskilled wage. The assumptions concerning sectoral migration we are using in this scenario are equivalent to scenario 2: unskilled workers can switch sectors, while skilled workers cannot, because of sector-specific skills.

Figure 5 demonstrates that this has dramatic consequences for the transitional dynamics. Naturally, the increased demand in the exporting sector induces some unskilled workers in the exporting sector to invest in their skills, speeding up the increase in the number of skilled workers in the exporting sector. The possibility to train and become skilled in the exporting sector also enhances incentives for unskilled workers in the import-competing sector to switch to the exporting sector. This reduces the productivity of skilled workers in the import-competing sector by even more than in the second scenario, with the consequence that their wage drops sharply after the initial upward jump.

This has the consequence that the skill premium decreases strongly and very persistently in the import-competing sector, while it sharply but only briefly increases in the exporting sector. This implies that some of the skilled workers in the import-competing sector would not have invested in skills before the trade liberalization shock, had they anticipated the development of wages. Note, however, that due to the way we have modelled the training decision, in the long run the skill premium must go back the old steady state level in both sectors. So in contrast to the earlier scenarios, in the long run the higher demand for skills due to trade liberalization materializes in a higher number of skilled workers instead of a higher skill premium. Ignoring training possibilities leads to exaggerated estimates of the skill premium effect of trade liberalization.

Sectoral wage inequality among skilled workers moves as expected, the wage in the exporting sector increases strongly and persistently relative to the wage in the import-competing sector. The development of sectoral wage inequality among unskilled workers is more puzzling. While the wage in the exporting sector jumps relative to the wage in the import-competing sector, this development is soon reversed so that the wage gets higher in the import-competing sector than in the exporting sector. This puzzling result is explained by the option value of unskilled workers. Unskilled workers in the exporting sector have the option to invest in training to become high-skilled workers in the exporting sector. This option is worth a lot in the aftermath of trade liberalization, which makes the exporting sector very attractive for unskilled workers, who are willing to accept lower wages relative to the import-competing sector to have this option.

The consequences for overall wage inequality are also in stark contrast with the results we had so far. In the short run overall wage inequality increases, but after some time the opposing trends (skill premium rises in one sector and falls in the other; sectoral wage differentials rise for skilled workers but fall for unskilled workers) begin to dominate, so that total wage inequality actually drops in the medium run. By construction, in the long run overall wage inequality does not change (in the long run, the skill premium is fixed and sectoral wage dispersions has to vanish).

Overall, this scenario delivers much more polarizing labor market developments than the previous scenarios, with the skilled workers in the import-competing sector being the biggest losers, due to their investments in the 'wrong' sector.

5 Asymmetric trade liberalization scenarios

It is one of the advantages of having a model with multiple sectors that one can analyze asymmetric trade liberalization scenarios, i.e., scenarios in which only some of the sectors experience a decrease in trade barriers. These kind of scenarios might be appealing for policy makers for at least two reasons. i) It might be easier to negotiate partial trade liberalizations with other countries. ii) Partial trade liberalization might meet lower opposition at home based on the hope that the effects on wage inequality are less severe because vulnerable sectors are spared.

We analyze two different scenarios which we consider realistic. i) It appears plausible that the rich country is more powerful and thus able to push through its preferred agenda, liberalizing trade in the sector where it has its comparative advantage and leaving the other sector untouched. This is our fifth scenario. ii) If the poor country is more powerful it might be able to push for a liberalization strategy that lowers the trade costs for exports of both comparative-advantage industries. This strategy is our sixth scenario and involves the reduction of the costs of exporting the skill-intensive good from the rich country to the poor country and of the costs of exporting the low-skill-intensive good from the poor to the rich country.

In both scenarios, we restrict our analysis to the mobility assumption that we, in line with empirical results from other papers, consider the most realistic, namely assuming that low-skilled workers are more mobile across sectors. We will consider both the case with exogenous shares of skilled workers (analogous to scenario 2 of the previous section), to be comparable to BRS, and the case with sector specific training (analogous to scenario 4).

5.1 Scenario 5: Liberalization of the skill-intensive sector

In this scenario the rich country manages to push through the liberalization of trade in the sector where it has its comparative advantage, i.e., τ_1 and τ_1^* is reduced from 1.3 to 1.2. With this strategy the rich country might hope to gain from increased exports in its comparative advantage sector, while at the same time avoiding stronger competition in the import-competing sector. We show that this reasoning is flawed.

The results are illustrated in figures 6 and 7. Let us first concentrate on the case without training, figure 6. It is immediately evident that low-skilled workers are hard hit in this scenario. Although wages increase a bit on impact, they soon drop and stay below the old steady state value. The development of exporting firms is also interesting. While the number of exporting firms in the liberalized sector goes up, the number of exporting firms in the not liberalized sector goes down.

Leaving out the import-competing sector from trade liberalization does not seem to protect that sector. It rather seems that this sector suffers from a loss of competitiveness because it cannot gain from the reduction in trade costs. This loss in competitiveness hurts mostly the unskilled workers who are relatively more important in the import-competing sector and thus their wages go down.

The wages of skilled workers in the exporting sector increase smoothly. The wages of skilled workers in the import-competing sector fall below the old steady state value for some time but must rise eventually to catch up with the skilled wage in the exporting sector (remember that in the long run wages have to equalized across sectors). Note, however, that the wage gains for the skilled workers are much smaller than in the scenario were both sectors were liberalized. Thus, it seems that leaving the import-competing sector untouched really takes away a large part of the gains from trade liberalization.

Allowing for endogenous training, as demonstrated in figure 7, has qualitatively similar implications as in our baseline scenario. Trade liberalization increases the demand for skilled workers. This induces more unskilled workers to pay the training cost to become skilled workers. Relative to the scenario without training, the supply of unskilled workers is thus lower, while the supply of skilled workers is higher. Consequently, the wages of unskilled workers are pushed up (relative to the scenario without training), while the wages of skilled workers are pushed down. This implies that skilled workers in the import-competing sector have to endure a prolonged period of wages below the pre-liberalization steady state. In contrast, the push-up in the unskilled wage is large enough so that the wage losses from the previous scenario are turned into wage gains. But again, wage increases are much higher when both sectors are liberalized.

It can be concluded that it is not a good idea to keep the import-competing sector protected from trade liberalization. The gains from trade are considerably reduced while the effects on wage inequality are minor at best. The reduction in trade in the import-competing sector that comes with a liberalization of the exporting sector might even considerably hurt unskilled workers and skilled workers who have invested their skills in the 'wrong' sector.

5.2 Scenario 6: Liberalization of comparative-advantage sectors

In this scenario we assume that both countries agree on a one-sided reduction of trade barriers for exports in their respective comparative advantage sectors, i.e., the poor country allows the rich country to export the products of the skill-intensive sector at lower costs (τ_1 goes down from 1.3 to 1.2), while the rich country allows the poor country to export the products of the low-skill-intensive sector at lower cost (τ_2^* goes down from 1.3 to 1.2).

The results for exogenous endowments of skilled and unskilled workers are illustrated in figure 8. This scenario yields the most dramatic effects so far. While the wage increases of skilled workers in the exporting sector are higher than in all previous scenarios, the wages of skilled workers in the import competing sector and the wages of unskilled workers in both sectors go down (the wage of unskilled workers in the exporting sector jumps up on impact but becomes negative very quickly). The drop in wages of high-skilled workers in the import-competing sector is very large and very persistent. The drop in unskilled wages is even permanent. Note that the average wage of skilled workers still exhibits a strong increase, so looking only at the aggregates ignores the huge differentials revealed at a more disaggregate level. In line with these developments all our measures of wage inequality increase more sharply than in our baseline scenario.

In this scenario the import-competing sector is hit double. The sector cannot gain from lower trade barriers but at the same time it is still exposed to higher competition from abroad.

Figure 9 shows the results under the assumption that unskilled workers can invest in sector-specific human capital. Again partial trade liberalization hurts the skilled workers in the import-competing sector severely and persistently (even more severely than in the scenario without training). The wage of low-skilled workers in the import-competing sector drops only temporarily and then increases even above the unskilled wage in the exporting sector. The reason is that the option to train in the exporting sector is very attractive and pushes up the number of unskilled workers in the exporting sector, so that unskilled workers in the import-competing sector become relatively scarce.

Again we conclude that the partial liberalization of trade in specific sectors is not a good idea. This strategy cannot protect vulnerable workers or sectors. Rather to the contrary, this kind of policy has the potential to hurt vulnerable workers even more than a full liberalization of trade which affects all sectors equally.

6 Robustness

In this section we perform robustness checks and try to investigate more closely the importance of various channels for dynamic adjustment after trade liberalization. First we shut off firm dynamics. Then we analyze the role of selection into export markets and of firm heterogeneity. Finally, a scenario with higher trade costs is simulated. We restrict ourselves to symmetric liberalization scenarios 2 (with active switching of unskilled workers only) and 4 (with training) because we consider them the most realistic. Results for the other scenarios are available upon request.

6.1 Firm dynamics

In Ghironi and Melitz (2005) all the dynamics arises from the slow adjustment of firms. As noted in Burstein and Melitz (2012), the model would not yield any transitional dynamics if domestic firms had to pay fixed costs as well, because unproductive firms would drop out of the market immediately. This is different in our model, because mobility and training costs give rise to slow labor market adjustment and reallocation of resources takes time. Thus, even without the slow adjustment of firms, our model yields transitional dynamics.

To demonstrate this we shut off firm dynamics completely, by making the number of domestic firms, the number of newly entering firms and the share of exporting firms exogenous variables during the transition. We assume that these variables immediately jump to the new steady state. The result is demonstrated by the dash-dot black line in figures 10 and 11. Since none of the parameters are changed, the initial and final steady states are the same as in our baseline simulations; only the transition is affected.

For most variables the shutting-off of firm dynamics only implies quantitative changes but no qualitative changes. There is one notable exception, however: wages in the import-competing sector now decrease on impact, whereas they increased in our baseline scenario. For unskilled workers this effect is very short-lived, but the wage of skilled workers in the import-competing sector goes down very persistently.

Due to the instantaneous adjustment of firms, the number of firms in the import-competing sector drops much faster than in our baseline scenarios. This implies that the demand for labor in the import competing sector falls much faster. The low-skilled workers are more mobile, migrate more quickly to the exporting sector and, therefore, the effect is very short-lived. The high-skilled workers are more immobile and, therefore, endure lower wages for a much longer period. Note, however, that ultimately the wage of high-skilled workers in the import-competing sector catches up with the wage of high-skilled workers in the exporting sector.

This has also implications for wage inequality. The figures illustrate that all our measures of wage inequality react much more strongly in the short-run, especially the sectoral wage inequality among high-skilled workers. The skill premium in the import-competing sector even becomes negative for a long period of time.

6.2 Selection into export markets and firm heterogeneity

In this section we analyze the role of selection into export markets and of firm heterogeneity. In contrast to Melitz (2003), in our model the two are indistinguishable because we do not have selection into the domestic market. Shutting off selection into export markets in our model implies that both the average productivity of domestic firms and the average productivity of exporting firms are fixed. This makes firm heterogeneity irrelevant because the model is isomorphic to one in which only one firm exists (with its productivity equal to the average of the productivity distribution of the heterogenous firm model).

To study the role of selection into export markets and firm heterogeneity we set the fixed cost of exporting equal to zero. This implies that all active firms take up exporting, i.e., the share of exporting firms is always equal to one. It further implies that the average productivity of exporting firms is equal to the average productivity of domestic firms (in fact, the two sets are identical). The results are illustrated in figures 12 and 13.

It can be seen that generally wages react by less in the model with selection into export markets. Selection into export markets provides an additional margin of adjustment. In response to the increase in demand that follows from trade liberalization, the share of exporting firms increases, especially in the exporting sector. Since exporting firms are more productive than domestic firms, the increase in the share of exporting firms makes production generally more efficient. This implies that less reallocation between sectors is needed to increase production, both in terms of firms and in terms of workers. In the model where all firms export this adjustment mechanism is missing and therefore reallocation between sectors is necessary.

Due to the lower reallocation that is necessary in the model with selection into export markets, wage differentials need to rise by less. In the end these wage differentials drive the reallocation of workers and if less reallocation is needed, wage differentials tend to be lower. Note that the differences are quite sizeable, not so much in the short run as in the long run. E.g., in scenario 2 without training the decrease in the number of both skilled and unskilled workers in the import-competing sector is about 5% higher in the model without selection into export markets, while the increase in the skill premium is 50% higher.[13] Thus, it can be concluded that selection into export markets and firm heterogeneity are dampening the effects of trade liberalization on wage inequality.

6.3 Trade costs

In our baseline scenario we have used the standard approach of reducing trade costs from 1.3 to 1.2. This is arguably quite low, given that we want to capture the trade between a rich, developed country and a poor, developing country. As demonstrated in Larch and Lechthaler (2011) the magnitude of trade costs matters for the type of trade: for high trade costs inter-industry is dominant, while for low trade costs intra-industry becomes more and more important. Therefore, we check how robust our results are to the type of trade (intra- versus inter-industry) by simulating a scenario with higher trade costs.

Figures 14 and 15 compare scenarios 2 and 4 of our baseline with the same scenarios under a trade shock that decreases τ and τ^* from 2.5 to 2, so that the trade costs decrease from 150% to 100%. In relative terms this is the same reduction as in our baseline simulations where we decreased the trade costs from 30% to 20%.

The results from the higher transport cost simulation are qualitatively the same as in our baseline scenarios: all variables move in the same direction and the shapes of the response functions are also very similar. The magnitude of the reactions is harder to compare because the experiments are so different. Most variables move by less in the scenario with higher trade costs, even though the absolute reduction in trade costs is higher. This is also true for all our measures of wage inequality, suggesting that trade liberalization has a larger impact on wage inequality when trade costs are already low to begin with. One exception is again the number of exporting firms which is much more responsive if trade costs are higher. This is not surprising, given that the number of exporting firms is much lower when trade costs are high.

6.4 Summary

In this section we have explored in more detail the effects of various features of our model on the effects of wage inequality. We have found that the slow adjustment of firms and the selection of firms into export markets lead to more modest increases in wage inequality after trade liberalization. For the most part, changing the importance of the various features of our model has only quantitative, but no qualitative implications. One notable exception is the development of skilled wages in the import-competing sector when firm dynamics are shut off. The immediate adjustment of firms reduces the demand for skilled workers in the import-competing sector to such an extent that their wage goes down for a prolonged period of time.

7 Conclusion

We build a two-country-two-sector dynamic trade model in which worker mobility is costly in order analyze the transitional dynamic effects from permanent trade liberalization. We focus on the dynamic effects of permanent trade liberalization on wage inequality. Our analysis concentrates on the effect of the welfare of workers in highly

[13] The skill premium increases by 2 percentage points within the context of the model.

developed countries from increased trade with developing countries. We find that worker mobility assumptions are critical for wage inequality dynamics. We distinguish two potential sources of inequality, the wage differential between workers who are in the same skill class but in different sectors (comparative advantage versus comparative disadvantage sectors) and the skill premium, i.e., the wage differential between skilled and unskilled workers.

In the short run, wage inequality is dominated by changes in the wage differential across sectors: it rises due to rising relative demand for workers in the exporting sector. In the medium to the long run, wage inequality is dominated by changes in the skill premia. When low skilled workers are not allowed to train, inequality rises due to the rising skill premium in the exporting sector. When skilled workers face costs of switching sectors that are too high due to having invested in sector-specific human capital and when low skilled workers face low mobility and are allowed to train and become skilled, wage inequality can actually fall in the medium run. This is due to the sharply falling skill premium in the import-competing sector. The option of unskilled workers in the import-competing sector to switch to the exporting sector and train to become skilled workers there leads to a sharp and persistent decrease in the productivity of skilled labor in the shrinking sector.

Labor mobility assumptions are also critical for the distribution of income across workers. In a scenario where skilled workers are relatively less mobile than low skilled ones due to having invested in sector-specific human capital, they also become the biggest losers and winners from trade liberalization, with the skilled workers in the import-competing sector being the biggest losers and skilled workers in the exporting sector being the biggest winners. This is a striking result considering the fact that popular concern with the negative effect on wage inequality from trade liberalization is usually associated with the *low-skilled* workers in the import-competing sector.

Our results also suggest that it is not a good idea to keep the import-competing sector protected from trade liberalization. When trade liberalization is restricted to only the high-skill intensive sector the gains from trade are considerably reduced, while the effects on wage inequality are minor at best. If both countries restrict their trade liberalization to their respective comparative advantage sectors, the effects are even more striking. Not only are the gains from increased trade reduced but the most vulnerable workers are hurt even more than under symmetric trade liberalization. The reduction in trade in the import-competing sector that comes with a liberalization of the exporting sector hurts high-skilled workers who have invested their skills in the 'wrong' sector.

While a full analysis of policy implications is left for future research, a few conclusions are suggestive. Labor market policies of increasingly globalized developed countries should concentrate on providing moving subsidies to high skilled workers so that they can switch their sector of employment more easily. In addition, low-skilled workers value the option to train and become high-skilled in the exporting sector very highly. In fact, having this option to train is behind the result that they are not the main losers from trade liberalization. Our findings suggest that a training subsidy can make this option to train even more valuable and mitigate their losses from trade liberalization. The option to train can lead to a fall in the skill premium in the medium run and can reduce overall wage inequality.

Finally, we show that restricting trade liberalization to comparative advantage sectors and protecting comparative disadvantage sectors is not a good policy decision. Our results indicate that not only the gains from trade are considerably reduced but also the most vulnerable workers are hurt even more from increased trade with developing countries.

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8 Tables and Figures

Table 1		
Parameter	Description	Value
α	share of high-skilled intensive good in household consumption	0.5
γ	household discount factor	0.99
θ	elasticity of substitution between varieties	3.8
η	cost of international bond trading parameter	0.0025
δ	probability of firm death	0.025
$z_{\min}$	minimum value of firm productivity	1
k	shape parameter for firm Pareto distribution	3.4
β_1	skilled labor intensity parameter	0.6
β_2	unskilled labor intensity parameter	0.4
S	endowment of skilled labor at Home	900
L	endowment or unskilled labor at Home	1100
S^*	endowment of skilled labor at Foreign	500
L^*	endowment or unskilled labor at Foreign	1500
s	retirement rate of workers	0.02
$\varepsilon^s_{\min}$	minimum cross-sector mobility cost for skilled labor	$5(1, 2, 4, 5, 6), 1(3)$
$\varepsilon^l_{\min}$	minimum cross-sector mobility cost for unskilled labor	$5(1), 1(2, 3, 4, 5, 6)$
κ	Pareto shape parameter for cross-sectoral mobility cost distribution	2
$\varepsilon^i_{\min}$	minimum cost of training at Home	1.30987
$\varepsilon^{*i}_{\min}$	minimum cost of training at Foreign	2.79926
κ^{train}	Pareto shape parameter of training cost distribution	2
f_x	fixed trade cost at Home	$0.235[1-\beta(1-\delta]/[\beta(1-\delta)]f_e$
f^*_x	fixed trade cost at Foreign	$0.235[1-\beta(1-\delta)]/[\beta(1-\delta)]f^*_e$
f_e	fixed entry cost at Home	1
f^*_e	fixed entry cost at Foreign	1
τ	iceberg trade cost at Home	1.3
τ^*	iceberg trade cost at Foreign	1.3
Z	aggregate productivity at Home	1
Z^*	aggregate productivity at Foreign	1

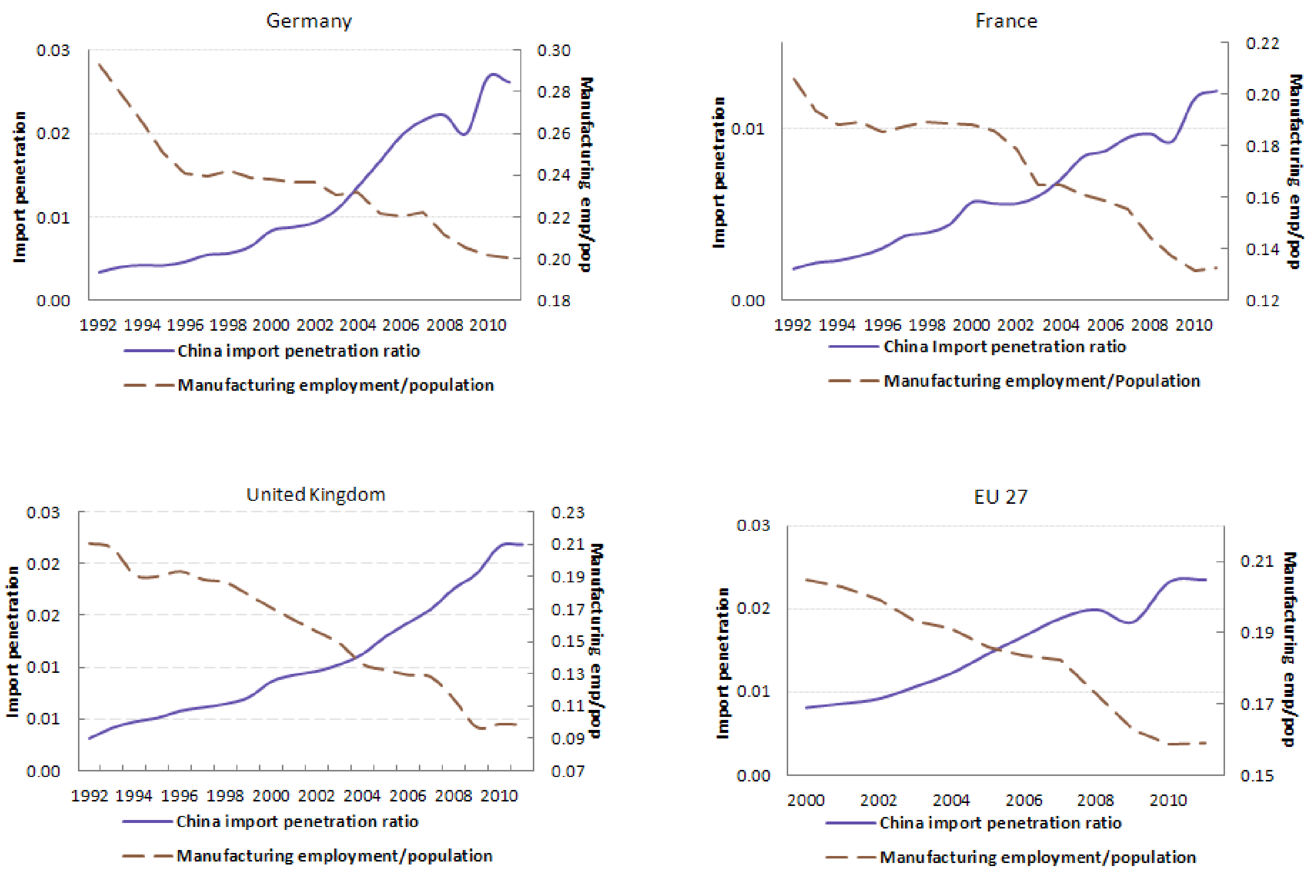

Figure 1: Import Penetration Ratio for Imports from China (left scale), and Share of Working-Age Population Employed in Manufacturing (right scale)

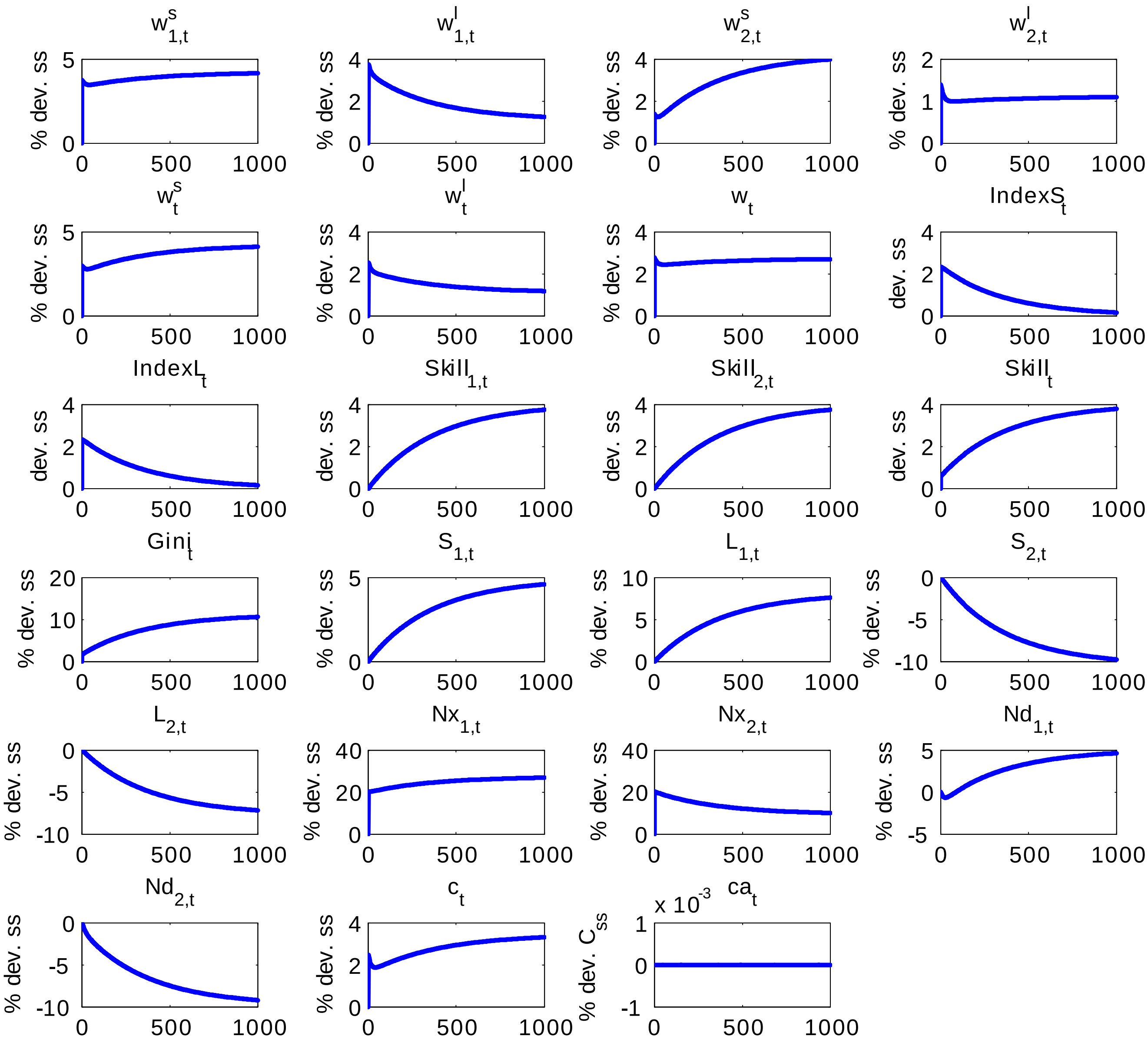

Figure 2: Scenario 1 Symmetric Liberalization With No Active Switching of Workers

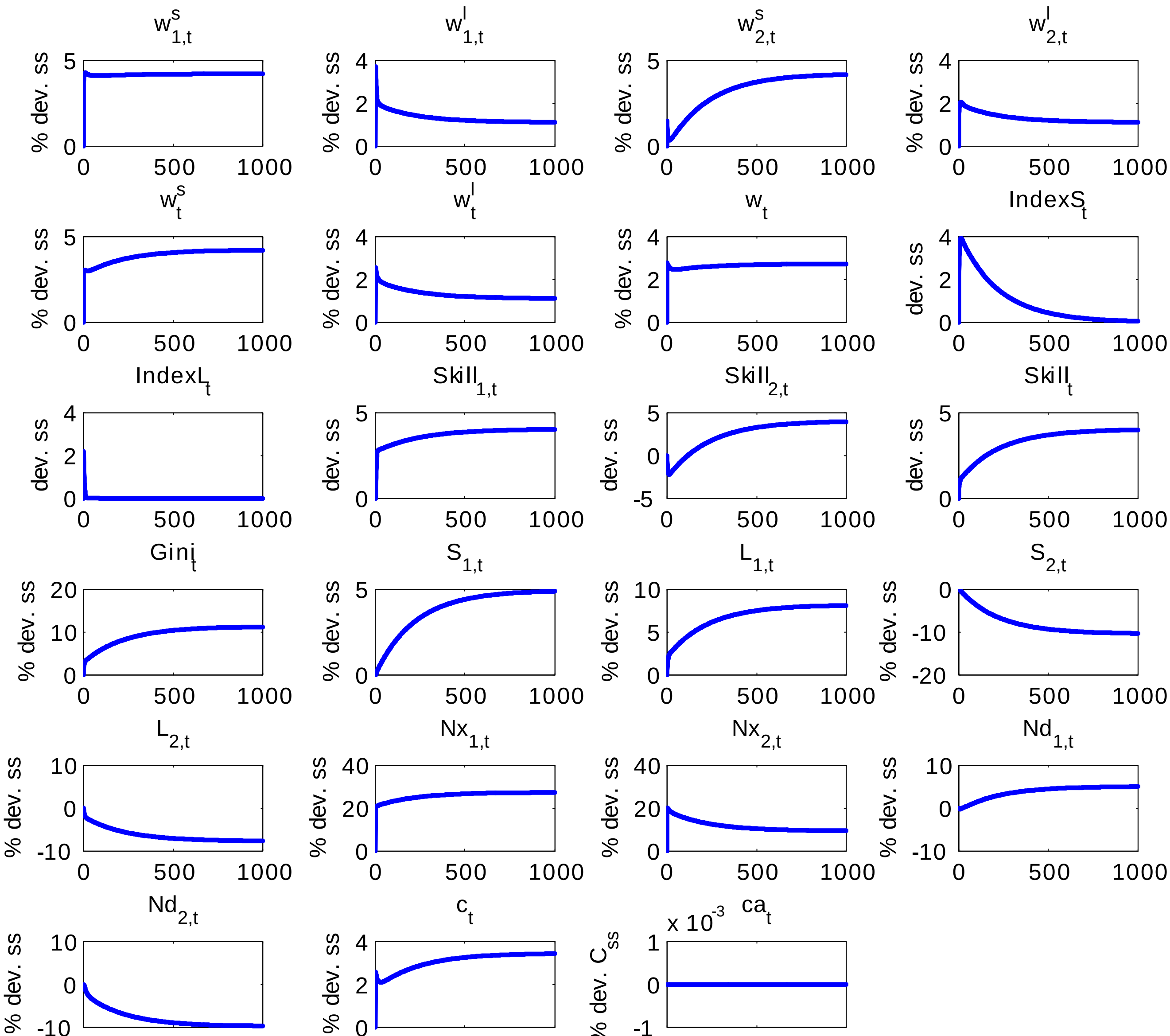

Figure 3: Scenario 2 Symmetric Liberalization With Active Switching of Unskilled Workers Only

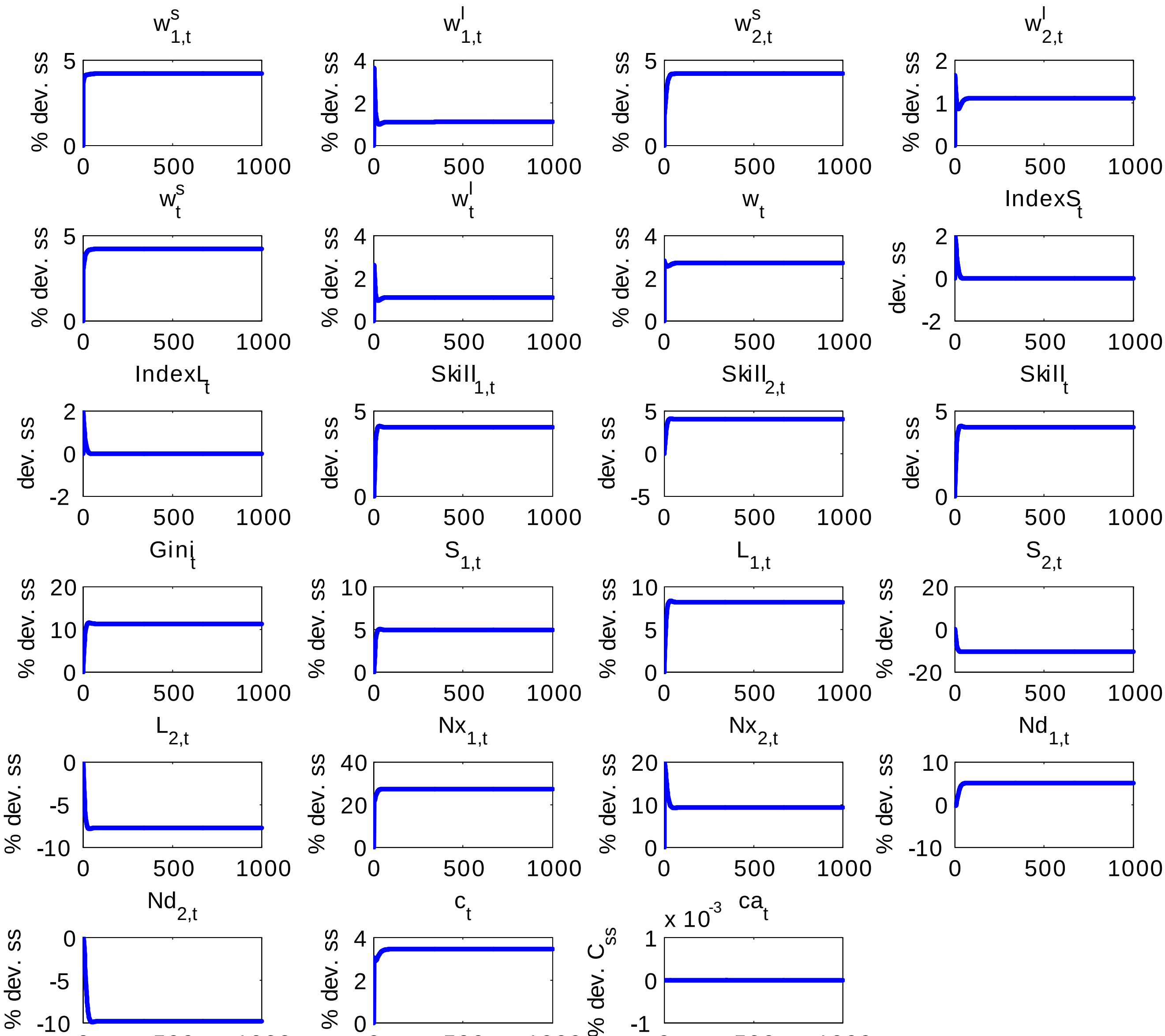

Figure 4: Scenario 3 Symmetric Liberalization With Active Switching of Skilled and Unskilled Workers

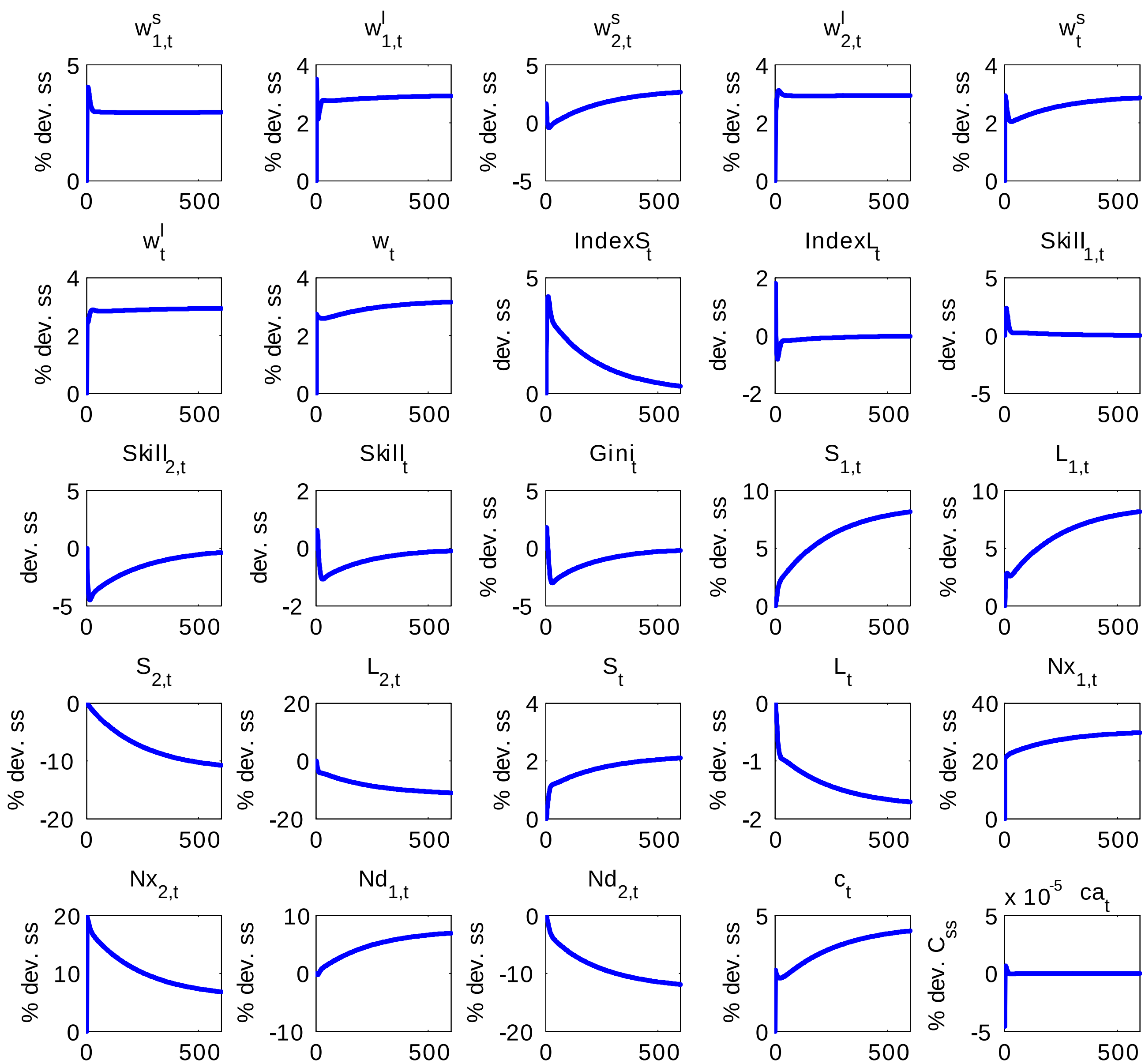

Figure 5: Scenario 4 Symmetric Liberalization With Training

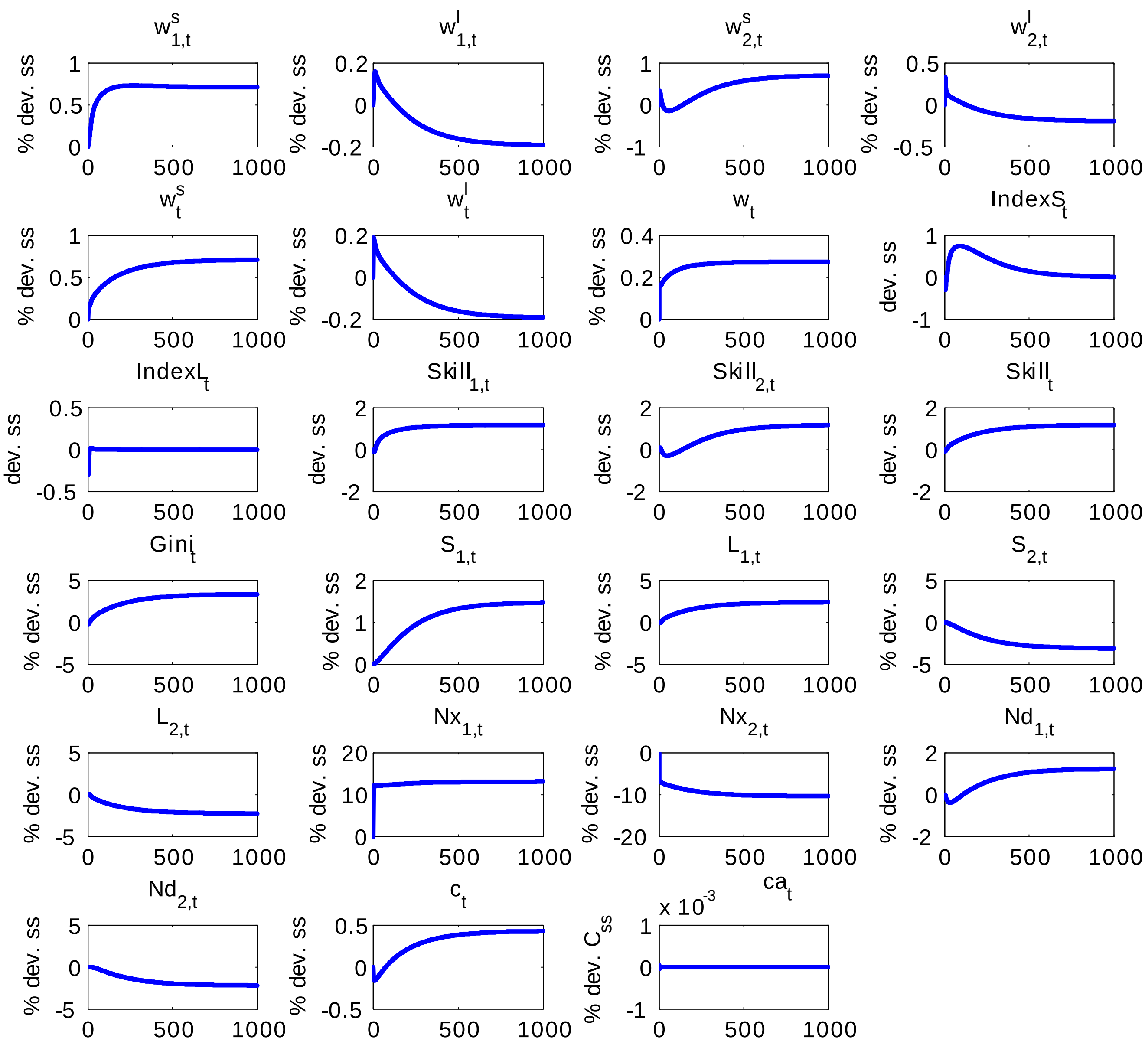

Figure 6: Scenario 5a Liberalization of the Skill-Intensive Sector With Active Switching of Unskilled Workers Only

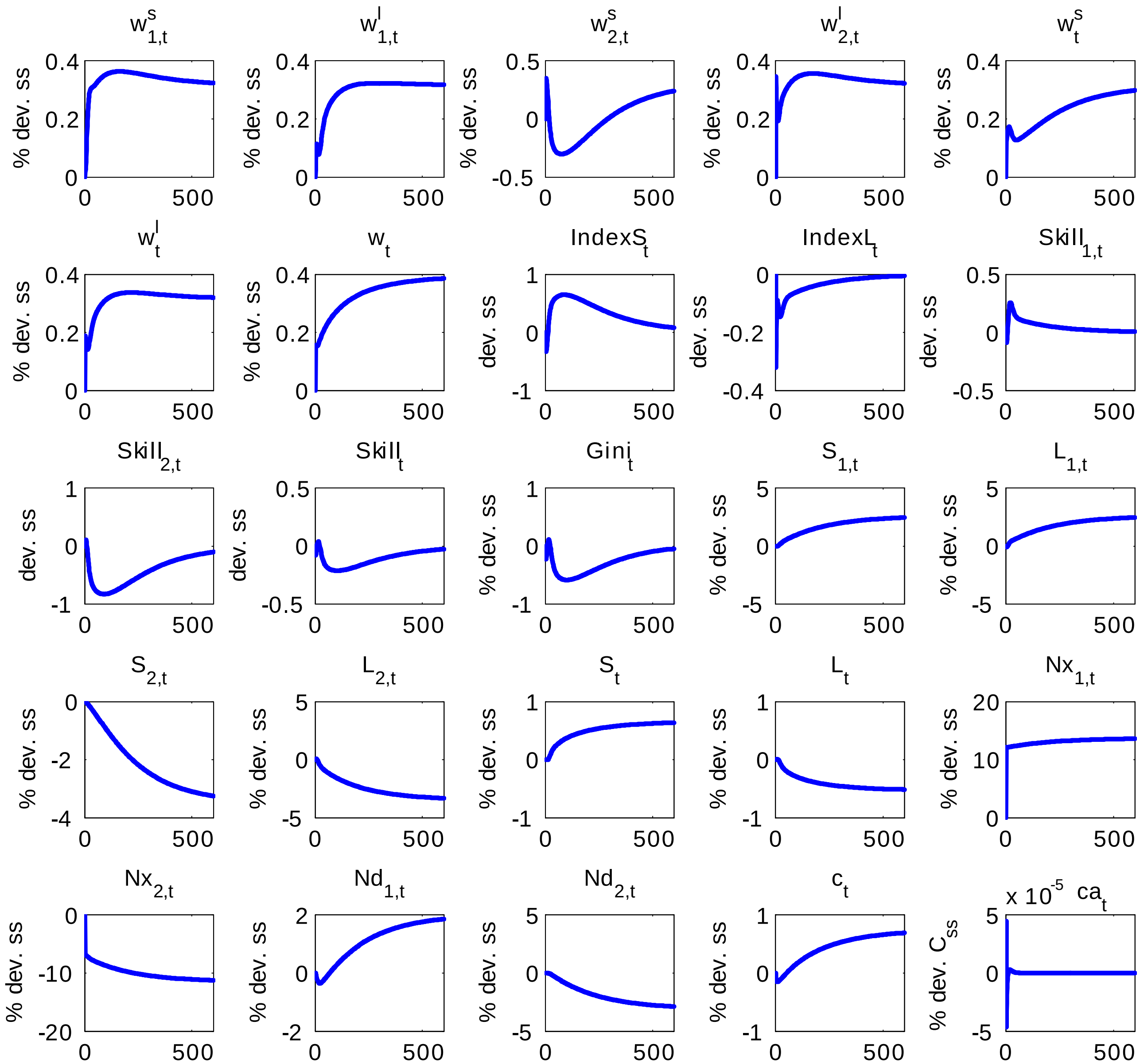

Figure 7: Scenario 5b Liberalization of the Skill-Intensive Sector With Training

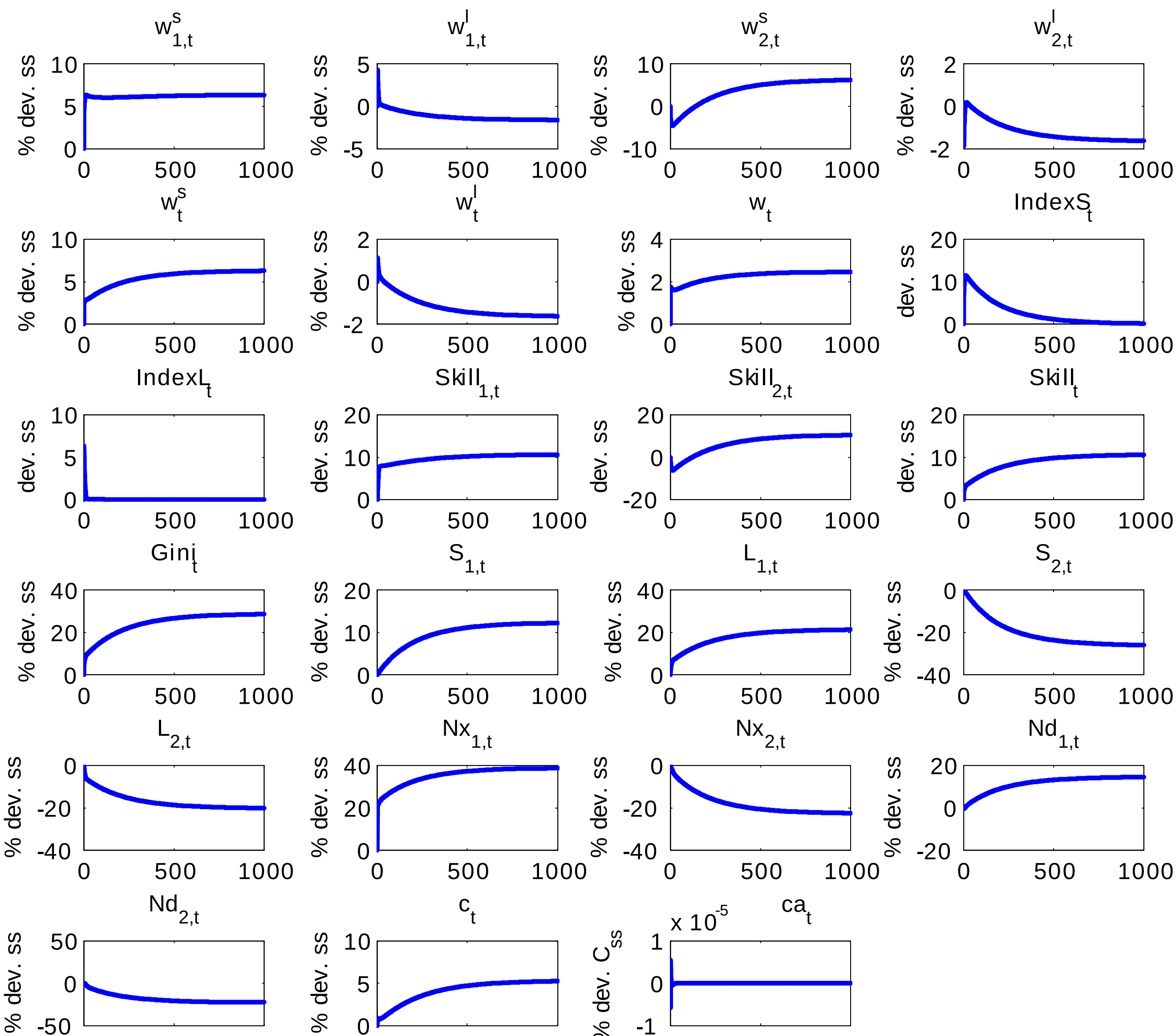

Figure 8: Scenario 6a Liberalization of the Comparative Advantage Sectors With Active Switching of Unskilled Workers Only

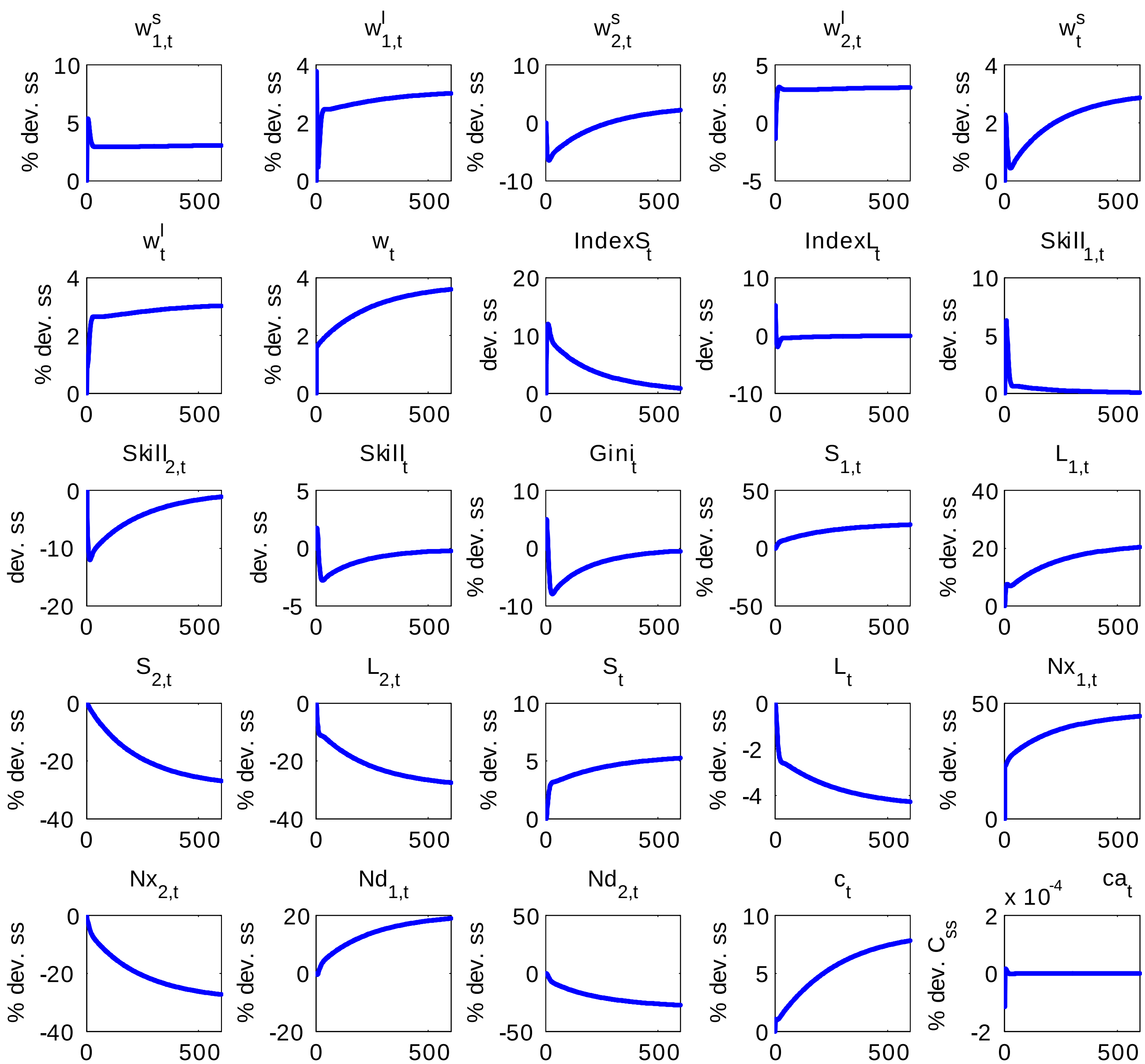

Figure 9: Scenario 6b Liberalization of the Comparative Advantage Sectors With Training

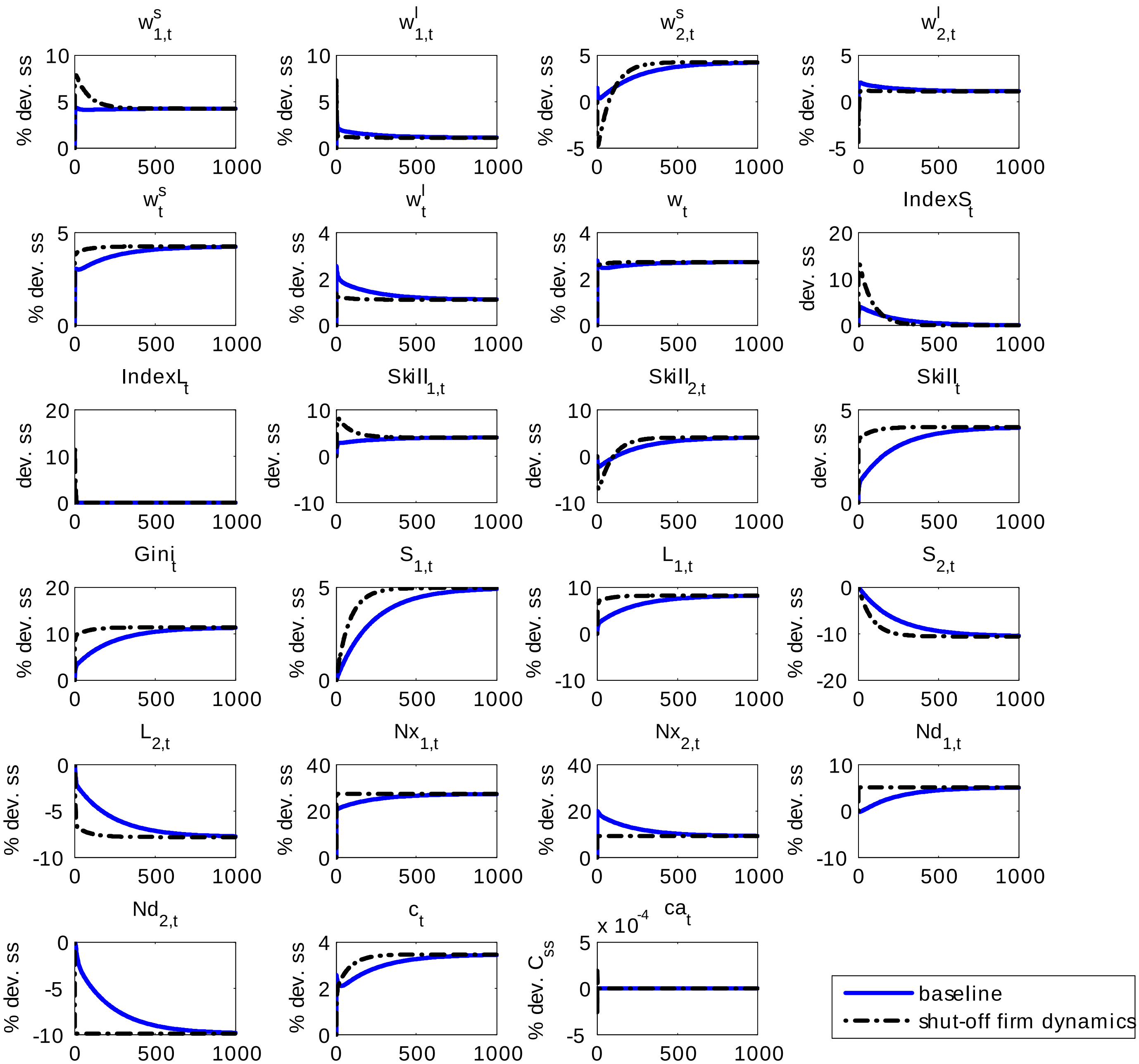

Figure 10: Symmetric Liberalization With Firm Dynamics Shut-Off With Active Switching of Unskilled Workers Only (S2)

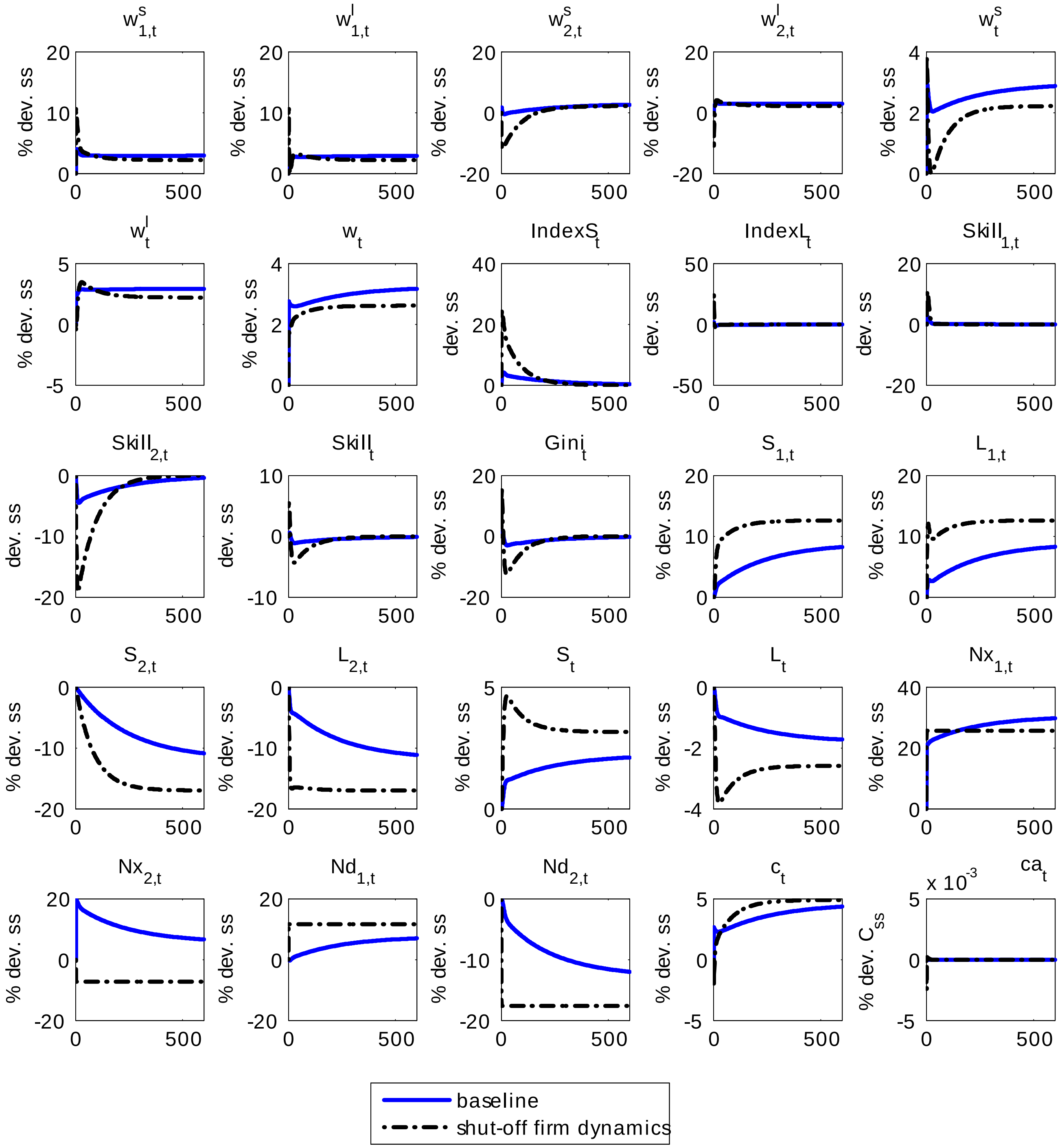

Figure 11: Symmetric Liberalization With Firm Dynamics Shut-Off With Training (S4)

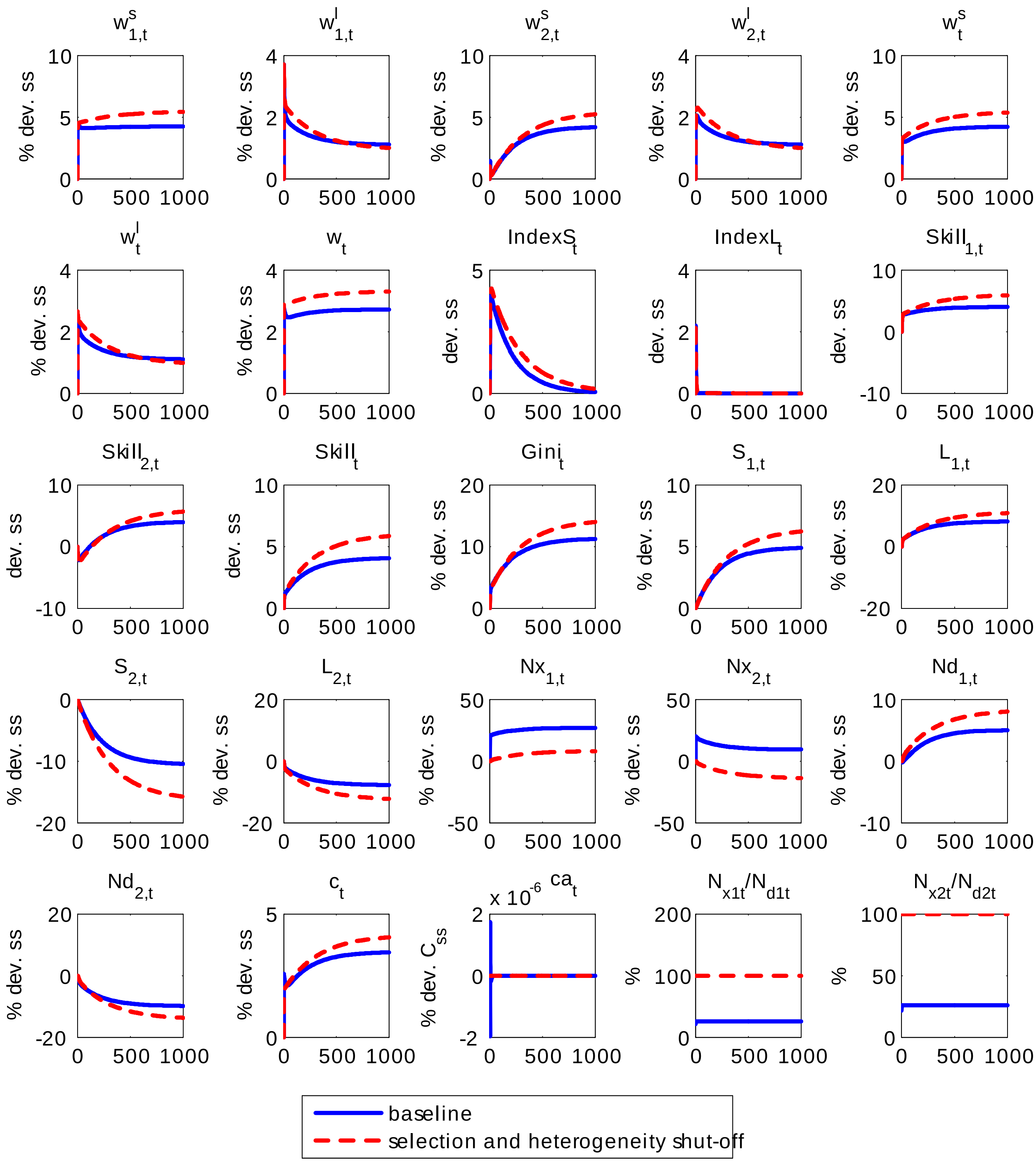

Figure 12: Symmetric Liberalization Without Selection Into Export Markets With Active Switching of Unskilled Workers Only (S2)

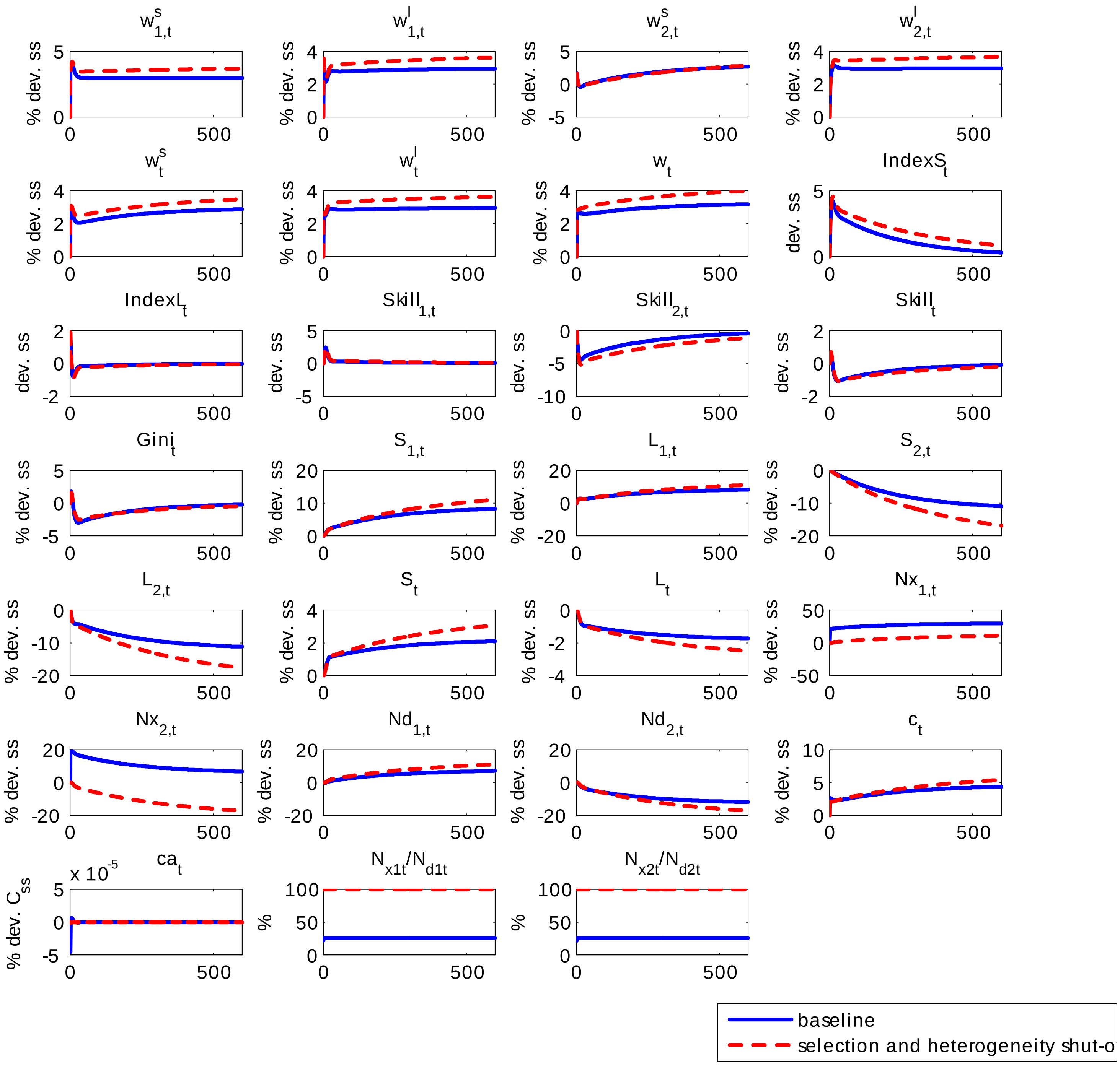

Figure 13: Symmetric Liberalization Without Selection Into Export Markets With Training (S4)

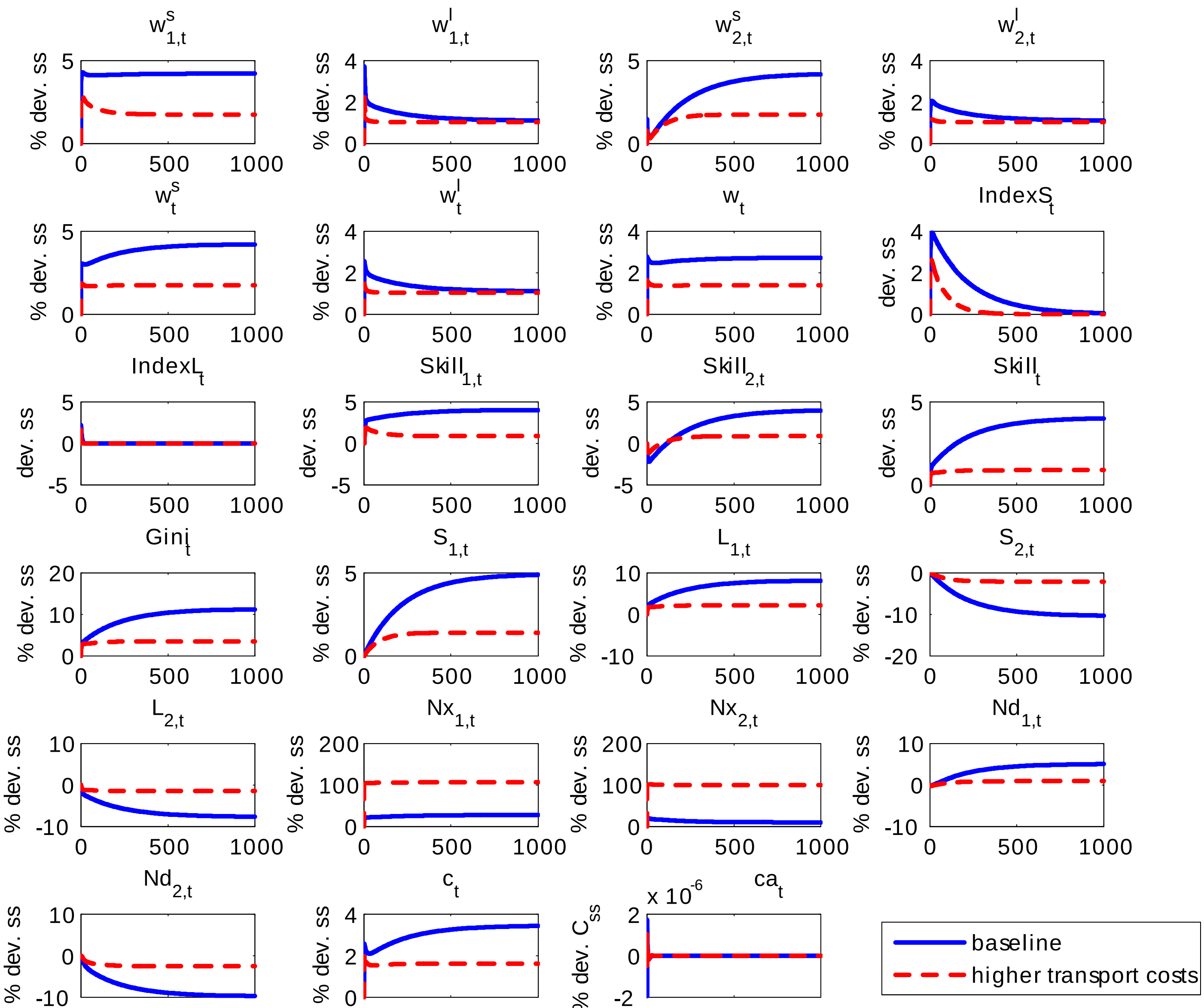

Figure 14: Symmetric Liberalization With Higher Transport Costs With Active Switching of Unskilled Workers Only (S2)

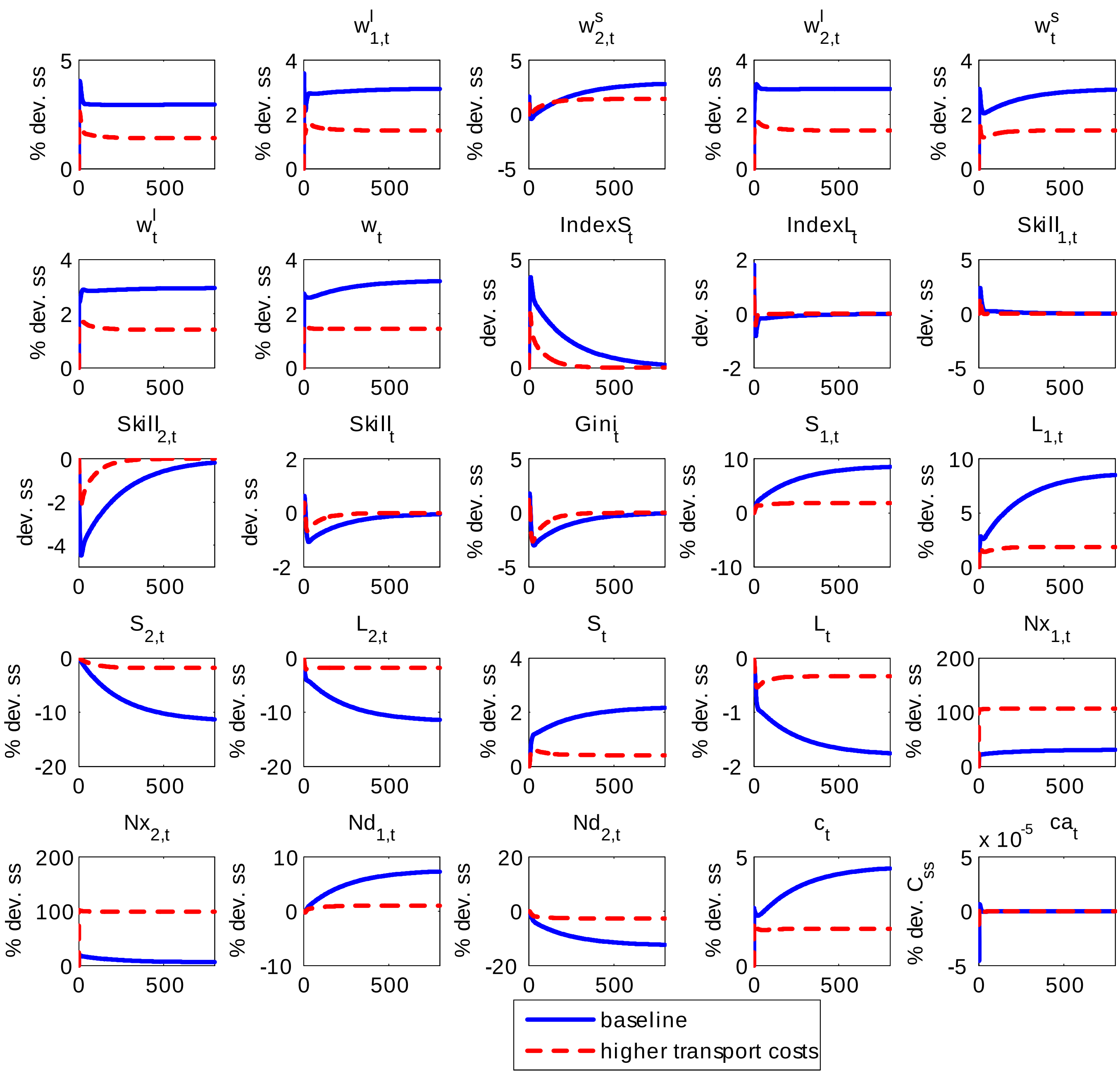

Figure 15: Symmetric Liberalization With Higher Transport Costs With Training (S4)

Negative Shocks, Job Creation, and Selection

Working Paper no 11

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Negative Shocks, Job Creation, and Selection

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Abstract: High inter-country variability characterises the responsiveness of both output to (exogenous) shocks and employment to output contractions. We argue that inter-country differences in firm-size distributions contribute to explaining this variability. Within an open economy model, we show that competitive selection processes are an important channel through which a shock affects aggregate employment. Intra-industry selection is then shown to influence the effectiveness of active labour market policies in countering the employment and welfare effects of a negative shock. We estimate a measure of the shape parameter of firm size distribution and study its effect on the employment-output relationship for a number of OECD countries. Our results confirm the key predictions of the theory.

JEL classification: E22, E64, F12, F41

Keywords: job creation, employment subsidies, competitive selection, international trade

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1. Introduction

An important stylised fact – confirmed by the Great Recession – concerns the existence of high inter-country variability in the responsiveness of both output to (exogenous) shocks and employment to output contractions. This variability reflects country-specific productivity responses to shocks which, in turn, have been explained with differences in labour market institutions (e.g. employment protection laws that affect lags in laying-off workers in a recession; work-sharing agreements) and/or in aggregate economic structures (e.g., countries specialised in relatively labour intensive sectors experience higher employment responses).

In this paper, we argue that inter-country differences in *intra-industry reallocations and selection* can be an important channel through which a shock affects aggregate outcomes. Specifically, we conjecture that variations across countries in the productivity distribution of firms can contribute to explaining the observed differences in aggregate employment. This channel will then be of relevance in explaining the level and effectiveness of policy interventions aimed at increasing employment and/or offsetting the effects of negative shocks.

In recent years, an extensive body of literature has documented the existence of a significant degree of intra-industry heterogeneity between firms in characteristics, behaviour and performance in international markets.[1] A key stylised fact emerging from this evidence is that there is a positive correlation between firms' performance and their size and productivity – despite the considerable variations observed in the strength of this link across countries and industries as well as over time. Economists have recently started to highlight the impact of intra-industry reallocations on aggregate performance. Di Giovanni and Levchenko (2013) find that the size composition of industries interacts with trade openness in determining aggregate output volatility. Several studies document how misallocations across heterogeneous production units can affect aggregate productivity and the transmission of shocks (e.g., Baily *et al*., 1992; Restuccia and Rogerson, 2010). Of particular interest is that different firms exhibit different cyclical patterns of net job creation (Moscarini and Postel-Vinay, 2012; Elsby and Michaels, 2013). It is therefore plausible to conjecture that intra-industry reallocations are also likely to have some impact on the aggregate employment effects of shocks. A further implication of these studies is that policy-induced distortions can be responsible for the observed inter-country variations in the strength of the inter-firm productivity-size link and for total factor productivity differences (e.g. Bartelsman *et al*., 2013). For instance, Garicano *et al*. (2013) and Gourio and Roys (2013) show that size dependent regulations affect both the firm-size distribution and the extent of industry misallocations.

[1] For recent surveys of the theoretical and empirical literature see, respectively: Melitz and Redding (2012) and Bernard *et al*. (2012).

In the first part of this paper, focusing on a small number of OEDC countries, we provide some evidence of significant inter-country differences in output and employment fluctuations over time, and in the size distribution of firms.

We then proceed to develop a theoretical model that can provide a rationale for these stylised facts. We consider a small open economy producing two goods with labour endogenously supplied by households to study the effects of intra-industry structure on output, employment, and welfare. We also examine how intra-industry reallocations influence the effectiveness of Active Labour Market Policies (ALMP), in the form of employment subsidies, in countering the effects of a shock on employment and welfare. These policies, whose use is widespread across the OECD and has increased during the recent recession, are central to the "European Employment Strategy" to address structural unemployment and to increase labour participation.

We show intra-industry inter-firm heterogeneity and selection to be a channel through which shocks, by affecting average industry productivity, impact on employment and welfare. We find that, in an export-oriented small open economy, a negative demand shock toughens competition for exporters (reducing the extensive margin and increasing the intensive margin of export) but softens it in the domestic market (by reducing the minimum productivity required to survive in the industry). In essence, the shock has an anti-competitive effect that – by reallocating market shares towards less efficient firms – results in a lower average industry productivity, lower employment and lower welfare. However, countries with a 'more efficient distribution of firms' (i.e. with a distribution that is skewed towards higher productivity levels)[2] are shown to weather out the shock better than less efficient ones – and experience a weaker anticompetitive selection effect and smaller aggregate employment and welfare losses.

Competitive selection and intra-industry structure are also shown to affect the usefulness of ALMP in countering the employment and welfare effects of a negative shock. Specifically, we assess the effectiveness of employment subsidies in preserving and/or creating employment; we also examine whether targeted policies (to specific types of firms) may be desirable by considering uniform policies (across all firms in the industry), and ones that either target the non-exporter or the exporters only.

In the face of the negative employment effects of the recession, hiring credits (i.e. subsidies to firms that encourage hiring of workers) are perceived as being more effective than worker subsidies (that encourage active labour force participation) in generating employment – see, e.g., Neumark (2011). We find, instead, that worker subsidies are preferable to employment subsidies paid to firms: the 'best' policy entails taxing firms and subsidising workers. This policy mix toughens the selection of exporters (thus reducing the extensive and increasing the intensive margin of export) and increases average industry

[2] The 'efficiency' of the distribution will be discussed later in the analysis.

efficiency, and expands aggregate demand directly by increasing workers' income. Only when the production for domestic sales but not for exports (which is relatively more efficient) is targeted is this result reversed. Furthermore, a uniform policy (that does not discriminate between exports and domestic sales) is dominated, from a welfare point of view, by a policy that targets exports (i.e. the more efficient firms). Thus, the 'best' policy (in terms of employment and welfare) entails picking the winners (i.e. the exporters) by taxing them to sustain aggregate demand and employment via workers subsidies.

A further result of the theoretical analysis is that when ex-ante (i.e. pre-shock) ALMPs are in place, the negative effects of a shock are more enhanced (as it produces stronger anti-competitive effects and reallocations of market shares to less efficient firms). However, after the shock (and before any policy adjustment) employment and welfare are still higher than without ALMPs and the industry is more competitive – with higher intensive margins of export.

Finally, we make an initial attempt at bringing the key testable hypothesis concerning the role of firm heterogeneity that emerges from the theory to the data. To this end, we estimate a parameter representing the firm size distribution and examine its explanatory role within the relationship between aggregate employment and income for a number of OECD countries. Although our data availability does not allow us to study the effects of the shape parameter of the distribution at the country level over time, our pooled analysis confirms that it does matter in determining the effects of output on (un)employment. Specifically, we find that the shape parameter of the distribution has a negative impact on employment: ceteris paribus, the employment level is lower the more skewed is the size distribution of firms towards smaller firms. Furthermore, the fall in employment resulting from an output contraction is smaller the more heterogeneous are firms (i.e. the less skewed is the distribution towards smaller firms). These results are fully consistent with the predictions of our theoretical model.

The rest of the paper is organised as follows. Section 2 provides the important stylised facts that motivate the paper. Section 3 develops the theoretical model. Section 4 tests the importance of the shape parameter of the distribution for the relationship between employment and output. Section 5 concludes the paper.

2. Inter-Country Differences – stylised facts

We begin by documenting the differences in the pattern of real economic activity between the four largest EU countries, France, Germany, Italy and the UK. Let y_{jt} and e_{jt} respectively denote, for country *j* at time *t*, the values of output and employment. We approximate *y* by the logarithm of real GDP. As for *e*, rather than using the actual level of employment, we use the employment rate (i.e. the ratio of employment to labour force) which captures fluctuations in the labour force.[3] This enables us to understand whether a rise in output increases employment relative to the labour force and does therefore lead to a reduction in unemployment. The pattern followed by y_{jt} and e_{jt} in each country is shown in the graphs in Figure 1 which document a considerable inter-country difference in the way the series have been evolving. This difference is further brought to light in Figure 2 where we compare the cyclical and trend components of the series across these countries. For instance, during the recent recession, Germany has experienced a bigger dip in output, but then a faster recovery than the other countries in this sample. Furthermore, fluctuations in employment appear to be less enhanced than those in output across the board – interestingly, as has been discussed in the literature, during the recent recession, Germany has experienced a smaller contraction in employment despite a higher drop in output. In general, it is noticeable that inter-country differences in changes in employment rate are larger than in output.

We use two methods to quantify the differences in the series across countries. First, we estimate their AR(p) representations which we report in Table 1, confirming that although both Δe_{jt} and Δy_{jt} are stationary, they exhibit rather different characteristics in terms of their cyclicality, persistence and volatility. In Figure 3, we compare the AR residuals (representing the innovations to Δe_{jt} and Δy_{jt}) of France, Italy and the UK with their German equivalent. These indicate that Germany's Δe_{it} innovations (Δy_{jt} innovations) have been less (more) volatile relative to the rest. Second, we use the structural vector autoregressive representations of $\left(\Delta e_{jt}, \Delta y_{jt}\right)$ and the autoregressive distributed lag model – relating Δe_{jt} to its own lags and to Δy_{jt-s} – to estimate the impulse response of Δe_{jt} to exogenous shocks and its dynamic multipliers with respect to a change in Δy_{jt} (see Appendix 1 for detail). Figure 4 shows these, further highlighting the differences in the way employment responds to exogenous shocks, and to changes in output. Again, Germany's case is noticeable with a smaller immediate impact which declines monotonically and steadily. The UK also exhibits a similar pattern but its immediate impact is more enhanced. Italy's employment, on the other hand, shows a volatile response to shocks. Such inter-country differences in the response of employment reflect differences in productivity responses and have been ascribed to the way labour market institutions (e.g.: employment protection laws that affect lags in laying-off workers in a recession, or work-sharing agreements), and/or differences in aggregate economic structures (with countries specialised in relatively labour intensive sectors experiencing higher employment responses) vary across countries.

[3] Given that we focus on welfare, using the logarithm of total employment (employees + self-employed) for *e* can be misleading in that the underlying policies do not necessarily target the absolute level of employment and are primarily concerned with the proportion of participating labour force that is employed so as to reduce the unemployment rate $u = 1 - e$.

In this paper we conjecture that one of the reasons for the variations in the response of employment lies in *intra-industry reallocations and selection*. In particular, we wish to examine whether the distribution of firms in a country can explain the way its aggregate employment reacts to exogenous shock and/or changes in its output. There is ample evidence in the literature on the existence of considerable variations across countries of firms' size distribution, where firms' size is found to be correlated positively with their performance. Given the difficulties involved in obtaining accurate measures of productivity to approximate performance, we follow others (see, e.g., Moscarini and Postel-Vinay, 2012) and use employment as a measure of firm-level performance and size. Figure 5 plots the cumulative distribution of firm-level employment for the four EU countries considered above, showing that considerable differences exist between their firm size distributions, with the UK and Germany having a larger proportion of bigger firms than France and Italy.

Following the convention in the literature, in our theoretical analysis detailed in the next section, we shall approximate the probability density function of firms' size by a Pareto distribution and use the corresponding shape parameter to characterise differences in distribution when investigating the role played by this channel in transmitting the impact of policies.

3. Theoretical Analysis

We consider a small open economy consisting of two sectors, one imperfectly and one perfectly competitive, respectively producing a horizontally differentiated and a homogeneous commodity.[4]

The homogeneous good is freely traded with the rest of the world. All varieties of the differentiated commodity are exported but none is imported. The small open economy (SOE) assumption requires the export revenue for the differentiated commodity to be treated as exogenous (i.e. total expenditure by the rest of the world on the good is inelastic and exogenously given).[5] Labour, the only factor used in production, is internationally immobile but perfectly mobile between the two sectors. Labour supply is endogenous. Thus, although employment effects do not result from a labour market distortion in this model, this assumption enables us to capture the endogeneity of the level of economic activity and to study the aggregate employment effects of exogenous and policy shocks. A government implements active labour market policies, in the form of an employment subsidy, which can

[4] The model is based on Molana and Montagna (2013) who examine the effects of ALMPs on competitive selection in different trade and policy configurations. The SOE setting is adopted in this paper as it allows for an easy characterisation of exogenous (aggregate demand) shocks via demand for exports.

[5] In the traditional perfect competition literature, the SOE assumption implies that the country has a perfectly elastic demand for its exports at a constant price. As is standard in models of monopolistic competition, in this paper, the country is 'small' in the sense that it cannot affect the total aggregate expenditure for the differentiated good it exports (see, for instance, Flam and Helpman, 1987; Demidova and Rodiguez-Clare, 2013). Clearly, due to the monopoly power that each firm has in its market niche, the quantity of output sold by each firm in foreign market will be a function of its price.

be used to offset the negative impact of a fall in export demand facing the imperfectly competitive sector. The government ensures that the subsidy bill is met by the (general) tax revenue and uses tax and subsidies as instruments to achieve its policy target – e.g. to keep aggregate employment at the pre-shock level, or to maximise welfare.

3.1. Consumers and firms

On the demand side, the representative consumer maximises a utility function defined over the two consumption goods and labour supply,

$$u = \left(\frac{a}{1-\beta}\right)^{1-\beta}\left(\frac{y}{\beta}\right)^{\beta} - \frac{\theta h^{1+\delta}}{1+\delta}, \quad 0<\beta<1, \quad \delta>0,\ \theta\geq 0, \tag{1}$$

subject to the time and budget constraints,

$$h+\ell=1, \tag{2}$$

$$P_A a + P_D y = (1-t)(wh-\tau), \tag{3}$$

where the total time endowment is normalised to unity, *h* and ℓ are time spent at work and leisure respectively, *a* and P_A are the quantity and the price of the homogenous commodity, *y* and P_D are the quantity and price of the differentiated good, *w* is the wage rate and *t* and τ are the income tax rate and the lump-sum tax, respectively.[6] We define the consumer price index by $P = P_A^{1-\beta}P_D^{\beta}$ and use the homogenous commodity as the numeraire. Since this commodity is freely (and costlessly) traded internationally, the law of one price holds and $P_A = P_A^*$; hereon, we use an asterisk to denote the value of a variable in the rest of the world and normalise $P_A = P_A^* = 1$.

Denoting by *N* the number of consumers, the aggregate labour supply function and the demand functions for the two goods are, respectively,

$$\begin{gathered} L \equiv Nh = N\left(\frac{(1-t)w}{\theta P}\right)^{1/\delta}, \\ A \equiv Na = \frac{(1-\beta)(1-t)(wL-N\tau)}{P_A}, \\ D \equiv Ny = \frac{\beta(1-t)(wL-N\tau)}{P_D}. \end{gathered} \tag{4}$$

D is assumed to be a CES bundle of differentiated varieties with 'dual' price index P_D, respectively given by

[6] This setting enables us to choose one or both taxations methods. Using a lump-sum tax is usually considered to involve less distortion (in that it does not affect the relative prices), unless the proportional tax can be argued to correct an existing distortion. In what follows we shall concentrate on the proportional income tax case, and only briefly refer to the results based on using the lump-sum taxation.

$$D=\left(\int_{i\in M} x(i)^{1-1/\sigma}di\right)^{\frac{1}{1-1/\sigma}} \quad \text{and} \quad P_D=\left(\int_{i\in M} p(i)^{1-\sigma}di\right)^{\frac{1}{1-\sigma}}, \tag{5}$$

where i and M denote a variety and the set of varieties and p and x are the price and quantity of a variety. The demand for each variety is then

$$x(i)=D\left(\frac{p(i)}{P_D}\right)^{-\sigma}, \qquad i\in M. \tag{6}$$

A subset $M^*\subseteq M$ of the differentiated goods is also marketed abroad and attracts a fixed proportion β^* of foreign nominal income I^*, hence $\int_{i\in M^*} p^*(i)x^*(i)di=\beta^* I^*$ where x^* is the quantity demanded of a variety by consumers abroad and p^* is the corresponding variety price. Let P_D^* and D^* be the corresponding aggregate price and quantity indices such that $P_D^* D^*=\beta^* I^*$. Assuming, for simplicity, that consumers abroad have the same elasticity of substitution between any two varieties as that of domestic consumers, P_D^* and p^* and D^* and x^* are related as in (5) and the demand for each variety can be written as

$$x^*(i)=D^*\left(\frac{p^*(i)}{P_D^*}\right)^{-\sigma}, \quad i\in M^* \tag{7}$$

The homogenous good is produced under perfectly competitive conditions using a constant returns to scale technology with unit labour requirement, $L_A=A^s$ where L_A and A^s denote the labour demand by this sector and the supply of the good, respectively. The constant returns to scale technology, the zero-profit condition and free mobility of labour across the two sectors imply the equality between the wage rate and the price of the homogeneous good, hence $w=P_A=1$.

In the differentiated good sector, each firm produces one variety of the good using a linear technology with increasing returns to scale. Labour is the only input and the labour requirements, to produce and market the quantities x and x^* of a variety in domestic and foreign markets, are respectively, $l(\varphi)=\alpha+\frac{x(\varphi)}{\varphi}$ and $l^*(\varphi)=\alpha^*+\frac{x^*(\varphi)}{\varphi}$ where we have dropped the variety indicator i and distinguished the firm by its productivity parameter $\varphi\in[1,\infty)$. $1/\varphi$ is a firm's marginal labour requirement and α and α^* are its fixed labour requirement for the domestic and export productions respectively.[7] To capture the fact that exporting is costlier than domestic sales, it is assumed that $\alpha^*>\alpha>0$. Imposing w=1, a

[7] Note that in the existing setup where the country exports but does not import the differentiated good, the ice-berg transport cost that is commonly used in the literature will be simply equivalent to a proportional reduction in productivity of exporting firms for their export relative to their production for domestic market, and therefore will not add much; for this reason it has been disregarded here.

firm's profits from domestic and export sales are, respectively, $\pi(\varphi) = p(\varphi)x(\varphi) - (1-s)l(\varphi)$ and $\pi^*(\varphi) = p^*(\varphi)x^*(\varphi) - (1-s^*)l^*(\varphi)$ where $s \in [0,1)$ and $s^* \in [0,1)$ are the wage subsidy rates that firms receive from the government for their domestic and export operations. For any given subsidy rate, the firm chooses its price to maximise profits subject to its technology and demand but ignoring the effect of its action on the industry price index. This yields the familiar markup rules

$$p(\varphi) = \frac{\sigma(1-s)}{(\sigma-1)\varphi} \text{ and } p^*(\varphi) = \frac{\sigma(1-s^*)}{(\sigma-1)\varphi}. \quad (8)$$

For later use, we note that using (8) the equilibrium profits from domestic and foreign sales can be written as $\pi(\varphi) = r(\varphi)/\sigma - (1-s)\alpha$ and $\pi^*(\varphi) = r^*(\varphi)/\sigma - (1-s^*)\alpha^*$ where $r = px$ and $r^* = p^*x^*$ are the firm's revenues.

Following Montagna (1995) and Melitz (2003) we assume that, before they can set up and start producing, a large pool F of identical potential entrants make an initial 'entry investment' which amounts to paying a fixed entry sunk cost f measured in terms of the numeraire good. This investment enables entrants to draw their technology, as embodied in the specific value of the productivity parameter φ. The draw is from a common population with a known p.d.f. $g(\varphi)$ defined over support $[1,\infty)$ with a continuous cumulative distribution $G(\varphi)$. A firm's survival in the domestic market and whether or not it can also export will depend on the magnitude of its $\varphi \in [1,\infty)$ in relation to two thresholds φ_c and φ_c^* which satisfy $\pi(\varphi_c) = 0$ and $\pi^*(\varphi_c^*) = 0$ respectively, with $1 < \varphi_c < \varphi_c^*$ (which hold under conditions specified below): firms with $\varphi \in [\varphi_c^*, \infty)$ will succeed in serving both domestic and foreign markets while those with $\varphi \in [\varphi_c, \varphi_c^*)$ can serve the domestic market only; firms with $\varphi \in [1, \varphi_c)$ will not enter since they would make a loss, while all firms with $\varphi \in (\varphi_c, \infty)$ make positive profits. Prior to entry, therefore, it is known that a fraction $G(\varphi_c)$ of F will fail to enter and that, of the fraction $M \equiv (1 - G(\varphi_c))F$ that succeed, a mass $M^d \equiv (G(\varphi_c^*) - G(\varphi_c))F$ only serve the domestic market while a mass $M^* \equiv (1 - G(\varphi_c^*))F$ of firms are sufficiently efficient to also export. Thus, ex-post, M and M^* are the mass of varieties available to domestic and foreign consumers respectively, with $M = M^d \cup M^*$, $M^d \cap M^* = 0$. We can therefore redefine the p.d.f of the surviving (incumbent) firms over $\varphi \in [\varphi_c, \infty)$ by $\mu(\varphi) = \dfrac{g(\varphi)}{1 - G(\varphi_c)}$ and the p.d.f of the exporting firms over $\varphi \in [\varphi_c^*, \infty)$ by $\mu^*(\varphi) = \dfrac{g(\varphi)}{1 - G(\varphi_c^*)}$. Following Melitz (2003), measures of aggregate productivity of the surviving and exporting firms can then be written as weighted averages of the productivity levels φ that satisfy respectively $\varphi \in [\varphi_c, \infty)$ and $\varphi \in [\varphi_c^*, \infty)$ to obtain[8]

$$\tilde{\varphi} = \left(\int_{\varphi_c}^{\infty} \varphi^{\sigma-1} \mu(\varphi) d\varphi \right)^{\frac{1}{\sigma-1}} \quad \text{and} \quad \tilde{\varphi}^* = \left(\int_{\varphi_c^*}^{\infty} \varphi^{\sigma-1} \mu(\varphi) d\varphi \right)^{\frac{1}{\sigma-1}}. \tag{9}$$

All aggregate variables can then be written in terms of $\tilde{\varphi}$ or $\tilde{\varphi}^*$ which are independent of M and M^*: $D = M^{\sigma/(\sigma-1)} x(\tilde{\varphi})$; $P_D = M^{1/(1-\sigma)} p(\tilde{\varphi})$; $R = P_D D = Mr(\tilde{\varphi})$; $\Pi = M\pi(\tilde{\varphi})$; $L_D = Ml(\tilde{\varphi})$; $D^* = M^{*\sigma/(\sigma-1)} x^*(\tilde{\varphi}^*)$; $P_D^* = M^{*1/(1-\sigma)} p^*(\tilde{\varphi}^*)$; $R^* = P_D^* D^* = M^* r^*(\tilde{\varphi}^*)$; $\Pi^* = M^* \pi^*(\tilde{\varphi}^*)$; and $L_D^* = M^* l^*(\tilde{\varphi}^*)$.

In order to obtain explicit solutions, we adopt a Pareto distribution and let

$$G(\varphi) = 1 - \varphi^{-\gamma} \quad \text{and} \quad g(\varphi) = \gamma \varphi^{-(1+\gamma)}, \quad \varphi \in [1, \infty), \tag{10}$$

where the shape parameter γ provides an inverse measure of dispersion: the higher is γ the more homogeneous are the firms.[9] To obtain meaningful results we impose $\gamma > \sigma - 1$. Using (10) and (9) imply $\tilde{\varphi}^{\sigma-1} = \left(\dfrac{\gamma}{1+\gamma-\sigma} \right) \varphi_c^{\sigma-1}$ and $\tilde{\varphi}^{*\sigma-1} = \left(\dfrac{\gamma}{1+\gamma-\sigma} \right) \varphi_c^{*\sigma-1}$. We can also use $M \equiv (1 - G(\varphi_c))F$ and $M^* \equiv (1 - G(\varphi_c^*))F$ to obtain $\dfrac{M}{M^*} = \left(\dfrac{\varphi_c^*}{\varphi_c} \right)^{\gamma}$. Finally, note that a sufficient condition for $\varphi_c < \varphi_c^*$ is $\alpha^* \geq (1-s)\alpha / (1-s^*)$ and $\beta I > \beta^* I^*$ since $r^*(\varphi_c^*) / r(\varphi_c) = (1-s^*)\alpha^* / (1-s)\alpha$ always holds.[10]

3.2. *The general equilibrium*

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[8] To see this, define $\tilde{\varphi} = \left(\int_{\varphi} \varphi^{-1} (x(\varphi)/x(\tilde{\varphi})) \mu(\varphi) d\varphi \right)^{-1}$ and note that the weight $x(\varphi)/x(\tilde{\varphi})$ is given by $(\varphi/\tilde{\varphi})^{\sigma}$ which can be substituted back in the definition of $\tilde{\varphi}$ to obtain (9).

[9] In the Pareto distribution, both mean and variance are negatively related to the shape parameter γ. Thus, the smaller is γ, the higher is the average firm efficiency and the higher is the productivity dispersion (i.e. the lower is the density of firms at lower productivity levels). It is in this sense that we argue that the value of γ captures the efficiency of the distribution: a "more efficient distribution of firms" is one with a higher average productivity and a higher dispersion – i.e. one with a smaller γ.

[10] $I = (1-t)(L - N\tau)$ is domestic aggregate disposable income of consumers and $\beta I > \beta^* I^*$ requires the domestic demand for the differentiated good to exceed the foreign demand, but the extent of this is dampened by $\alpha^* \geq (1-s)\alpha / (1-s^*)$.

In general equilibrium, the entry process continues until the expected *net* profit of entry is driven to zero,

$$M\pi\left(\tilde{\varphi}\right)+M^{*}\pi^{*}\left(\tilde{\varphi}^{*}\right)-Ff=0, \tag{11}$$

and marginal firms' zero profit condition require $\pi\left(\varphi_c\right)=r\left(\varphi_c\right)/\sigma-\left(1-s\right)\alpha=0$ and $\pi^{*}\left(\varphi_c\right)=r^{*}\left(\varphi_c\right)/\sigma-\left(1-s^{*}\right)\alpha^{*}=0$.

The labour market equilibrium condition, balanced government budget constraint (equating the subsidy bill with tax revenue) and the trade balance, which should hold in equilibrium, are

$$L_A+L_D+L_D^{*}=L, \tag{12}$$

$$sL_D+s^{*}L_D^{*}=t\left(L-N\tau\right)+N\tau, \tag{13}$$

$$A+Ff-A^{s}=\beta^{*}I^{*}. \tag{14}$$

In addition, the demand and supply for the homogenous good are $A=\left(1-\beta\right)\left(1-t\right)\left(L-N\tau\right)$ and $A^{s}=L_A$[11], and the market clearing conditions for the differentiated good are given, at the firm level, by $x\left(\tilde{\varphi}\right)=\left(\tilde{\varphi}/\varphi_c\right)^{\sigma}\alpha\left(\sigma-1\right)\varphi_c$ and $x^{*}\left(\tilde{\varphi}^{*}\right)=\left(\tilde{\varphi}^{*}/\varphi_c^{*}\right)^{\sigma}\alpha^{*}\left(\sigma-1\right)\varphi_c^{*}$, which at the aggregate level will require $Mr\left(\tilde{\varphi}\right)=\beta\left(1-t\right)\left(L-N\tau\right)$ and $M^{*}r^{*}\left(\tilde{\varphi}^{*}\right)=\beta^{*}I^{*}$. Finally, we note that since all markets clear, (12) and (14) can be obtained from each other and only one of them can be used in deriving the solution.

3.3. Policy analysis

In this section we study the effects of an exogenous (international) aggregate demand shock on the equilibrium of the model. Although the model can be characterised analytically, given the complexity of the algebra involved, we resort to numerical solutions to analyse the effects of external shocks and policy and in comparing different equilibria. Our calibration parameters are consistent with those widely used in the literature for this type of model.[12]

As a benchmark, it is useful to consider the case in which the government is not active, for which we set $s=s^{*}=t=\tau=0$. This will enable us to isolate the effects of the size of the shape parameter of the productivity distribution on the impact of a negative shock.

In what follows, welfare is measured by the indirect utility obtained by substituting (4) into the utility function in (1). For τ=0, this is given by

$$u=\frac{\theta\delta}{1+\delta}h^{\delta+1}, \tag{15}$$

[11] Equation (14) can also be interpreted as the market clearing condition for the homogenous good since it equates the value of exports with the value of domestic excess demand for the differentiated good.

[12] See e.g. Felbermayr *et al*. (2011).

which is monotonically increasing in labour supply *h*.

The first two columns of Table 2 give the equilibrium solutions for two values of γ. As is clear from the table, in the no-policy equilibrium, a reduction in γ (that results in an increase in firm heterogeneity, with the distribution becoming less 'skewed' towards low productivity levels) will increase both domestic and export productivity cut-offs, i.e. $(\partial\varphi_c/\partial\gamma)<0$ and $(\partial\varphi_c^*/\partial\gamma)<0$: thus, a country with a more efficient productivity distribution of firms will be characterised by a higher minimum productivity to survive in both the domestic and export markets. This essentially amounts to a toughening of market competition that results in a smaller mass of surviving firms and exporters, despite a larger number of firms attempting entry. However, the higher average industry efficiency is accompanied by a larger average size of both domestic-only and exporting firms, a lower price index (despite the smaller total mass of firms), and a higher welfare. Aggregate employment is also higher. Thus, a country with a higher degree of firm heterogeneity (in which there is a lower density of smaller, less efficient firms) will be characterised by a higher level of economic activity, with a smaller intensive (and a higher extensive) margin of export.

The third and fourth columns of Table 2 report equilibrium values after a negative export demand shock. As can be seen from the table, for a given value of γ, a negative aggregate demand shock reduces employment, real wages and welfare and reallocates market shares towards less efficient firms – with a fall in the total mass of firms being accompanied by an increase in the mass of domestic firms and a reduction in the extensive (and an increase in the intensive) margin of exports; these effects result from an increase in the export productivity cut-off and a reduction in the domestic cut-off. Thus, a negative shock in this model effectively has *anti-competitive* effects that translate into a lower average industry productivity. The last two columns of Table 2 show, however, that in a country with a higher degree of firm heterogeneity (i.e. with a lower value of the shape parameter γ) a negative shock will have less severe effects in terms of aggregate employment and welfare reduction. Effectively, in a more 'efficient' country, industries are better placed to 'weather out' the effects of a shock – experiencing weaker anti-competitive effects, with a smaller fall in the extensive (and a greater increase in the intensive) margin of exports, and a smaller reduction in average industry efficiency.

Thus, this analysis suggests that (intra-industry) competitive selection is a channel for the transmission of shocks, through which they affect aggregate industry productivity, aggregate employment and welfare. In particular, in an *export-oriented* small open economy, a negative shock has a selection-toughening effect on exporters, a selection-softening effect on less efficient firms, and an overall *anti-competitive effect* on average productivity. However, more efficient countries (characterised by a higher degree of heterogeneity among firms, i.e. a smaller shape parameter of their productivity distribution), manage to *weather* *out* the shock better and experience *weaker* anticompetitive selection effects, with a resulting smaller negative effect on employment and welfare.

In recent years, welfare state reforms have tended to be directed away from traditional redistribution systems towards the 'social investment model' associated with 'flexicurity' and Active Labour Market Programmes (ALMP). ALMP are being increasingly used by many OECD countries to reduce structural unemployment as well as to offset the impact of negative shocks[13], even though a significant disparity on spending exists across countries (Kluve, 2010). These programmes consist of policies aimed at reducing search frictions (e.g. public employment services), increasing employability (e.g. training schemes), or at direct job creation. The latter include direct employment programmes in the public sectors, but also measures directed at either private employers or workers that seek to influence hiring and labour force participation. We wish to examine how the use of ALMP influences the aggregate outcomes in response to a shock via their effects on competitive selection in this model. In particular, we shall focus on private sector incentive schemes, in the form of wage subsidies to firms, and consider a policy in which the subsidies are chosen so as to keep the level of employment at the pre-shock levels (what we term '*employment protection*' policy); we then compare this policy scenario to an *optimal* policy, in which the government chooses (*uniform* and *targeted*) subsidies to firms (in the post-shock equilibrium) that maximise welfare.

We first consider the effects of a uniform subsidy, financed via proportional income taxation, given to all firms in response to a negative shock for both their domestic and export production (i.e. $s_i = s_i^* = s \quad \forall i$): hence, the policy is implemented on the post-shock equilibrium given in column III of Table 2. The results, for the ad-hoc and optimal policy respectively, are reported in the first two columns of Table 3. For a given γ, both the policy aimed at restoring employment to pre-shock levels and the optimal policy consist of *negative subsidies* and *negative taxes* – i.e. the policy response to a shock entails *taxing firms* and *subsidising workers*. Doing so increases aggregate employment and welfare relative to the post-shock equilibrium. Underpinning these results is the fact that taxing firms and subsidising workers has a *pro-competitive effect* on industry and an *expansionary aggregate demand effect*. The former occurs because, by taxing firms, the government triggers a process of competitive selection that reallocates market shares from low to high productivity firms – and that translates, with both policies, in higher domestic and export productivity cut-offs. The direct transfer to workers, in turn, produces an increase in labour supply and in aggregate demand that contributes to the increase in employment, with both domestic-only and

[13] See Andersen and Svarer (2012) for a discussion of the Danish case. The 2013 EU Annual Growth survey, available at http://ec.europa.eu/europe2020/making-it-happen/annual-growth-surveys/index_en.htm encourages the member states to step up ALMP, paying specific attention to maintaining and even reinforcing their coverage and effectiveness. The implementation of such policies to create employment also heavily featured in the ILO-IMF 2010 conference in Oslo on "The Challenges of Growth, Employment and Social Cohesion".

exporting firms increasing in size. The effects of the intervention are qualitatively the same for both ad-hoc and optimal policies. The latter, however, is more *interventionist* and has stronger (positive) effects on welfare and aggregate employment – which increase even above their pre-shock levels, as can be seen by comparing column II of Table 3 with column I of Table 2.[14]

During the recent 'financial' crisis there have been calls for targeting particular firm types – such as for example small firms and/or exporters.[15] Table 3 also reports the results of a *targeted* policy response to the shock based on: (i) subsidising all firms' domestic production only (columns III and IV), and (ii) subsidising production for exports only (columns V and VI).[16]

It is clear from columns III and IV in Table 3 that case (i) alters the nature of the policy as it involves subsidising the firms and taxing the workers. Comparison of this case with the post-shock equilibrium in column III of Table 2, reveals that subsidising domestic production only (and hence the relative less efficient firms) reduces the average industry efficiency (by reducing both domestic and export productivity cut-offs) but results in higher employment and welfare. As with the uniform policy, even in this case the optimal policy is more *interventionist* and has stronger positive welfare and employment effects, leading to an improvement on both fronts even relative to the pre-shock equilibrium. Comparison with the effects of a uniform policy in columns I and II of Table 3, however, shows that the non-discriminatory policy in response to a shock is more expansionary and leads to higher welfare. The reason for this is that subsidisation of relatively weaker firms has an anti-competitive effect (by softening selection) – as reflected in the lower productivity cut-offs.

Instead, in case (ii), the *pick-the-winner* policy targeted to exporters only involves, as with the uniform policy, taxing firms and subsidising workers. This can be seen from columns V and VI of Table 3.

To summarise, both uniform and export-targeting policies entail taxing firms and subsidising workers. Only when targeting all firms' domestic production (and hence the relatively less efficient firms) does the policy require a positive subsidy to firms. Taxing firms and subsidising workers' income increases welfare and employment relative to the post-shock equilibrium, and to the pre-shock equilibrium levels in the case of optimal policy. The reasons for this is that this type of intervention on the one hand toughens export selection (resulting in a smaller extensive and a larger intensive margin of export) and thus increases average industry efficiency, and, on the other hand, increases aggregate demand *directly* by raising workers' income. Thus, an implication of this analysis is that workers' subsidies are

[14] Molana and Montagna (2013) discuss in more depth how international trade affects the impacts and the role of the policy.

[15] Targeted intervention has been typically based on worker type, e.g. the young or long-term unemployed. However, during the recent crisis, intervention has been advocated for small firms and/or exporters (see e.g. calls by the Irish Exporters Association).

[16] Molana and Montagna (2013) examine the impact of size dependent policies.

preferable to employment subsidies to firms. This casts doubt on the perception (see, e.g. Neumark, 2011) that hiring credits are more effective than worker subsidies in raising employment.[17]

Finally, since the effect of the shock is found to be larger in relatively less efficient countries (whose productivity distribution is more skewed towards less efficient firms), the required policy intervention to offset the shock grows in γ. Table 4 (in which for ease of comparison the first two columns repeat the first two columns of Table 2 corresponding to the no-active-policy equilibrium) shows that ex-ante optimal ALMPs (i.e. an active intervention being in place regardless of and/or prior to a shock), for a given value of γ, results in higher employment and welfare. Again, the optimal policy involves taxing firms and subsidising workers – and results in a redistribution of market shares towards more efficient firms, via a higher export cut-off (and a fall in the extensive and an increase in the intensive margin of exports) and a higher domestic cut-off. Hence, the equilibrium can always be improved by the use of ALMP – i.e. the optimal policy always entails intervention, in the form of taxing firms and subsidising workers, with the extent of intervention increasing in γ. However, the last two columns of Table 4 show, for the uniform policy case, that the effects of a shock are more enhanced when ALMP are in place. In this instance, a shock results in a greater fall in employment and welfare.

4. Evidence on the Role of Firm Size Distribution

In this section we carry out a brief empirical investigation of whether evidence supports the theoretical predictions concerning the role of shape of the firm size distribution in determining aggregate employment. Ideally, we would need either time series data for a number of countries over a sufficiently long period or cross country data for a large number of countries for a few years. However, we could not construct either type of dataset that would include the two main variables of interest – the shape parameter for firms' size distribution (as a proxy for the aggregate country-level productivity distribution) and the expenditure on active labour market policies – and provide sufficient degrees of freedom for robust econometric analysis. Thus, given these limitations, we shall restrict ourselves to examine, as a first step, within a cross-section time-series context, whether the shape parameter for firms' size distribution plays a significant role in determining aggregate employment. In particular, we use firm-level information from the AMADEUS dataset for 22 OECD countries (see the Appendix), which is available to us with annual frequency for a short time period (maximum period 2003-2011), to calculate (as explained in the Appendix)

[17] Although we do not report the results here, financing the policy via lump-sum taxation does not alter the qualitative nature of most of the results. However, since with lump-sum taxation the monotonicity between employment and welfare no longer holds, in this case the policy intervention aimed at maintaining employment at the pre-shock level entails taxing workers to subsidise firms.

the shape parameter of the firm size distribution in each country. Country level data on annual aggregate employment and output were obtained from the OECD (see the Appendix).

Given that overall employment is influenced by a number of factors, institutional and welfare state variables key among them, and that the business cycle plays a major role in determining its fluctuations, we would ideally want to use a robust dynamic panel regression technique that controls for these factors when examining the implications of the theory. However, since our sample is rather small and highly unbalanced, we cannot control for all the relevant explanatory variables and/or use the cyclically filtered series to distinguish between the short-run and long-run analysis. We therefore restrict our analysis to a static regression equation explaining the employment ratio (e_{jt}) by the logarithm of real GDP in constant US dollars (y_{jt}) and the (estimates of) the Pareto shape parameter (γ_{jt}), controlling for country and time fixed effects denoted below by η_j and ϕ_t. We report the LSDV estimates below[18] where the numbers in parentheses are the t-ratios based on *Panel Corrected Standard Errors* proposed by Beck and Katz (1995) which take account of period clustering, and those in square brackets are the P-values.

$$\hat{e}_{jt} = 0.2304 y_{jt} - 0.0460 \gamma_{jt} + 0.0033 \gamma_{jt} y_{jt} + \hat{\mu} + \hat{\eta}_j + \hat{\phi}_t$$

(8.07) (2.22) (2.16)

Unbalanced Sample: 22 Countries, 9 Years, No. of Observations = 148

Within $R^2 = 0.755$, $\bar{R}^2 = 0.705$

Country FE $\chi^2_{(21)} = 240[0.00]$; Time and Country FE $\chi^2_{29} = 256[0.00]$

The above result, although somewhat preliminary, is consistent with the theoretical predictions of our model: ceteris paribus, in countries in which the firm size distribution is less skewed towards smaller firms (i.e. with smaller γ) employment is higher (due to the direct impact of γ), and the impact of a fall in output on employment is lower (via the interaction effect γy).

As discussed, we cannot meaningfully examine the effect of labour market variables and their interaction with the shape parameter on employment, as data availability restrictions would result in the samples not being comparable. However, an important dimension of industry adjustments – that is not captured by our standard theoretical framework – is that changes in aggregate performance as a result of policy or other shocks are not only resulting from compositional changes between firms for a given distribution, but also from shifts or changes in the shape in the distribution. The latter would be reflected in a change in the shape

[18] This requires y_{jt} to be weakly exogenous with respect to e_{jt}. To this end, we carried out weak exogeneity tests at the country level using quarterly data and found that these tests did not reject the weak exogeneity assumption. The results are not reported here but are available on request.

parameter of the distribution. In this light, it is therefore instructive to examine (for the available subsample) whether labour market institutional variables influence the size distribution of firms. To this end, we regressed γ_{jt} on *ALMP* (expenditure on active labour market policies as a percentage of GDP), *PLMP* (expenditure on passive labour market policies as percentage of GDP), *PROT* (overall strictness of employment protection, scale 0 to 6 representing least to most stringent), *UDENS* (union density) and, *UMEMB* (union membership) and found the following results where again η_j and ϕ_t denote country and time fixed effects and the numbers in parentheses are the t-ratios based on *Panel Corrected Standard Errors* and those in square brackets are the P-values:

$$
\begin{aligned}
\hat{\gamma}_{jt} = & -\underset{(2.34)}{3.5127}ALMP_{jt} - \underset{(0.83)}{0.3599}PLMP_{jt} - \underset{(0.75)}{0.6090}PROT_{jt} + \underset{(1.95)}{0.0820}UDEN_{jt} \\
& + \underset{(1.02)}{0.0007}UMEM_{jt} + \hat{\mu} + \hat{\eta}_i + \hat{\phi}_t
\end{aligned}
$$

Unbalanced Sample: 20 Countries, 7 Years, No. of Observations = 100

Within $R^2 = 0.7319$, $\overline{R}^2 = 0.6153$

Country FE $\chi^2_{(19)} = 97\,[0.00]$; Time & Country FE $\chi^2_{25} = 100\ [0.00]$

Although not all estimated coefficients are statistically significant, these results suggest that welfare state and labour market variables affect the size distribution of firms;[19] active labour market policies in particular have a significant and negative effect on the shape parameter of the distribution – i.e. they skew the distribution towards larger firms. Thus, these results suggest that the size distribution of firms affects the employment rate and acts as a channel for the transmission of shock – which is fully consistent with our theoretical predictions – and that ALMP appear to influence that channel.

5. Conclusions

We have argued that inter-country differences in firm size (and productivity) distribution can contribute to explaining differences between countries regarding the relationship between output and employment. We have developed a small open economy model and shown the intra-industry inter-firm heterogeneity and selection acts as a channel through which shocks, by affecting average industry productivity, impact on employment and welfare. In particular, a negative demand shock results in an anti-competitive effect that – by reallocating market shares towards less efficient firms – lowers average industry productivity, aggregate employment and welfare. Countries with a ‘more efficient distribution of firms’ are shown to

[19] This is in line with the findings of Garicano *et al* (2013) and Gourio and Roys (2013).

weather out the shock better than less efficient ones, experiencing a weaker anticompetitive selection effect, and smaller aggregate employment and welfare losses.

The model also shows that the use of ALMP to sustain employment entails, in most cases, taxing firms and subsidising workers – a policy mix that toughens export selection (thus reducing the extensive and increasing the intensive margin of export), increases average industry efficiency, and expands aggregate demand directly by increasing workers' income. Only when the relatively less efficient firms (i.e. domestic production alone) are targeted is this result reversed. Furthermore, a uniform policy (that does not discriminate between production for domestic markets and for exports) is dominated, from a welfare point of view, by a policy that targets exports only (hence concerns the more efficient firms). Thus, the 'best' policy (in terms of employment and welfare) entails picking winners (i.e. the exporters) by taxing their production for export in order to sustain aggregate demand and employment via worker subsidies.

A key testable hypothesis emerging from the model is that in countries with a lower degree of firm heterogeneity – i.e. with a firm size distributions that is more skewed towards smaller (and less efficient) firms – a negative shock should have a stronger negative effect on aggregate employment. We estimated a measure of the shape parameter of the distribution and used it to examine its effect on the employment-output relationship for a number of OECD countries. Our results confirm the predictions of the theory: not only is the shape parameter of the distribution negatively related to employment (i.e. as the size distribution of firms becomes more skewed towards smaller firms, aggregate employment falls), but the impact on aggregate employment of a fall in aggregate output is reduced by the size parameter of the distribution.

Other testable hypotheses emerging from the theoretical model concern the role of ALMP and how it is influenced by the shape of the size and productivity distribution of firms. Our data availability at the cross-country level prevented us from assessing these empirically; we shall pursue this in future research.

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Appendix

1. Specification of the structural VAR and ARDL models

For each of the four countries, we find that Δy and Δe are I(0), and that although *y* and *e* are I(1) they do not cointegrate. We therefore work with the following VAR(p) specification

$$\begin{aligned}\Delta y_t &= \eta^y + \sum_{j=1}^{p}\left(\beta_{e,j}^{y}\Delta e_{t-j} + \beta_{y,j}^{y}\Delta y_{t-j}\right) + D_t\phi^y + \varepsilon_t^y,\\ \Delta e_t &= \eta^e + \sum_{j=1}^{p}\left(\beta_{e,j}^{e}\Delta e_{t-j} + \beta_{y,j}^{e}\Delta y_{t-j}\right) + D_t\phi^e + \varepsilon_t^e,\end{aligned} \qquad \text{(A1.1)}$$

where D' = (d08q2, d08q3, d08q4, d09q1, d09q2) is a vector of 5 dummies each assuming the value of unity for the corresponding date — 2008q2 to 2009q2 — and zero elsewhere. These are simple shift dummies which are used to capture the impact of the crisis so as to leave the residuals clean and raise the robustness of the estimates.

For each country we try to find a parsimonious restricted version of the above, by simple general to specific estimation and testing, and use it to estimate the structural version

$$\begin{bmatrix} 1 & 0 \\ -a_{21} & 1 \end{bmatrix}\begin{bmatrix} \varepsilon_t^y \\ \varepsilon_t^e \end{bmatrix} = \begin{bmatrix} b_{11} & 0 \\ 0 & b_{22} \end{bmatrix}\begin{bmatrix} u_t^y \\ u_t^e \end{bmatrix}, \qquad \text{(A1.2)}$$

where u_t^y and u_t^e are the orthogonalised exogenous disturbances and can be considered as the random shocks specific to *y* and *e* respectively.

First, given that the structural form above is the appropriate theoretical framework for examining the impact of an exogenous shock to *y* on *e*, we use its estimates to examine the impulse response of *e* to u_t^y. These are given in left-hand-side panel of Figure 4. Next, since (A1.2) is empirically appropriate if Δy_t is weakly exogenous in Δe_t equation (which we have established by the appropriate tests), we can also work with the corresponding ARDL equation

$$\Delta e_t = \tilde{\eta}^e + \gamma_y^e \Delta y_t + \sum_{j=1}^{p}\left(\tilde{\beta}_{e,j}^{e}\Delta e_{t-j} + \tilde{\beta}_{y,j}^{e}\Delta y_{t-j}\right) + D_t\tilde{\phi}^e + \tilde{\varepsilon}_t^e, \qquad \text{(A1.3)}$$

or in its appropriate restricted version as long as $\gamma_y^e \simeq a_{21}$. We used this setup to generate the dynamic multipliers for the impact of Δy_t on Δe_t (the first impact being $\frac{\partial \Delta e_t}{\partial \Delta y_t} = \gamma_y^e$), which are given in right-hand-side panel of Figure 4.

2. Estimation of the shape parameter for the size distribution of firms

Suppose that the random variable *size* is defined over $s \geq s_0 > 0$ and is generated by the Pareto distribution with the probability density function

$$f\left(s; s_0, b\right) = b s_0^b s^{-(1+b)}; \;\; s \geq s_0 > 0,\, b > 0,$$

where s_0 and *b* are also known as the scale and shape parameters, respectively. Quandt's maximum likelihood estimator of *b* uses the joint likelihood function

$$L\left(b, s_0\right) = \prod_{i=1}^{N} b s_0^b x_i^{-(1+b)},$$

whose logarithm is maximised with respect to s_0 and b. It is straightforward to see that the corresponding estimators are $\hat{s}_0 = \min(x_i)$ and hence $\hat{b} = N\left[\sum_{i=1}^{N} \ln\left(\frac{x_i}{\hat{s}_0}\right)\right]^{-1}$.

3. Data Appendix

The firm-level data was obtained from the February 2013 update of the Amadeus database – a commercially available database supplied by Bureau van Dijk – of standardised financial information covering over 17 million companies across Europe. Our analysis focuses on the number of employees reported by firms within 22 EU countries (Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Turkey, and United Kingdom) from 2003-2011. In order to ensure that employees of the same corporate group are not reported in multiple company records, we focused on companies that had only unconsolidated accounts, and had not been involved in mergers on de-mergers. The final selection criteria used is that the company had one employee or more during at least one year from 2008 to 2011.

Seasonally adjusted nominal GDP and GDP deflators were obtained from the OECD National Accounts (June 2012 edition). Data on harmonised unemployment rates were obtained from the OECD Main Economic Indicators (November 2012 edition), again seasonally adjusted. In both instances quarterly and annual data was acquired. Quarterly data is used in Section 2 of the paper, while Section 4 employs the annual data.

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Figure 1. Employment Rate and Real GDP

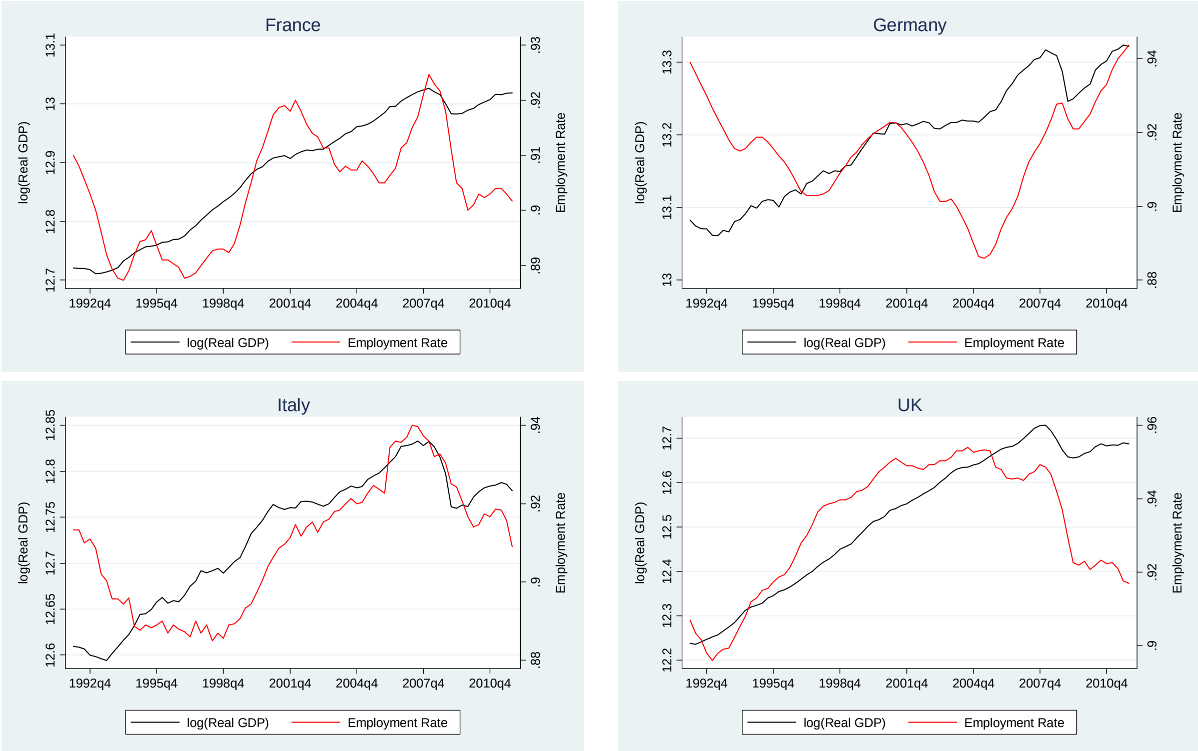


Figure 2. Employment Rate and Real GDP: Trend and Cycle

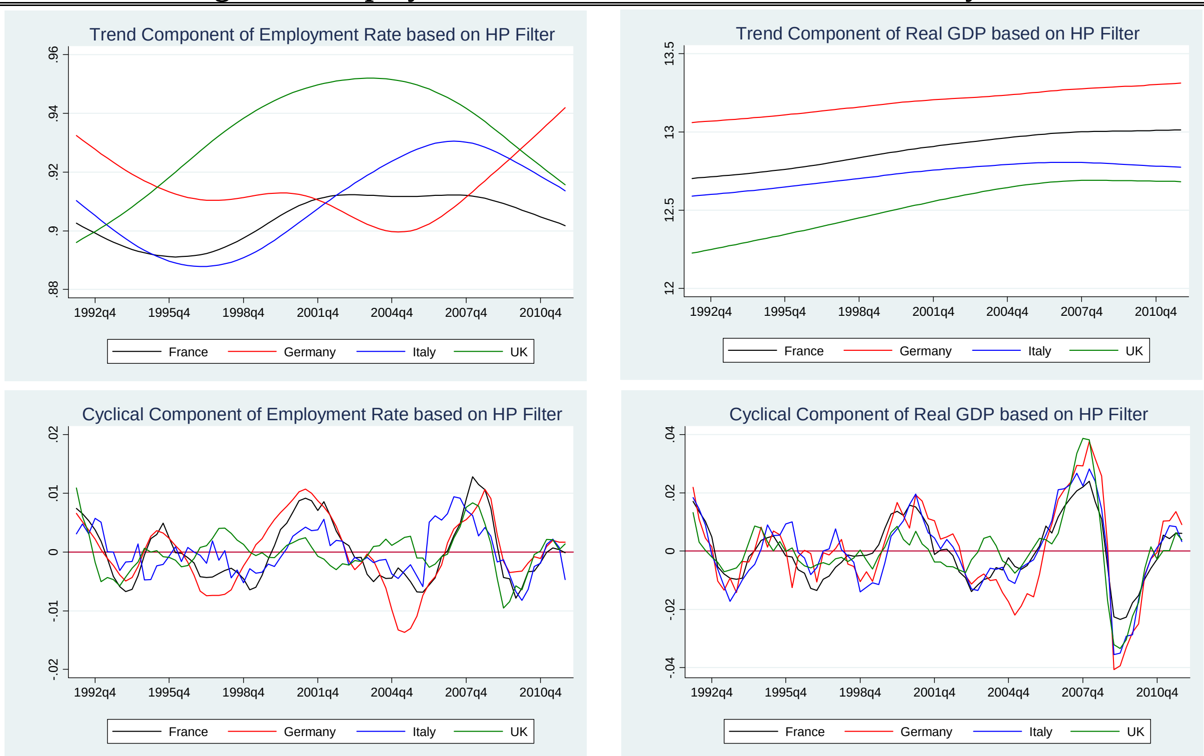


Table 1. Time Series Behaviour of Employment and Output, 1992q1-2011q4

AR Coefficients	AR representation of Employment Rate Dependent Variable: Δe_{it}				AR representation of Real GDP Dependent Variable: Δy_{it}			
	France	**Germany**	**Italy**	**UK**	**France**	**Germany**	**Italy**	**UK**
Intercept	4.38E-06 [0.022]	7.71E-05 [0.56]	-3.73E-05 [0.11]	0.000101 [0.54]	0.001489 [2.58]	0.002197 [2.26]	0.001337 [1.73]	0.001847 [2.56]
lag 1	0.5946 [5.25]	1.2736 [11.12]	0.0219 [0.18]	0.6000 [5.17]	0.6135 [6.79]	0.3150 [2.92]	0.4850 [4.23]	0.8205 [6.95]
lag 2	0.1401 [1.06]	-0.6818 [3.96]	0.1597 [1.34]	0.0978 [0.72]	--	--	0.0429 [0.34]	0.0903 [0.58]
lag 3	0.1495 [1.13]	0.2520 [2.19]	0.1793 [1.52]	0.1890 [1.41]	--	--	0.2096 [1.67]	-0.2435 [2.07]
lag 4	-0.3099 [2.75]	--	0.2228 [1.83]	-0.2574 [2.24]	--	--	-0.3130 [2.75]	--
AR Roots	.73±.33i -.43±.54i	.82 .23±.51*i*	.84 -.09±.64*i* -0.64	.70±.27*i* -.40±.55*i*	.61	.31	.67±.37*i* -.43±.59*i*	.65±.32*i* -.47
Mean of Dep. Variable	2.22E-05	0.000180	4.44E-06	0.000280	0.003831	0.003170	0.002407	0.005798
SE of Dep. Variable	0.002333	0.002492	0.002937	0.002166	0.005153	0.008457	0.007200	0.006906
SE of Residuals	0.001703	0.001190	0.002809	0.001608	0.004091	0.008071	0.006083	0.004449
Sum of Sq. Residual	0.000203	0.000102	0.000552	0.000181	0.001272	0.004951	0.002591	0.001425
B.L.P. Q Stat.	1.94 (0.925)	1.84 (0.93)	1.85 (0.93)	1.61 (0.95)	5.72 (0.46)	3.16 (0.79)	3.40 (0.76)	0.43 (0.99)
Residual SC LM stat.	3.93 (0.69)	3.21 (0.78)	6.57 (0.36)	9.75 (0.14)	5.60 (0.47)	3.47 (0.75)	5.93 (0.43)	1.60 (0.95)
R^2	0.496017	0.781087	0.134921	0.478814	0.377712	0.101097	0.324635	0.601564
$\bar{R}^2$	0.467218	0.771966	0.085488	0.449032	0.369524	0.089269	0.286043	0.584963

(a) OLS estimates are reported, with the AR order chosen using sequential likelihood ratio test and Schwarz information criterion. **(b)** Unit root and stationarity tests show that both e_{it} and y_{it} are integrated of order one, I(1), while Δe_{it} and Δy_{it} are stationary, I(0) — tests are not reported here. **(c)** Figures in square brackets are the t-ratios. B.L.P. **(d)** Q Stat is the Box-Pierce-Lujng Q statistic for the residuals for 6 lags, asymptotically distributed as $\chi^2_{(6)}$ with the figure in parentheses providing the table P-value. **(e)** Residual SC LM is the Breusch-Godfrey LM statistic for up to 6th residuals serial correlation asymptotically distributed as $\chi^2_{(6)}$ with the figure in parentheses providing the table P-value.

Figure 3. Comparing the AR Residuals (Estimates in Table 1)

Employment	Output

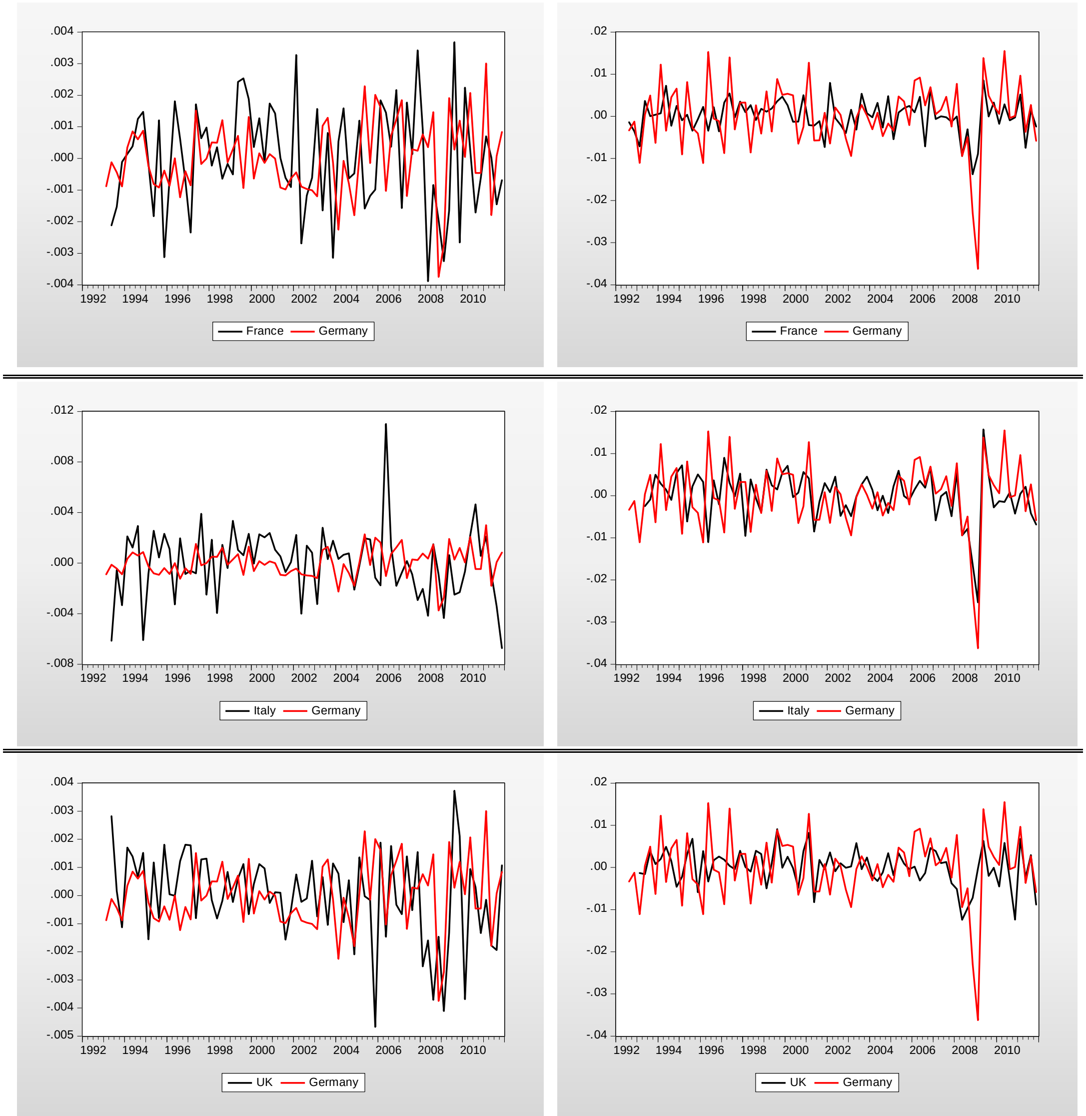
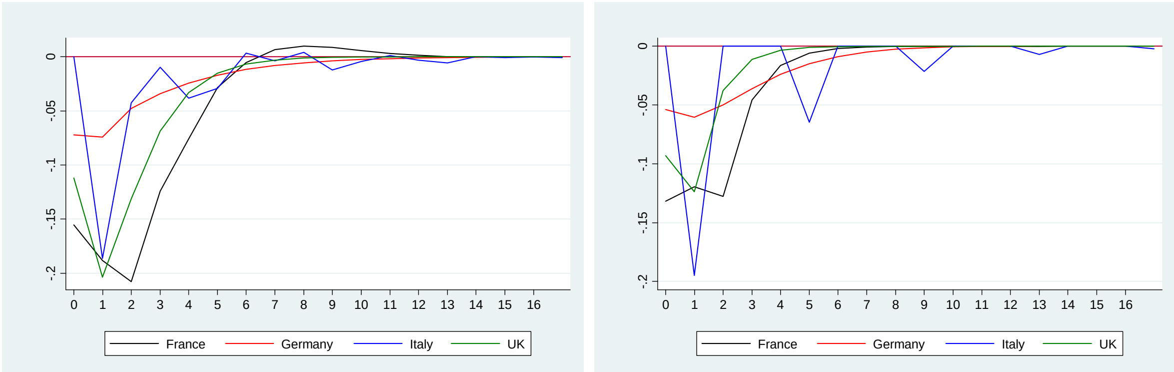


Figure 4. Response of the change in employment, Δe_{it}, to negative shocks



Impulse response to an exogenous shock based on the restricted Structural VAR models

Dynamic multipliers with respect to a unit fall in Δy_{it} based on the restricted ARDL models

Figure 5. Cumulative Distribution of Firms' Size (number of employees)

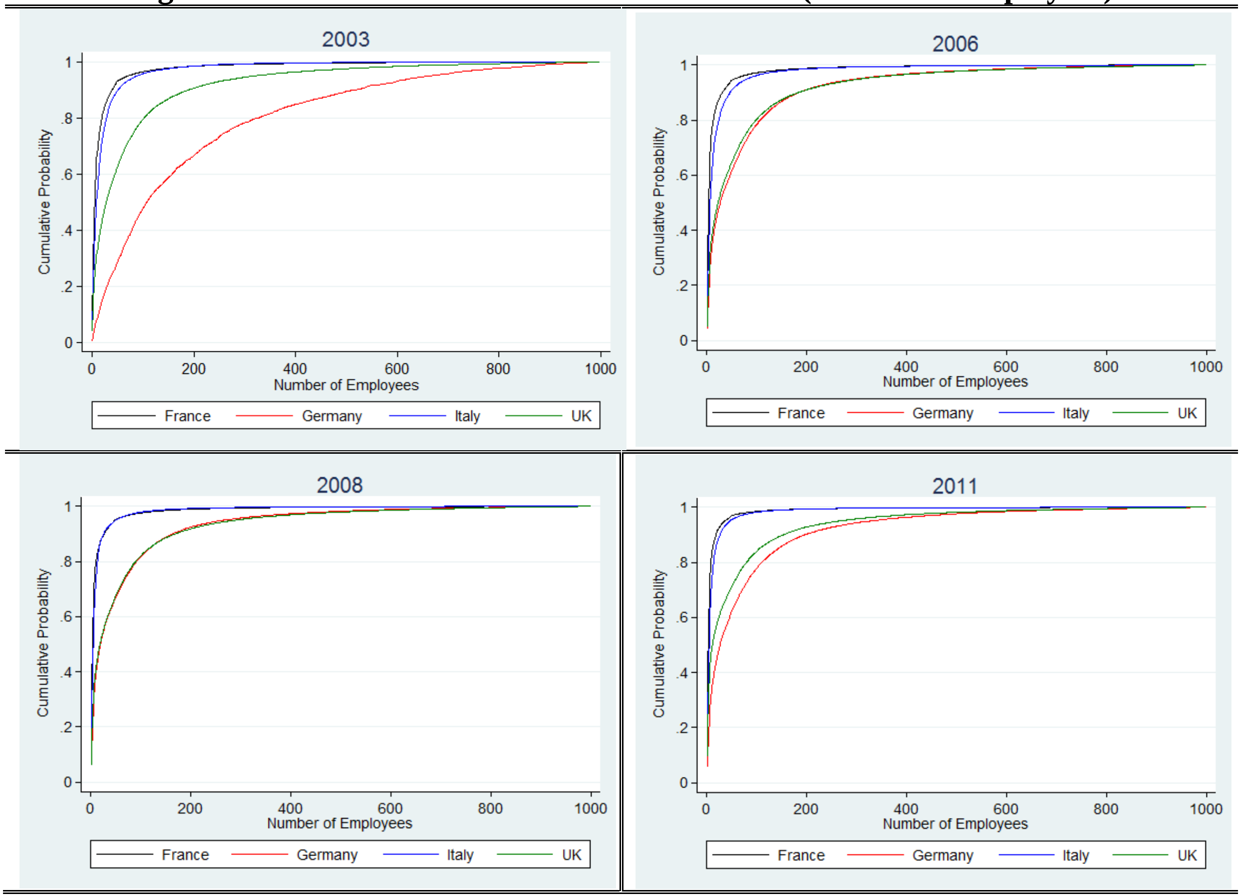


Table 2. The role of firms' concentration/distribution in the absence of any policy in transmitting the impact of a shock
($s = s^* = t = \tau = 0$ and a negative export shock equivalent to a reduction in $\beta^* I^*$ from 300 to 270)

Cases / Variables	(I) Equilibrium with $\gamma = 2$	(II) Equilibrium with $\gamma = 1.95$	(III) Post-shock equilibrium with $\gamma = 2$	(IV) Post-shock equilibrium with $\gamma = 1.95$	(V) Impact of the shock with $\gamma = 2$ %Δ from pre-shock level	(VI) Impact of the shock with $\gamma = 1.95$ %Δ from pre-shock level
F	7.442	8.581	7.157	8.285	-3.83	-3.45
M	4.198	2.552	4.165	2.534	-0.79	-0.72
M^*	1.034	0.531	0.931	0.477	-9.96	-10.00
L	760.927	901.973	754.948	895.474	-0.79	-0.72
L_A	149.877	223.630	167.286	240.504	11.62	7.55
$L_D + L_D^*$	611.05	678.342	587.662	654.970	-3.83	-3.45
L_D	409.326	479.138	406.11	475.686	-0.79	-0.72
L_D^*	201.724	199.204	181.552	179.284	-10.00	-10.00
x	612.064	2372.676	602.608	2339.052	-1.54	-1.42
x^*	2466.026	10619.661	2549.186	11009.482	3.37	3.67
ϕ_c	1.331	1.862	1.311	1.836	-1.50	-1.42
ϕ_c^*	2.682	4.168	2.773	4.321	3.39	3.67
u	2.937	4.892	2.869	4.787	-2.32	-2.15
P_D	0.111	0.073	0.114	0.074	2.70	1.82
$(1-t)w/P$	5.79	8.136	5.699	8.019	-1.57	-1.44
p	0.237	0.119	0.241	0.121	1.69	1.44
p^*	0.118	0.053	0.114	0.051	-3.39	-3.54

The parameter values used in all simulations are $N = 1000$; $\sigma = 2.9$; $\delta = 2$; $\theta = 10$; $\alpha = 2.5$; $\alpha^* = 5$; $f = 40$; and $\beta = 0.8$.

Table 3. Different subsidy options financed by proportional income taxation to compensate employment effect of a negative shock ($\gamma = 2, \tau = 2$ and negative export shock equivalent to a reduction in $\beta^* I^*$ from 300 to 270)

Cases / Variables	Uniform policy subsidising domestic and export production equally ($S = S^*$)		Targeting domestic production of all firms (S^*=0)		Targeting production for exports only (S=0)	
	(I) Using $S = S^*$ to keep L at pre-shock level	**(II)** Using $S = S^*$ to maximise u (and hence L)	**(III)** Using S to keep L at pre-shock level	**(IV)** Using S to maximise u and hence L	**(V)** Using S^* to keep L at pre-shock level	**(VI)** Using S^* to maximise u and hence $L^{(1)}$
s	-0.088	-0.360	0.122	0.360	0.000	0.000
s^*	-0.088	-0.360	0.000	0.000	-0.046	-0.200
t	-0.065	-0.239	0.069	0.232	-0.010	-0.039
F	7.522	8.441	6.851	6.067	7.248	7.502
M	4.112	3.857	4.448	5.074	4.242	4.456
M^*	0.931	0.931	0.931	0.931	0.890	0.776
L	760.927	767.403	760.927	766.639	760.927	777.330
L_A	193.025	257.810	145.693	90.399	173.704	191.610
$L_D + L_D^*$	567.902	509.593	615.234	676.239	587.223	585.720
L_D	400.967	376.099	433.682	494.687	413.581	434.427
L_D^*	181.552	181.552	181.552	181.552	173.643	151.293
x	621.730	680.022	570.529	502.699	600.924	596.510
x^*	2613.369	2768.338	2494.067	2347.030	2623.112	2858.981
ϕ_c	1.352	1.479	1.241	1.094	1.307	1.298
ϕ_c^*	2.842	3.011	2.713	2.553	2.853	3.110
u	2.937	3.013	2.937	3.004	2.937	3.131
P_D	0.121	0.142	0.102	0.079	0.113	0.111
$(1-t)w/P$	5.790	5.889	5.790	5.877	5.790	6.042
p	0.254	0.290	0.223	0.185	0.241	0.243
p^*	0.111	0.105	0.116	0.124	0.116	0.122

(1) In this case, the utility function is decreasing in S^* hence the higher is the tax on exporting firms the higher is u and L, since as the tax rises a smaller but more efficient mass of firms survives. The figures in this column are just an example, with exporting firms paying 20% tax on wage. However, note that the marginal gain in welfare and employment gets smaller and smaller as the firms are taxed at higher rates.

Table 4. The role of firms' concentration/distribution in determining the extent of policy

Cases / Variables	$\beta^* I^*$ = 300 and no Policy ($S = S^* = t = \tau = 0$) (as columns I and II in Table 2)		$\beta^* I^*$ = 300 and optimal policy providing uniform subsidy ($S = S^*$) financed by a proportional income tax only		Comparing effects of a negative shock with $\gamma = 2$ (reducing $\beta^* I^*$ from 300 to 270) without and with optimal policy	
	(I) $\gamma = 2$	**(II)** $\gamma = 1.95$	**(III)** $\gamma = 2$	**(IV)** $\gamma = 1.95$	**(V)** %Δ from column I	**(VI)** %Δ from column III
s	0	0	-0.40	-0.33	0	-10.00
s^*	0	0	-0.40	-0.33	0	-10.00
t	0	0	-0.27	-0.21	0	-11.24
F	7.442	8.581	8.91	9.96	-3.83	-5.29
M	4.198	2.552	3.88	2.36	-0.79	-0.66
M^*	1.034	0.531	1.03	0.53	-9.96	-10.00
L	760.927	901.973	776.21	914.18	-0.79	-1.13
L_A	149.877	223.630	253.54	319.90	11.62	1.68
$L_D + L_D^*$	611.05	678.342	522.67	594.29	-3.83	-2.50
L_D	409.326	479.138	378.58	443.94	-0.79	-0.66
L_D^*	201.724	199.204	201.72	199.20	-10.00	-10.00
x	612.064	2372.676	696.45	2663.43	-1.54	-2.36
x^*	2466.026	10619.661	2698.59	11463.63	3.37	2.58
ϕ_c	1.331	1.862	1.52	2.09	-1.50	-2.36
ϕ_c^*	2.682	4.168	2.94	4.50	3.39	2.58
u	2.937	4.892	3.12	5.09	-2.32	-3.37
P_D	0.111	0.073	0.14	0.09	2.70	-0.17
$(1-t)w/P$	5.79	8.136	6.03	8.36	-1.57	-2.26
p	0.237	0.119	0.29	0.14	1.69	-0.51
p^*	0.118	0.053	0.11	0.05	-3.39	-2.52

Age-Specific Education Inequality, Education Mobility and Income Growth

Working Paper no 6

Authors: Jesus Crespo Cuaresma (WU),
Samir K.C. (IIASA), Petra Sauer (WU)

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Age-Specific Education Inequality, Education Mobility and Income Growth*

Jesus Crespo Cuaresma† Samir K.C.‡ Petra Sauer§

Abstract

We construct a new dataset of inequality in educational attainment by age and sex at the global level. The comparison of education inequality measures across age groups allows us to assess the effect of inter-generational education attainment trends on economic growth. Our results indicate that countries which are able to reduce the inequality of educational attainment of young cohorts over time tend to have higher growth rates of income per capita. This effect is additional to that implied by the accumulation of human capital and implies that policies aiming at providing broad-based access to schooling have returns in terms of economic growth that go beyond those achieved by increasing average educational attainment.

Keywords: Human capital, education inequality, age structure, economic growth

JEL codes: I24, I25, O50

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1 Introduction

The term *human capital* comprises aspects inherent in humans, which are either given - as in the case of congenital abilities, skills and talent - or can be acquired - as in the case of education or experience. In this context, formal education takes on an essential role in linking those two components of human capital. On the one hand, education is able to compensate for congenital differences as well as educational gaps arising in early childhood. On the other hand, education constitutes the foundation of personal professional careers and affects lifetime income and health over the whole life-cycle. Its central role as a determinant of individual well-being and income has lead formal education to play a particularly important role in development policy paradigms[1].

At the aggregate level, the empirical analysis of the effects of investments of education on economic outcomes has been traditionally based on measurements of average educational attainment of societies. Variables such as the mean years of schooling of a person in the working age population or the proportion of population with some specific formal educational attainment level are often used in the framework of cross-country or panel data regressions to assess the role played by human capital as a determinant of socio-economic outcomes[2].

The literature on the linkage between human capital and economic outcomes has concentrated on relating these to the first moment of the distribution of educational attainment. However, in the last decades some effort has been invested in analysing the distributional dimension of human capital measures. The standard deviation and Gini indices of schooling measures are the two statistics that have primarily been used in the literature for investigating the aggregate distributional characteristics of educational attainment across individuals. In this regard, the impact of the distribution of education on income growth, income distribution and poverty reduction has been explored making use of the standard deviation of school attainment.[3] Such a measure of dispersion in the distribution of educational outcomes has also been used for testing the existence of an inverted U-shaped relationship between the dispersion and the average level of schooling (a so-called education Kuznets curve) by Fan, Thomas, and Wang (2002), who confirm the findings of Londono (1990) and Ram (1990) concerning the fact that education inequality first increases as the average level of schooling rises, and, after reaching a peak, starts to decline.

Since the standard deviation of the distribution of education variables is only a measure of absolute dispersion, it does not provide a consistent picture of the distribution of education outcomes across individuals, especially for countries with very low and high levels of average schooling. The use of the education Gini coefficient as a measure of inequality is thus more widespread in the recent literature. Earlier studies used Gini indices computed using school enrollment or education finance data[4] for relatively small samples of developing economies. To the extent that enrollment

[1]See for example Lutz (2009) for a broad discussion of the role of education on development.

[2]See for example Mankiw, Romer, and Weil (1992), Barro and Lee (1993), de la Fuente and Doménech (2006), Cohen and Soto (2007), just to name a few.

[3]See Birdsall and Londono (1997), López, Thomas, and Wang (1998), Lam and Levison (1991) or Inter-American Development Bank (1999).

[4]Maas and Criel (1982), Rosthal (1978) and Sheret (1988).

ratios are flow variables and as such constitute indicators of access to education, they do not capture the degree of inequality in educational outcomes, that is, in the *stock* of human capital. More recent studies calculate the education Gini coefficient based on educational attainment of the population of interest. López, Thomas, and Wang (1998) derive Gini coefficients for 12 countries using attainment data. Fan, Thomas, and Wang (2001) calculate education Gini indices for 85 industrialized and developing countries for the period from 1960 to 1990 and relate them to average educational attainment, educational gender-gaps and real GDP per capita differences. In subsequent work (Fan, Thomas, and Wang, 2002), they further extend the sample to 140 countries spanning the period 1960 to 2000. The approach in Fan, Thomas, and Wang (2001) and Fan, Thomas, and Wang (2002) has been utilized for deriving consistent indicators summarizing the distribution of education that can be related to the distribution of income and income growth (see e.g. Checchi, 2000). The results in Checchi (2000) do not support the existence of an education Kuznet's curve, but reveal instead a strong negative relation between the degree of inequality and the average level of educational attainment. Castelló and Doménech (2002) compute Gini coefficients using years of schooling for a broad sample of countries and Castelló-Climent and Doménech (2012) and Sauer and Zagler (2012b) provide an update of the dataset which spans a larger historical period.[5] While the results in Castelló and Doménech (2002) show that uneven distributions of human capital tend to be directly related to lower income per capita growth rates, the evidence of Sauer and Zagler (2012b) reveals that countries that show greater education inequality experience lower macroeconomic returns to education than more equal economies, on average.

Studying the heterogeneity in the distribution of human capital across individuals due to the age structure of societies has also gained importance lately. Recent developments in data collection and population back-projections have been able to shed light into the crucial role played by the age structure of educated adults as a determinant of economic development[6]. In this contribution we bridge both branches of the literature by constructing a new dataset of inequality measures of educational attainment by age groups and sex for 175 countries during the period 1960-2010. For this purpose, we use the recently developed IIASA/VID (International Institute for Applied Systems Analysis/Vienna Institute of Demography) global dataset of populations by age, sex, and levels of education.[7] This enables us to incorporate the demographic dimension into our analysis of education inequality. We are thus able to analyse global trends for subgroups of the population. Beyond that, we distinguish the differential characteristics of distributions of educational attainment across different age groups - which tend to dominate in episodes of educational expansion - from those within age groups.

The new data allow us to create aggregate measures of intergenerational education mobility based on comparing the distribution of educational attainment among older individuals with that at younger age groups. From a theoretical point of view, Galor and Tsiddon (1997) provide a model that studies the interaction between the inter-

[5]Fan, Thomas, and Wang (2002) also calculate Theil indices of educational attainment and Castelló and Doménech (2002) additionally report the distribution of education by quintiles.

[6]See Lutz, Crespo-Cuaresma, and Sanderson (2008) or Crespo-Cuaresma and Mishra (2011).

[7]See KC, Barakat, Goujon, Skirbekk, Sanderson, and Lutz (2010) and Lutz and KC (2011), for example.

generational mobility of human capital and output growth. In the context of an overlapping generations model, Galor and Tsiddon (1997) hypothesize that the intergenerational transmission of education occurs through two different mechanisms. On the one hand, the prevailing level of human capital of an individual is assumed to depend on the resources invested in education as well as on the level of human capital of their parents. This creates path dependency within dynasties and is thus called the *local home externality*. Second, the level of technology is a non-decreasing function of the parental generation's average human capital in the economy. By increasing the wage rate of each individual by the same amount, thereby creating incentives for human capital accumulation for the skilled and the unskilled, this *global technological externality* creates spillovers across dynasties and generations. The path towards the unique steady state equilibrium in this economy is characterized by intergenerational mobility along with a subsequent decline in the degree of inequality in the distribution of human capital. To the extent that exogenous technological shocks are complementary to human capital, technological progress boosts the returns to skills and increases intergenerational mobility. The model put forward by Galor and Tsiddon (1997) thus predicts a positive relationship between intergenerational education mobility and income growth.

Using panel regressions, we show that countries which reduce the degree of inequality in the distribution of education for younger age groups (and therefore those which increase the degree of intergenerational education mobility) tend to have higher growth rates of income per capita. Our results confirm the theoretical insights of Galor and Tsiddon (1997) and expand some of the results found in the literature. Our estimates indicate that the returns of policy actions aimed at improving intergenerational education mobility in terms of income growth go beyond the direct effect that higher average educational attainment has on economic growth. The results of the analysis implies that monitoring the distribution of age-structured educational attainment provides policymakers with very valuable information about future economic growth trends and that therefore the use of demographic modelling and projection methods can serve an important function as an instrument to investigate income growth scenarios over long time horizons. In this context, we study the heterogeneity observed within the European economies in terms of education inequality in more detail and construct projections of education inequality within and across age groups for the continent. Such a projection exercise provides insights concerning the potential future effects of human capital dynamics on income growth in Europe.

The paper is structured as follows. In section 2 we discuss the database for and the construction of our age and sex-specific education inequality indicator. In section 3 we analyse global trends in the demography of education inequality. The intuition behind our aggregate indicator of intergenerational education mobility is dealt with in section 4, while section 5 concentrates on the education inequality and mobility dynamics for Europe. We present and discuss the results of the empirical analysis which addresses the role played by educational inequality and intergenerational education mobility on income growth in section 6. Section 7 summarizes the findings and concludes.

2 Constructing Age-Structured Education Gini Coefficients

In this section we present the details concerning the construction of age and sex-specific education inequality indicators. We study the differences in the distribution of educational attainment across and within age groups by presenting results for two selected countries, India and South Korea, which are of interest in their own right.

In line with the existing literature, we follow Fan, Thomas, and Wang (2001) and Fan, Thomas, and Wang (2002) in measuring the degree of inequality in the educational distribution by computing Gini coefficients of educational attainment but extend their approach by accounting for the demographic dimension. In a given country, for the age group a of sex s the measure of inequality in educational attainment is thus given by the Gini coefficient computed over the relevant population group.

$$\text{Gini}_{a,s} = \frac{1}{\bar{y}_{a,s}} \sum_{i=2}^{4} \sum_{j=1}^{i-1} |y_{a,s,i} - y_{a,s,j}| \, p_{a,s,i} p_{a,s,j}, \tag{1}$$

where $y_{a,s,i}$ is the cumulative duration of schooling for the level of education i in the age group a with sex s and $p_{a,s,i}$ is the corresponding share of the population with that level of education. $\bar{y}_{a,s}$ denotes the mean value of years of schooling, given by given by $\bar{y}_{a,s} = \sum_{i=1}^{n} p_{a,s,i} y_{a,s,i}$. We consider four educational attainment levels ranging from no formal education ($i = 1$) through primary education ($i = 2$), at least junior secondary education ($k = 3$) and tertiary education ($i = 4$). In relation to its application to income inequality, the education Gini coefficient is a measure of mean standardized deviations between all possible pairs of persons. The index always lies in a range between zero and one, with higher levels indicating more inequality in the distribution of education.

We are able to assess the full educational attainment distribution for four educational categories by five year age groups for men and women. Applying the demographic method of multistate back and forward projection, researchers at the International Institute for Applied Systems Analysis (IIASA) and the Vienna Institute of Demography (VID) have recently constructed population data[8] for 175 countries by age, sex and level of educational attainment spanning the period from 1960 to 2010 at five year intervals. The definitions of formal educational attainment categories are based on UNESCO's International Standard Classification of Education (ISCED) categories and are thus strictly consistent over time and across countries.

The basic structure of the data can be easily visualized using population pyramids for ages above 15. Figure 1 presents these for India and South Korea in the years 1970 and 2000. In India, on average 55.2% of people aged 20-24 did not have any formal education in 1970. The gender differences in terms of educational attainment are remarkable, with the share of uneducated women being 71.3% and for men 40.1 %. Only a negligible share of individuals attained some tertiary education in this age group. In 2000, the educational attainment of young age groups is comparatively very high. A substantial share of population in younger age groups had primary or

[8] See for example KC, Barakat, Goujon, Skirbekk, Sanderson, and Lutz (2010) and Lutz and KC (2011).

secondary education and the share of tertiary educated increased for both males and females. In spite of such improvements 41.5% of females and 20.2% of males still had no formal education in 2000. In contrast, the population pyramids for South Korea reveal the country's impressive educational expansion during the last part of the twentieth century. In 2000, among the younger age groups, attaining secondary education is the rule, and the share of individuals with tertiary education is 43% in the age group 25-29. Among the elderly there is still a significant share of uneducated persons and a sizeable gender gap which reflects overall lower educational attainment in preceding decades.

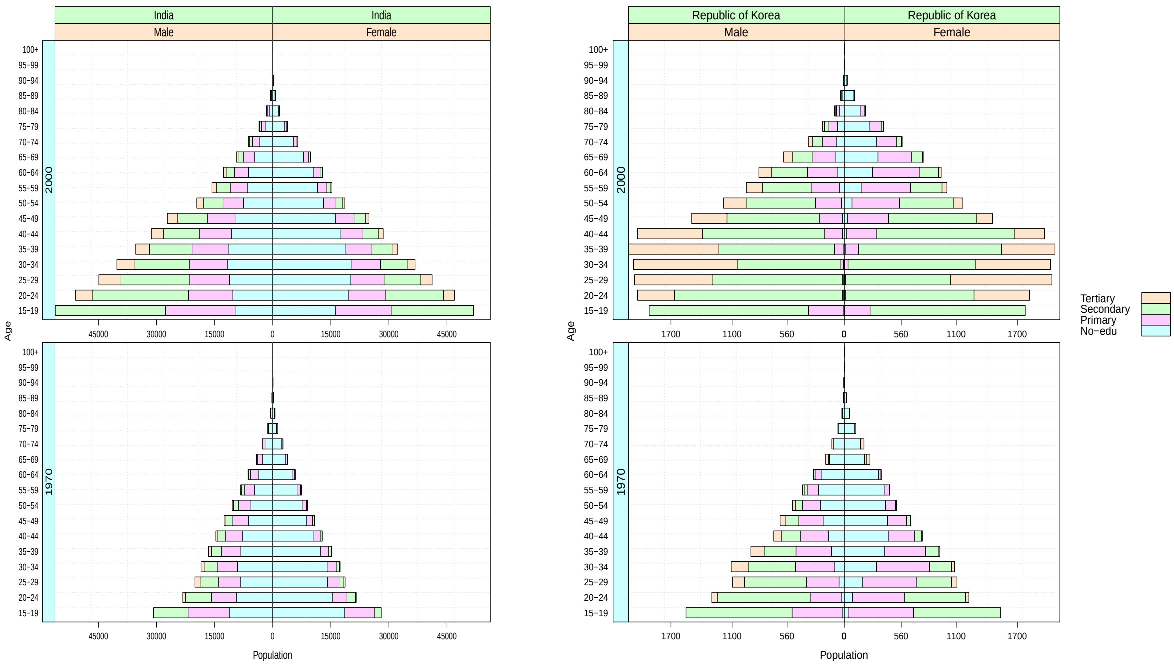

Figure 1: Population pyramids (ages 15+) including educational attainment information: India and South Korea, 1970 and 2000

In order to compute the education Gini coefficient by age group and sex given by equation (1), we require average duration data for each one of the educational attainment categories. We combine the age-structured education data from the IIASA/VID dataset with country-specific information on duration from the UNESCO Institute for Statistics (UIS). Since the IIASA/VID dataset includes in each one of the four broad categories of educational attainment individuals who did not complete the respective level, using the total duration for completion would overestimate the years that a representative individual spent in school. We therefore follow the method proposed by KC, Barakat, Goujon, Skirbekk, Sanderson, and Lutz (2010) to account for uncompleted attainment levels when computing the *mean* duration of each educational attainment level.[9]

The translation of cohort and gender-specific structures in the distribution of educated individuals to inequality measures are depicted in Figures 2 and 3. Figure 2 shows the Gini coefficient for educational attainment in each five-year age group for

[9]See appendix A.1 for a description of the computation of mean duration for the different educational attainment levels.

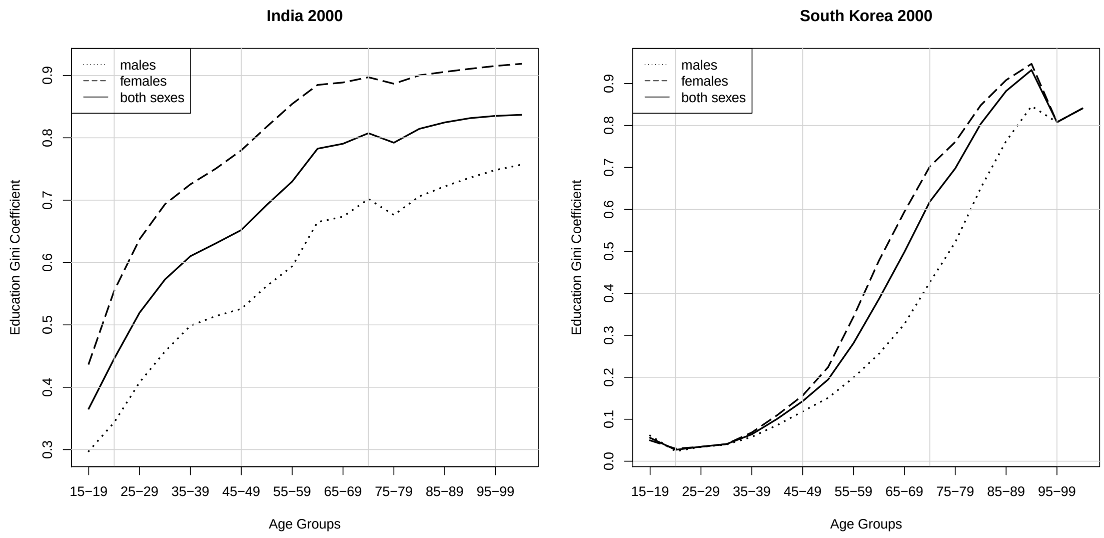

Figure 2: Education Gini coefficients by age group: India and South Korea, 2000

males and females using data corresponding to the year 2000. In general, the degree of education inequality is lower among younger people than among the elderly. Moreover, the educational attainment level is not only higher but also more equally distributed among men than among women. Such a gender gap is particularly pronounced in India as compared to South Korea. While the education Gini coefficient for males ranges between 0.3 in the lowest age group and 0.65 for individuals aged 65 and above, these values are 0.43 and 0.88, respectively, for females. The gender gap in education inequality disappears in young age groups for South Korea, where the education expansion led to an almost perfectly equal distribution of education among younger individuals, with the education Gini coefficient leveling off at 0.03. The steep slope of the curve reveals that the improvement in educational attainment for South Korea was accompanied by a substantial decline in the degree inequality in the distribution of education. Larger differentials in education inequality across sexes appear in South Korea for ages above 45, which correspond to the young age groups depicted in the population pyramid for 1970 in Figure 1.

The geometric representation of the Gini coefficient is the Lorenz curve. Formal schooling in the way we are able to measure it is a discrete rather than a continuous variable. The education Lorenz curve is thus a kinked line. If a proportion of the population does not attain any education, the function is horizontal over the corresponding range. Figure 3 plots the cumulative population shares against the cumulative shares of years of schooling for selected broader age groups of our example countries evaluated at the year 2000. The differences in terms of education inequality between age groups, depicted in the resulting educational attainment Lorenz curves for India and South Korea, stresses the importance of assessing the demographic dimension when analysing aggregate and distributional aspects of human capital dynamics. In India, the Lorenz curve for the population above 15 years of age presents characteristics which are similar to those in the age group 25-39, while in the case of South Korea the average value for the age group 15+ mimics the distribution observed in the age group 40-54. The average education Gini coefficient for South Korea thus overestimates the overall degree of within-age-group inequality

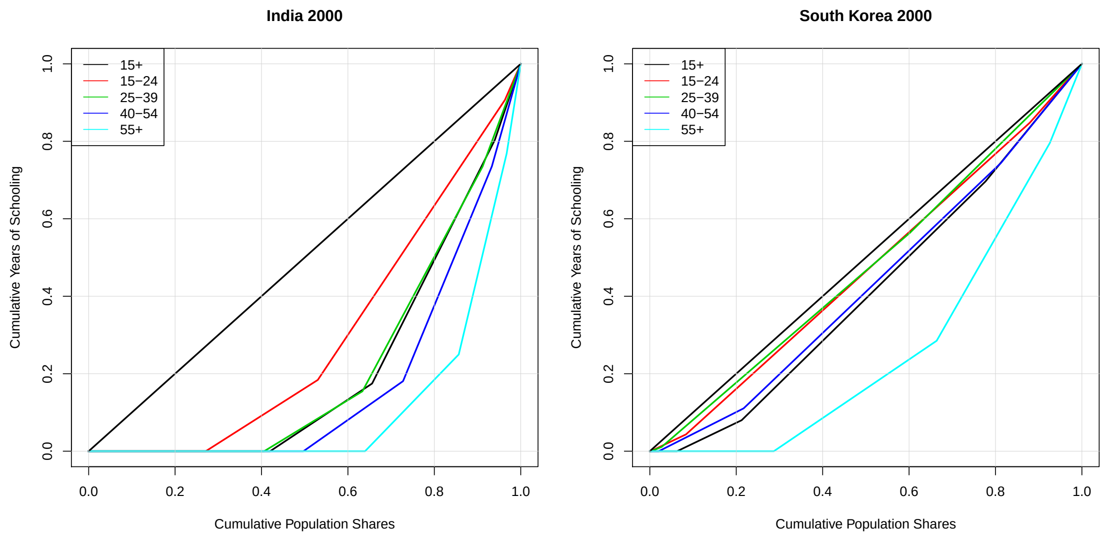

Figure 3: Education Lorenz curves for selected age groups: India and South Korea, 2000

in the distribution of education for most relevant age groups. This phenomenon is particularly relevant for countries which, as South Korea, have experienced a history of strong educational improvement and thus present stark differences in attainment levels between old and young individuals.

3 The Demography of Education Inequality: Global Trends 1960-2010

Figure 4 presents the evolution of the education Gini coefficient computed for the whole population above 15 years of age, as well as for broad age groups, over the period 1960-2010 for the eight world regions defined by the World Bank (Sub-Saharan Africa, South Asia, Middle East & North Africa, East Asia & Pacific, Latin America & the Caribbean, South America, Europe & Central Asia and Advanced Economies). An overall trend towards a more equal distribution of education is observable in all regions and for all age groups. However, marked differences in the dynamics of the Gini coefficients are present both, for the case of the whole adult population and, for the specific age groups.

For all age groups, the highest levels of education inequality are observed in Sub-Saharan Africa and South Asia, where also the trend towards a more equal distribution in educational attainment level has been the slowest in the 50 years depicted in Figure 4. Such an observation is not surprising taking into account that the decline in the share of individuals without education, which has been modest for a large part of the period in these two regions, is one of the main forces driving education inequality reduction (see Castelló-Climent and Doménech, 2012).

The process of educational expansion taking place over time in all regions leads in general to a reduction of the inequality differentials across age groups. Consequently, education Gini coefficients based on the whole adult population tend to be less

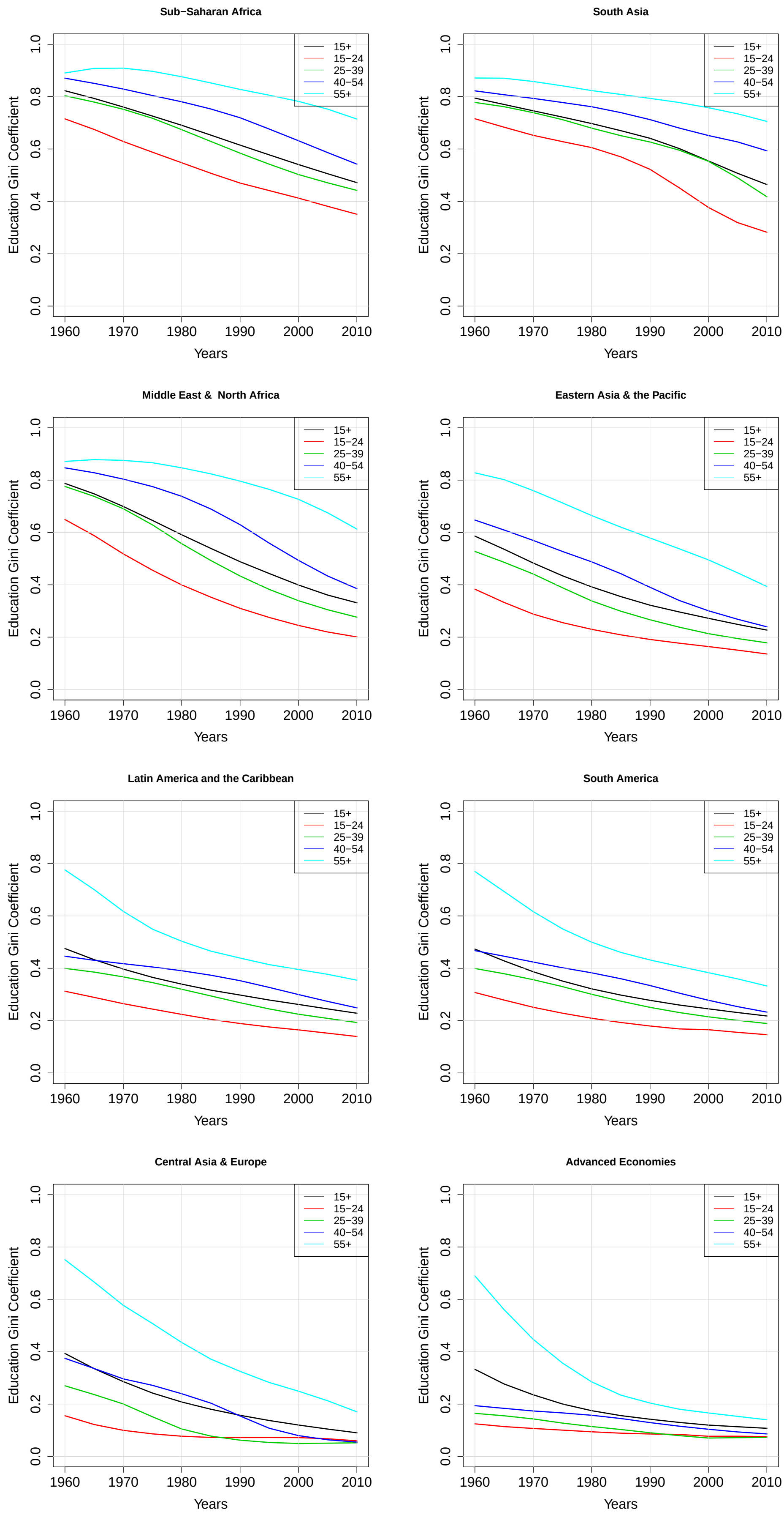

Figure 4: Education Gini coefficients by world region for selected age groups, 1960-2010

representative of within-age-group education inequality for less developed economies, which find themselves at early stages of the education expansion phase.

The Middle East & North Africa, Eastern Asia & the Pacific and South Asia have experienced large improvements in terms of equalizing the distribution of educational attainment among younger individuals since 1980. The dynamics in these regions resulted in highly pronounced age-group differentials in educational inequality. As the degree of inequality decreases (see the dynamics in Latin America & the Caribbean and South America as well as in Central Asia & Europe) the potential for further improvement is limited, which leads to a higher degree of persistence of the education Gini coefficient for economies at a more advanced level of development. The leveling off of the inequality measure takes place at a value of around 0.1 for the group of economies in Europe & Central Asia, as well as for the group of Advanced Economies.

4 Measuring Intergenerational Education Mobility

The demographic structure of the education dataset enables to compare the degree of within-age-group inequality across different cohorts. If we assume that a more equal distribution of education among the youth than among the elderly implies that education has been mobile across generations, we can derive an approach to constructing a simple catch-all measure of intergenerational education mobility at the aggregate level.

Accordingly, we define education mobility as the ratio between the education Gini coefficient of the $25-54$ age group and the education Gini coefficient of the 55+ age group. At a value equal to one, the distribution of the young generation over the four education categories resembles that of the older generation. From an intergenerational point of view, the relationship between the education distribution of the broad age groups is thus consistent with perfectly immobile education levels. The closer the ratio is to zero, the more equally is education distributed among the individuals in the younger age group as compared to the older generations. A value above one, on the other hand, indicates that education is more unequally distributed among the youth than among the elderly.

Figure 5 presents a scatterplot relating the level of educational attainment to the degree of intergenerational mobility for all observations in our sample. On average an overall trend towards a higher degree of intergenerational education mobility is observed as the level of educational attainment increases. The dynamics of the mobility variable are quite different across countries, however. In particular, the recent experience of the economies with the highest average educational attainment levels hint at an U shaped relationship between the two indicators.

A value of the mobility index above one is mainly observed in advanced economies. The increase in education inequality across young individuals observed as societies achieve higher levels of average education is mainly due to increasing shares of tertiary education. For example, in Japan, 48% of the 25-55 age group attained higher education in 2010, while the share was only 18% for individuals aged 55 and over.

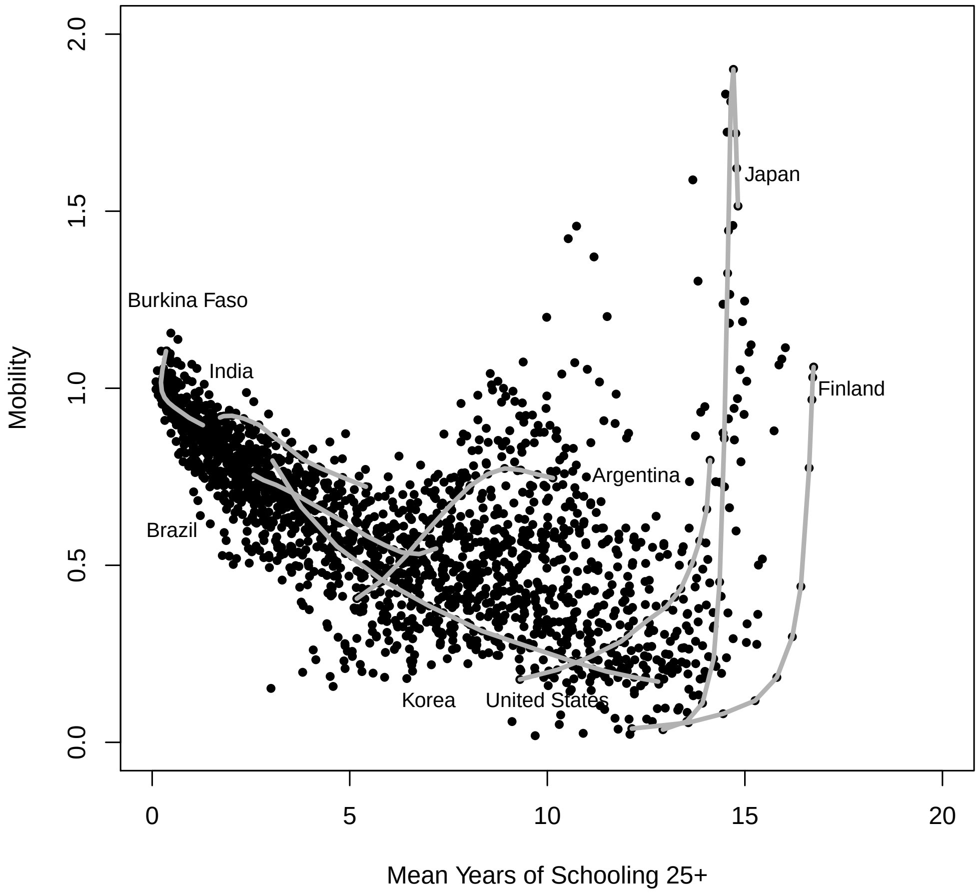

Figure 5: Intergenerational education mobility versus average educational attainment, 1960-2010

The education Gini coefficient is thus slightly higher in the former group than in the latter. These dynamics characterize the history of education expansion in Japan over the last ten years, with the education mobility indicator reaching a peak of 1.9 in 2000. On the other hand, in Finland the share of tertiary educated fluctuated around 40% in each one of the age groups considered since 2000, indicating high intergenerational persistence in the educational attainment structure. Figure 6, which depicts the dynamics of our education mobility indicator by world region, demonstrates that these patterns are representative for the region of advanced economies. As societies become highly educated, the pace of further expansion slows down and education becomes increasingly immobile across generations in the sense captured by our indicator.

Educational attainment levels have remained immobile across generations in South Asian and Sub-Saharan African countries. This is due to the persistently high degree of inequality in the distribution of education along with low levels of average attainment. Besides these extremes, developments have been very different across and within world regions. South Korea accomplished its enormous education expansion not only by increasing the education of the youth but also by consistently decreasing the degree of educational inequality, thereby accelerating mobility between age groups. In Brazil, on the other hand, mobility remained at about 0.5 since 1990 and in Argentina education became increasingly immobile as average attainment approached ten years of schooling.

In general, our findings reveal a pattern of phases of intergenerational mobility alternating with phases of persistence in the educational structure which resembles the theoretical predictions by Galor and Tsiddon (1997). At very low levels of average educational attainment, high mobility allows for education expansions (which in the framework of the model enable to adopt and imitates new technologies). As returns to skill diminish, there is no incentive for additional education investment and the existing composition persists until the next technological impulse. Such dynamics are primary observable in South and Latin American countries.

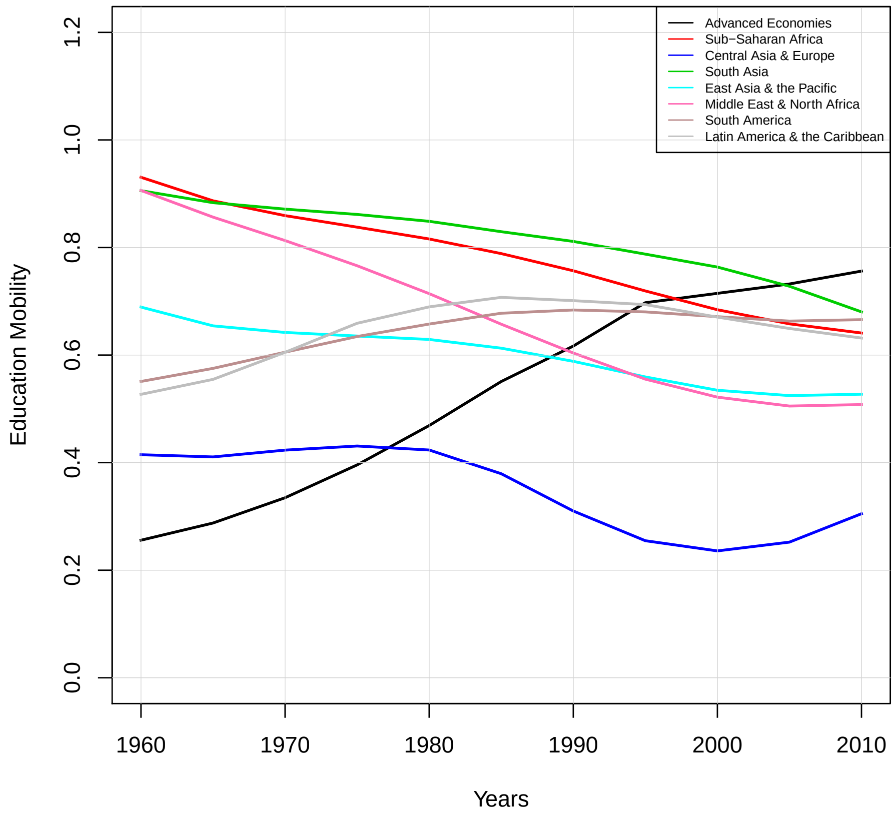

Figure 6: Education mobility by world region, 1960-2010

5 Education Inequality and Mobility in Europe: 1960-2050

In this section we offer a more detailed analysis of the education inequality dynamics within Europe. Our results in section 3 indicate that, on average, the distribution of education is relatively equal. Low levels of education inequality tend to be related to immobile education across generations. However, there exists a quite high degree of heterogeneity within the continent which deserves to be studied in more detail. For our analysis we consider 41 countries in Europe as defined by the United Nations' macro geographical (continental) region, which is composed of countries belonging to the group of Advanced or Central Asian & European economies. In order to study differential developments within Europe we define 6 subregions: the Anglo-Saxon group (United Kingdom, Ireland), the Continental group (Belgium, France, Germany Luxembourg, Netherlands, Switzerland) the East group (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Russian Federation, Slovakia, Slovenia, Ukraine), the North group (Denmark, Finland, Iceland, Norway, Sweden) the South group (Cyprus, Greece, Italy, Malta, Portugal, Spain), the South-East group (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, Republic of Moldova, Romania, Serbia, TFYR Macedonia, Turkey).

In Figure 7 we present sub-group specific developments of the Gini inequality index for the population aged 25 and above by gender over the 50-years sample period. In 1960, the degree of education inequality and the corresponding gender gap was relatively high in the South-East as well as in the South regions. The former subregion has been able to strongly reduce the degree of education inequality, with the education Gini coefficient of males falling short of that in Anglo-Saxon and Continental countries in 2010. When averaged over the total population aged 25 and above, the education Gini is consistently decreasing in all European regions until approximately 1990 and levelling off thereafter.

Figure 8 depicts the intergenerational education mobility index throughout the period 1960-2010. As opposed to the education Gini indices in Figure 7, the mobility index fluctuates strongly in the last decades. This feature emphasizes the importance of considering age-group specific developments in the education distribution to understand the dynamics of educational attainment in European societies. While average education inequality is decreasing in the United Kingdom and Ireland, the inequality in young cohorts, as well as the equality of older cohorts, is increasing. The ratio of young-to-old education Gini coefficients is thus increasing from 0.27 in 1960 to 0.96 in 1985, before consistently decreasing to 0.48 in 2010. Moreover, Northern Europe started out as an economy with a high level of intergenerational education mobility (as measured by our index) in 1960, but in 2010 the education distribution of older age groups resembles that of younger ones. In Denmark, for example, the education Gini of the 55+ age group decreased from 0.43 to 0.021, while that of the 25-54 age group increased from almost zero to 0.03. The increasing persistence in the education distribution across cohorts in Continental and Eastern European countries is also reflected in an increasing aggregate mobility measure. However, this tendency was stronger in Continental Europe.

The use of population projection methods allows us to build scenarios about the future development of education inequality in Europe and the distribution of educational attainment across and within age groups. KC, Barakat, Goujon, Skirbekk, Sanderson, and Lutz (2010) provide a series of methods to obtain population projections by age, sex and level of education, which enables us to project the education distribution by age group and compute the corresponding education Gini coefficients up to 2050. We do so using the Global Education Trend (GET) scenario in KC, Barakat, Goujon, Skirbekk, Sanderson, and Lutz (2010), which corresponds to extrapolating the historical trends in educational attainment observed for the world sample of countries. As such, this scenario provides the most realistic population

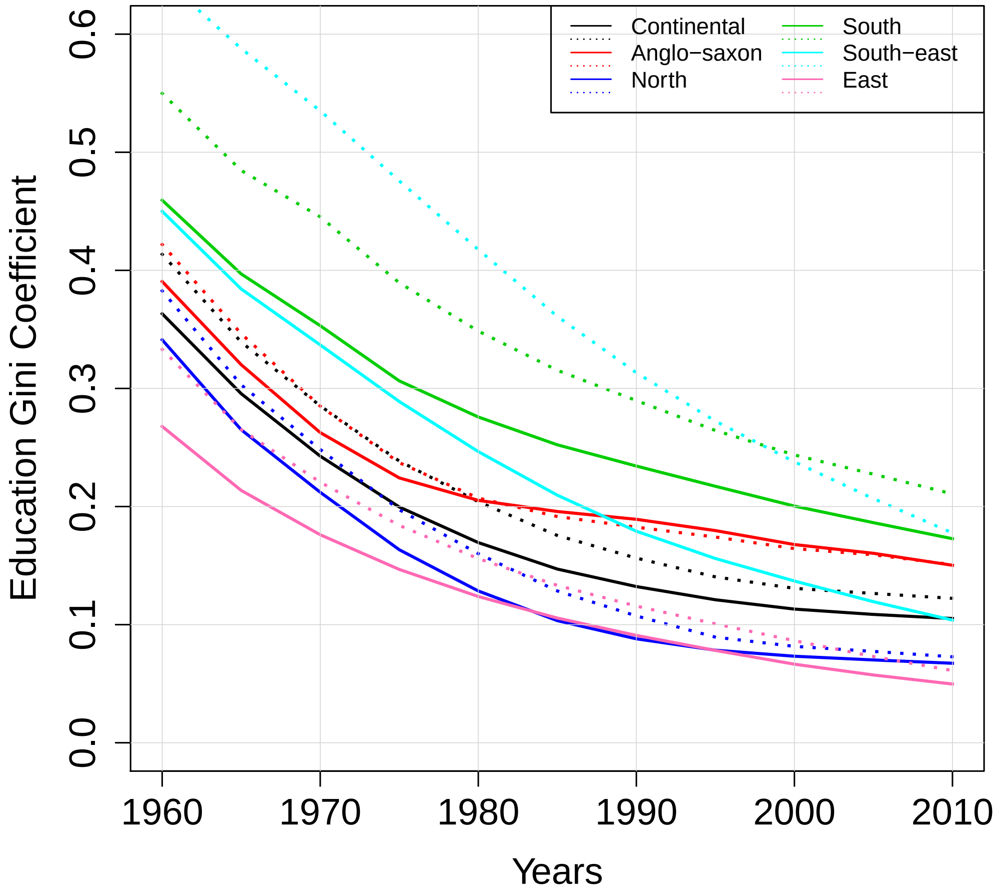

Figure 7: Education inequality by European region and gender, 1960-2010, Total population 25+

projections among the different settings presented in KC, Barakat, Goujon, Skirbekk, Sanderson, and Lutz (2010).[10]

The education mobility indicator derived for the projection period 2010-2050 is depicted in Figure 9 for the different European subregions. In general, these projections reveal convergence among European regions to a value slightly below one. This is due to the fact that European economies are relatively mature with respect to their average level and the distribution of educational attainment. Since Southern, South-Eastern and Anglo-Saxon economies started out with a relatively low mobility ratio of around 0.4, these countries are projected to gradually close the gap in education inequality between young and old age groups. On the other hand, in Continental and Northern Europe, the degree of inequality in the education distribution is projected to slightly decrease among subsequent young cohorts. After 2030, the education distribution of the youth is predicted to be more unequal than that of the elderly in Eastern Europe. The mobility ratio will therefore increase above one in several

[10]Notice that, to the extent that overall trend in educational attainment in the world over the last decades has been increasing, this scenario implies improvements in education for practically all economies. The speed of the educational expansion, however, is assumed to depend on the overall level of educational attainment already achieved. Technical details on the assumptions behind the projection model can be found in KC, Barakat, Goujon, Skirbekk, Sanderson, and Lutz (2010).

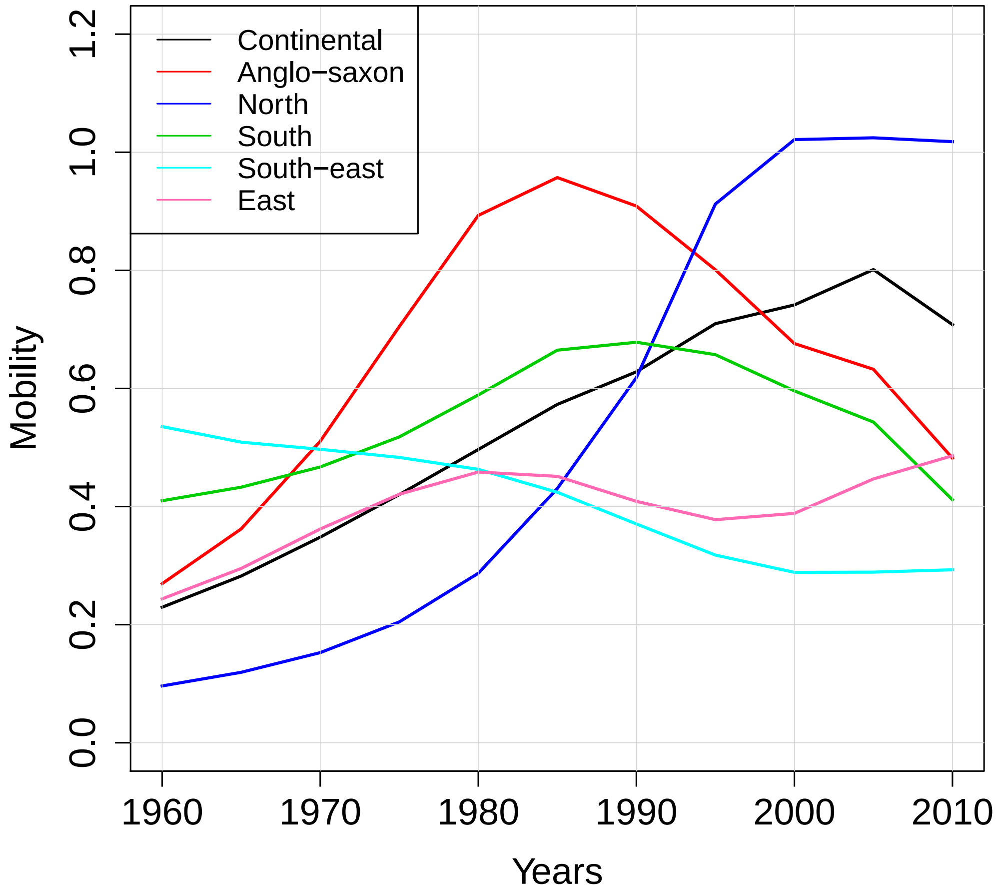

Figure 8: Education mobility by European region, 1960-2010

Eastern countries. The change in the intergenerational education mobility index implied by the population projections is presented in the Appendix for all countries in the continent. The observed and the predicted period together show an alternating pattern of intergenerational immobility followed by phases of accelerating mobility, which are fully in line with the theoretical predictions in Galor and Tsiddon (1997).

6 Age-Specific Education Inequality and Economic Growth

Existing empirical results confirm that overall education inequality tends to be harmful for economic growth (Castelló and Doménech, 2002). Castelló-Climent (2011) identifies several mechanisms that explain such an effect. In particular, the results by Castelló-Climent (2011) confirm that education inequality increases fertility rates and reduces life expectancy (see also Castelló-Climent and Doménech, 2008), thus affecting further investments in human capital negatively.[11] On the other hand, Sauer and Zagler (2012b) provide evidence that education inequality does not af-

[11]In addition, Castelló-Climent (2011) finds that access to credit plays a particularly important role in as a catalyst of such effects. For a survey on the theoretical and empirical literature on the relation between human capital inequality and income growth see Sauer and Zagler (2012a).

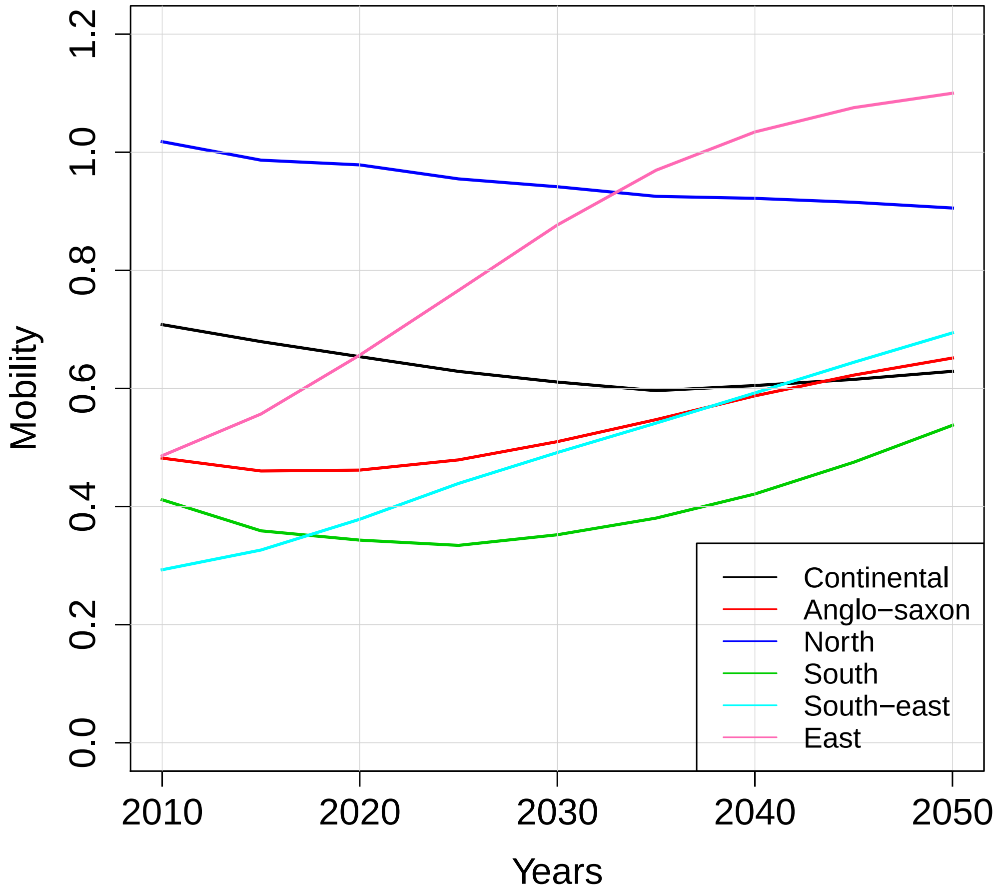

Figure 9: Education mobility by European region, GET projections 2010-2050

fect income growth directly but abates the macro economic return to education. In this contribution we move a step further by analysing the role played by education inequality within different age groups as a determinant of economic growth and development in a global sample of countries.

We set-up a regression model based on a panel dataset spanning the period 1970-2010 at intervals of five years. Income per capita growth for country i in a given period ($\Delta \ln y_{i,t} = \ln y_{i,t} - \ln y_{i,t-5}$) is assumed to depend on the growth rate of the capital stock ($g_{i,t}^{K}$), population growth ($g_{i,t}^{POP}$), the initial level of income per capita in the period ($\ln y_{i,t-5}$), which captures conditional income convergence dynamics, as well as the overall level of education, measured by the mean years of schooling of the population above 25 years of age ($\text{MYS}_{i,t-5}^{25+}$). We expand the specification by alternatively including measures of aggregate and age-structured education inequality (EDIN_{it-5}). The model we estimate can thus be written as

$$\Delta \ln y_{i,t} = \alpha_i + \beta \ln y_{i,t-5} + \gamma g_{i,t}^{K} + \rho g_{i,t}^{POP} + \theta \text{MYS}_{i,t-5}^{25+} + \eta \text{EDIN}_{it-5} + \lambda_t + \varepsilon_{i,t}, \quad (2)$$

where country-specific time-invariant characteristics are captured through country fixed effects (α_i) and global income shocks are modelled in the form of fixed period effects (λ_t). The error term, $\varepsilon_{i,t}$, is assumed to fulfil the standard assumptions of linear regression model disturbances.

Income per capita and total population data are sourced from the Penn World Table 7.1 (Heston, Summers, and Aten, 2012), the capital stock data are obtained from Berlemann and Wesselhoeft (2012) and all the variables based on educational attainment information are sourced from the IIASA/VID dataset (Lutz and KC, 2011). The available sample contains information for 96 countries and spans the period 1970-2010. The list of countries included in the panel regression is presented in the Appendix. Since income growth is the dependent variable and lagged income per capita one of the covariates, estimation with country fixed effects, OLS estimation methods lead to biased estimates, since the correlation between the error term (which includes a country-specific fixed effect) and the lagged income variable is not explicitly taken into account. Methods based on the generalized method of moments (GMM) estimator have been proposed by to overcome such a problem using lagged values of first differenced and levels of the explained variable as instruments (see Arellano and Bover, 1995; Blundell and Bond, 1998). Given the high persistence of the income variable, we implement the system-GMM estimator by Blundell and Bond (1998) in order to estimate the parameters in specification (2).

	(1)	(2)	(3)	(4)	(5)
Initial income	-0.063***	-0.053***	-0.058***	-0.064***	-0.033
	[0.0168]	[0.0170]	[0.0178]	[0.0184]	[0.0223]
Physical capital growth	0.252***	0.257***	0.238***	0.231***	0.231***
	[0.0464]	[0.0503]	[0.0485]	[0.0464]	[0.0470]
Population growth	-0.082	-0.044	0.074	0.031	0.149
	[0.278]	[0.295]	[0.327]	[0.330]	[0.317]
Mean years of schooling (25+)	0.0295***	0.0034	0.018	0.0368***	0.0223**
	[0.00843]	[0.0205]	[0.0230]	[0.0101]	[0.00948]
Education Gini (25+)		-0.400			
		[0.301]			
Education Gini (25-54)			-0.547**		
			[0.219]		
Education Gini (55+)			0.28		
			[0.186]		
Difference Education Gini (55+ and 25-54)				0.392***	
				[0.132]	
Education Mobility index					-0.186**
					[0.091]
Observations	640	640	640	640	640
Number of countries	96	96	96	96	96
AR(1) test (p-value)	0.000	0.000	0.000	0.000	0.000
AR(2) test (p-value)	0.775	0.728	0.841	0.865	0.863
Hansen test (p-value)	0.137	0.120	0.146	0.153	0.144

The dependent variable is the growth rate of income per capita. All models estimated using system-GMM (Blundell and Bond (1998)).

Country and period fixed effects included in all specifications.

Table 1: Estimation results: Economic growth and education inequality

The results of several specifications based on the model presented in equation (2) are shown in Table 1. In the first column of Table 1, the model is estimated without including any education inequality variable. The parameter estimates indicate that increases in the human capital stock (as measured by the mean years of schooling of the population above 25 years of age) as well as higher physical capital growth tend to be significantly related to higher income per capita growth. The negative parameter estimate associated with the initial level of income per capita gives evidence of conditional income convergence to a country-specific steady state. The inclusion of the education Gini coefficient for the population above 25 years of age (see column 2 in Table 1) does not reveal a statistically significant effect of overall education inequality on income growth. In column 3, we expand the model by including the education Gini coefficient for two broad age groups, one of them covering the population aged 25 to 54 and another one computed for ages 55 and above. The results show that, while education inequality in the older cohorts does not affect income growth significantly, changes in the educational attainment of individuals aged 25-54 that lead towards a more equal distribution of education in this broad age group affect growth positively. Such a result emphasizes the importance of considering the age structure of education inequality and thus moving away from aggregate measures that cover the full population when assessing its effect on income growth.

In addition, a simple F-test cannot reject the hypothesis that the parameter of the education Gini coefficient for the older group is of the same size but opposite sign (p-value = 0.395). This indicates that it is the relative education inequality between the older age groups (ages 55 and above) and the rest of the population that exerts an effect on income growth. Column 4 presents the estimates of the model including the difference in the corresponding education Gini coefficients between both age groups instead of the individual measures of education inequality. For a given degree of education inequality among older cohorts, decreases in education inequality for younger cohorts create positive income growth effects. Such a result indicates that policies oriented towards reducing the intergenerational persistence of educational attainment tend to have income growth returns that are significantly above those implied by the improvement in overall educational attainment. Such a result is also found if the intergenerational persistence measure used is the ratio of both Gini indices, as is presented in column 5 of Table 1. Our results confirm the theoretical insights in Galor and Tsiddon (1997) concerning the role played by changes in the intergenerational distribution of education as an income growth determinant.

7 Conclusions

The literature on the relation between human capital and economic outcomes has mainly concentrated on linking these to the first moment of the distribution of educational attainment. More recently, some effort has been invested in allowing for the heterogeneity in the aggregate level of human capital within societies. The distributional and the demographic dimension of educational attainment have, however, been investigated separately. In this contribution we aim at bringing these branches of the literature together. We therefore used the particular structure of the IIASA/VID education dataset, which provides educational attainment by age and sex, in order to construct a new dataset of inequality measures of educational attainment by age groups and sex for 175 countries during the period 1960-2010.

Incorporating the demographic dimension into the analysis of education inequality enables us to analyse global trends for subgroups of the population an to distinguish the differential characteristics of distributions of educational attainment across different age groups from those within age groups. Age-group specific and overall Gini coefficients of educational attainment reveal a general trend towards a more equal distribution of education across individuals. The degree of education inequality varies markedly across age and sex, however. We find education not only to be more equally distributed among men than among women, but also among young people versus older age cohorts. Beyond that, we observe different dynamics over time across regions. Differentials across cohorts also tend to dominate during episodes of educational expansion. As the degree of inequality decreases, the potential for further improvement is limited, which leads to a reduction of the inequality differentials across age groups and to more stable dynamics.

Comparing the distribution of educational attainment among older individuals with that at younger age groups leads to an indicator which suggests mobility to be increasing if the education Gini index becomes lower for successive generations. To this effect, we find that more educated societies tend to be characterized by higher mobility across generations. As the aggregate level of formal educational attainment approaches its maximum, however, education tends to converge to a more equal distribution among the youth and among the elderly. This indicates high intergenerational persistence in the educational attainment structure.

The differences in terms of education inequality between and within age groups stress the importance of assessing the demographic dimension of educational inequality when analysing human capital dynamics. We perform panel data regressions in order to assess the relevance of distributional dynamics in human capital with respect to economic outcomes. We find that countries which reduce the degree of inequality in the distribution of education for young age groups tend to have, ceteris paribus, higher growth rates of income per capita. This implies that improvements in the intergenerational mobility of education has positive effects on income growth on average. Our results confirm the theoretical insights of Galor and Tsiddon (1997) and expand some of the results found in the literature. Our estimates indicate that the returns of policy actions aimed at providing broad-based access to schooling and improving intergenerational education mobility in terms of income growth go beyond the direct effect that higher average educational attainment has on economic growth.

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A Appendix

A.1 Adjusting the duration of formal education cycles

We adjust country-specific information on the duration it takes to complete education level i (dur_i) such that it coincides with the four broad categories of the IIASA/VID dataset. In doing so we follow the method proposed by KC, Barakat, Goujon, Skirbekk, Sanderson, and Lutz (2010) to account for uncompleted attainment levels and compute the cumulative mean duration of each educational attainment level by age and sex ($y_{a,s,i}$) as follows.

$$
\begin{aligned}
y_{a,s,1} &= 0, \\
y_{a,s,2} &= 0.25dur_2 + 0.5dur_2\left[1 - \frac{p_{a,s,1}}{p_{a,s,1} + p_{a,s,3} + p_{a,s,4}}\right], \\
y_{a,s,3} &= dur_2 + 0.25dur_3 + 0.5dur_3\left[1 - \frac{p_{a,s,2}}{p_{a,s,2} + p_{a,s,4}}\right], \\
y_{a,s,4} &= dur_2 + dur_3 + dur_4.
\end{aligned}
$$

We assume zero years of schooling for people reporting that they did not attain any formal education. We further assume the mean duration of primary and secondary education to be contained between the 0.25 and the 0.75 quantile of the respective formal duration. Within these extremes, the adjusted years depend on weights given by surrounding education levels. For example, in India the formal duration of primary education was 8 years in 2000. The mean duration is hence at least 2 years. In the 25-54 age group, 41.5% of the population did not attend formal education, while 35.9% have attained at least secondary education. This results in a mean duration of 3.85 years. On the other hand, the duration of primary schooling was 9 years in South Korea in 2000, whereas only 0.2% did not attend formal schooling. As the share of individuals with at least some secondary education is 98.3%, the mean duration of primary education (6.74) almost equals the presumed maximum of 6.75 years. We adopt a similar rule for computing the mean duration of secondary education. In general, this algorithm follows the intuition that the share of people completing primary or secondary education is increasing with the share in subsequent education categories. Finally, as category four comprises only people who have *completed* higher education, mean duration equals the cumulative years it takes to complete the first cycle of tertiary education.

A.2 Projected Changes in Education Mobility: 2010-2050 (GET scenario)

Country	Educ. Mob. 2010	Educ. Mob. 2050	Change $2050-2010$	Change $2030-2010$	Change $2050-2030$
Norway	1.62	1.10	-0.52	-0.35	-0.18
Germany	1.11	0.70	-0.41	-0.25	-0.16
Iceland	0.87	0.64	-0.24	-0.09	-0.15
Denmark	1.22	1.07	-0.15	-0.13	-0.02
Luxembourg	0.59	0.46	-0.13	-0.17	0.04
France	0.49	0.39	-0.11	-0.13	0.02
Austria	0.94	0.85	-0.09	-0.06	-0.03
Finland	1.06	0.97	-0.09	-0.05	-0.04
Greece	0.49	0.40	-0.08	-0.12	0.04
Netherlands	0.57	0.56	-0.01	-0.01	0.00
Spain	0.53	0.52	-0.01	-0.06	0.05
Switzerland	0.88	0.90	0.02	-0.04	0.07
United Kingdom	0.57	0.62	0.05	-0.02	0.08
Portugal	0.39	0.47	0.09	-0.03	0.12
Turkey	0.51	0.63	0.11	0.10	0.02
Bulgaria	0.50	0.63	0.13	0.18	-0.05
TFYR Macedonia	0.34	0.49	0.15	0.08	0.08
Belgium	0.36	0.53	0.17	-0.01	0.18
Czech Republic	1.19	1.39	0.20	-0.01	0.21
Bosnia & Herzegovina	0.23	0.43	0.20	0.07	0.13
Cyprus	0.34	0.54	0.20	-0.03	0.23
Malta	0.42	0.63	0.21	-0.15	0.36
Slovakia	1.04	1.26	0.22	0.02	0.20
Ireland	0.40	0.68	0.28	0.08	0.21
Italy	0.31	0.66	0.35	0.04	0.31
Romania	0.28	0.68	0.41	0.23	0.17
Sweden	0.32	0.76	0.44	0.24	0.20
Poland	0.59	1.10	0.51	0.50	0.01
Republic of Moldova	0.22	0.76	0.54	0.33	0.21
Montenegro	0.21	0.76	0.54	0.20	0.34
Latvia	0.37	0.94	0.56	0.43	0.13
Slovenia	0.49	1.06	0.57	0.35	0.22
Serbia	0.22	0.80	0.58	0.25	0.33
Hungary	0.36	0.95	0.59	0.35	0.23
Estonia	0.34	0.94	0.60	0.44	0.16
Lithuania	0.24	0.86	0.62	0.44	0.18
Albania	0.19	0.85	0.65	0.33	0.32
Croatia	0.22	0.91	0.69	0.22	0.47
Russian Federation	0.30	1.07	0.77	0.51	0.26
Ukraine	0.20	1.17	0.97	0.64	0.33
Belarus	0.22	1.36	1.14	0.63	0.51

Projections based on the Global Education Trend scenario by KC, Barakat, Goujon, Skirbekk, Sanderson, and Lutz (2010). Countries ordered by change in the intergenerational education mobility indicator, 2010-2050.

Table 2: Intergenerational education mobility index projections for Europe

A.3 Countries included in the panel regression

Algeria	Guatemala	Norway
Azerbaijan	Guinea	Pakistan
Argentina	Honduras	Panama
Australia	Hungary	Paraguay
Austria	Iceland	Peru
Bahamas	India	Philippines
Bangladesh	Indonesia	Poland
Armenia	Iran	Portugal
Belgium	Ireland	Russian Federation
Bolivia	Italy	Senegal
Brazil	Japan	Singapore
Bulgaria	Kazakhstan	Slovenia
Belarus	Jordan	Spain
Cameroon	Kenya	Sudan
Canada	Korea	Swaziland
Cape Verde	Kyrgyzstan	Sweden
Chile	Lesotho	Switzerland
China	Latvia	Syria
Costa Rica	Luxembourg	Tajikistan
Cuba	Madagascar	Thailand
Cyprus	Malaysia	Tunisia
Czech Republic	Mali	Turkey
Denmark	Malta	Uganda
Dominican Republic	Mauritius	Ukraine
Ecuador	Mexico	Macedonia
El Salvador	Moldova	Egypt
Ethiopia	Morocco	United Kingdom
Estonia	Mozambique	Tanzania
Finland	Namibia	United States of America
France	Netherlands	Uruguay
Gabon	New Zealand	Venezuela
Greece	Nicaragua	Zambia

On the Determinants of Global Bilateral Migration Flows

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On the Determinants of Global Bilateral Migration Flows*

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Abstract

We present a method aimed at estimating global bilateral migration flows and assessing their determinants. We employ that fact that available net migration figures for a country are (nonlinear) aggregates of migration flows from and to all other countries of the world in order to construct a statistical model that links the determinants of (unobserved) migration flows to total net migration. Using simple specifications based on the gravity model for international migration, we find that migration flows can be explained by standard gravity model variables such as GDP differences, distance or bilateral population. The usefulness of such models is exemplified by combining estimated specifications with population and GDP projections in order to assess quantitatively the expected changes in migration flows to Europe in the coming decades.

Keywords: Bilateral migration flows, gravity model, nonlinearly aggregated models.

JEL Classifications: F22, O15, J11

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1 Introduction

In 1990, there were approximately 150 million international migrants in the world, a figure that increased by more than 40% in the following two decades. Currently, about 214 million people worldwide live outside the country where they were born, a number that represents roughly 3.1% of total population (see United Nations (2011)).

The lack of availability of global databases for bilateral migration flows is an important barrier to the understanding of the causes and consequences of international migration. While the OECD's International Migration Database (OECD, 2012) provides data on bilateral immigration flows, the information is limited to migration to a relatively small group of industrialized economies. Docquier and Marfouk (2006) present a data set of bilateral migration stocks by educational attainment for over 170 countries in 1990 and 2000, which researchers have used to construct migration flows as differences between stocks at these two points in time (see for example Beine, Docquier, and Ozden (2011)). The problems involved in using differences in migration stocks as a proxy of migration flows can be important and are often acknowledged in the empirical studies performing such an approximation. Mortality and return migration distort the quality of such a variable as a measurement of migration flows and thus the assessment of the dynamics of newcomers based on the difference in the stock of migrants can lead to seriously flawed inference.

Common approaches in the empirical literature aimed at modelling bilateral migration flows and assessing their determinants are extended *gravity models*. Gravity models relate flows of goods or factors between two countries to their attractive mass and to the distance between them. Although originally introduced to model trade flows between two countries (Tinbergen, 1962), the gravity specification also provides a useful tool to model international migration flows. Ravenstein (1885, 1889), in his early assessment of the determinants of migration, states as part of his *Laws of Migration* that *"the bulk of migrants ought to travel short distances only"* and that an *"increase in the means of locomotion and a development of manufactures and commerce have led to an increase of migration"*, thereby implicitly formulating the gravity model for migration. The first empirical application of the gravity model to explain migration flows between two countries is attributed to Vanderkamp (1977), who explained the logarithm of bilateral migration flows by the distance between the countries and their bilateral size, measured by the population of the source and destination countries.

More recent studies build upon the basic gravity model and focus on further determinants of migration flows beyond geographical distance and aggregate measures of economic mass. Vanderkamp (1977); Karemera, Oguledo, and Davis (2000); Clark, Hatton, and Williamson (2007); Pedersen, Pytlikova, and Smith (2008); Ortega and Peri (2009); Kim and Cohen (2010); Beine, Docquier, and Ozden (2011); Grogger and Hanson (2011) or Ortega and Peri (2013) are recent examples of this branch of empirical research. Data availability tends to limit these studies on the determinants of bilateral migration to cases where the recipient country is an advanced OECD economy, thus explicitly ignoring South-South migration in their analysis. Bakewell (2009) shows that, depending on how the *South* is defined, between 33% and 45% of global migration can be categorized as South-South migration. To the extent that the determinants of South-South migration may differ from those of migration flows to industrialized economies, these studies may only have limited applicability to other world regions.

In this study we propose a new method to study the empirical determinants of worldwide bilateral migration flows using net migration data, which are available for practically all countries in the world. By assuming that (log) bilateral migration flows can be described by a simple gravity model, we construct econometric specifications based on net migration, which can therefore be thought of as a nonlinear aggregation of (unobserved) bilateral flows. These, in turn, are functions of observed explanatory variables. Such a modelling strategy allows us to estimate the effects of the various determinants of bilateral migration and eventually construct estimates of bilateral migration flows as the corresponding fitted values. In addition, our approach presents a natural framework to obtain projections of bilateral migration flows that can be used to assess future trends in labour mobility and to improve existing population projection exercises.

Our work is related to recent developments in the estimation and modelling of bilateral migration flows. Abel (2013), building on Abel (2010), estimates bilateral migration flows for 195 countries based on place of birth data. This is done by deriving migration flows from sequential stock migration data in the framework of spatial interaction specifications. Although conceptually the approach in Abel (2013) shares some similarities with our method, we depart from this group of contributions by exploiting the nonlinear nature of the linkage between log bilateral migration (the variable we aim to model) and net migration (the variable we actually observe).

The paper is organized as follows. In section 2, the statistical modelling framework and the estimation strategy are presented. In order to assess the quality of the parameter estimates using our proposed method, a small-scale simulation study is also performed in this section. Section 3 presents the estimates of a representative model and section 4 provides a projection exercise where future changes in migration flows to Europe are assessed based on population and GDP projections. Finally, section 5 concludes.

2 Modelling nonlinearly aggregated bilateral migration flows

2.1 The econometric setting: From bilateral flows to net migration

Since gravity models tend to be specified in log-linear form, obtaining coefficient estimates for the model using aggregated net migration rates implies that the econometric specification used is a nonlinear function of the underlying parameters. We start by assuming that (log) bilateral migration flows can be represented by the model

$$m_{ij} = \log M_{ij} = X_{ij}\beta + u_{ij}, \tag{1}$$

where M_{ij} denotes migration from country i to country j, X_{ij} is a $1 \times k$ vector of determinants of bilateral migration, β is a $k \times 1$ vector of parameters to be estimated and u_{ij} is an error term assumed independent, identically distributed and homoskedastic with variance σ^2. Bilateral flows are not observed, but data for n countries exist on net migration (N_i), which is given by the difference of migration flows to country i from all other countries and migration out of country i to all other countries,

$$N_i = M_{i*} - M_{*i} = \sum_{j \neq i} M_{ij} - \sum_{j \neq i} M_{ji} = \sum_{j \neq i} \exp m_{ij} - \sum_{j \neq i} \exp m_{ji}. \tag{2}$$

The model for our observed data can thus be written in matrix form as

$$\mathbf{N} = \mathbf{S} \exp(\mathbf{m}) = \mathbf{S} \exp(\mathbf{X}\beta + \mathbf{u}), \tag{3}$$

where $\mathbf{N}$ is an n-dimensional column vector of net migration observations, $\mathbf{X}$ is an $n(n-1) \times k$ matrix of observations on the bilateral explanatory variables, $\mathbf{S}$ is an $n(n-1) \times n$ matrix which selects the corresponding bilateral migration flows, aggregates them for each country and creates the net migration figures and $\exp(\mathbf{u})$ denote the element-by-element exponent of vector $\mathbf{u}$. Assuming that $\mathbf{m}$ is ordered by origin country, then $\mathbf{S} = (\mathbf{I}_n \otimes \iota_{n-1}) - \mathbf{B}$, where $\mathbf{B}$ denotes a $n(n-1) \times n$ matrix formed by selected rows of the Kronecker product $(\mathbf{I}_n \otimes \iota_n)$. Denoting the selection correspondence by $(\mathbf{I}_n \otimes \iota_n) \to \mathbf{B}$, the matrix $\mathbf{B}$ is formed by the rows of $(\mathbf{I}_n \otimes \iota_n)$ which are not in the set $\{1, 2^2, ..., n^2\}$, so as to eliminate observations where origin and destination country are the same. Considering an example with three countries (A, B and C, $n = 3$), the corresponding transformation would be given by

$$\begin{array}{c} \\ AA \\ AB \\ AC \\ BA \\ BB \\ BC \\ CA \\ CB \\ CC \end{array} \left(\begin{array}{ccc} A & B & C \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{array} \right) \to \begin{array}{c} \\ AB \\ AC \\ BA \\ BC \\ CA \\ CB \end{array} \left(\begin{array}{ccc} A & B & C \\ 0 & 1 & 0 \\ 0 & 0 & 1 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \end{array} \right)$$

While the model for the bilateral migration flows is linear in parameters, the aggregation of the flows which yields the net migration flows implies a nonlinear link between $\mathbf{N}$ and β. Therefore, we cannot estimate our model with least squares and rely on nonlinear maximum likelihood methods to estimate β. Proietti (2006) proposes an iterative algorithm which allows to estimate models specified on disaggregated data using aggregated data.[1]. The algorithm focuses on the Taylor approximation around

[1]In a simplified setup, Proietti (2006) considers an standard linear model $y = \alpha + X\beta + \epsilon$ where α is the intercept, X is a known $N^2 \times k$ matrix of explanatory variables, y a N^2 vector of unknown responses and $\epsilon \sim N(0, \sigma^2 I)$. The vector y is not observed but a non–linear aggregation $Y = \sum_{j=1}^{N} f(y)$ is, where $f(\cdot)$ is a twice differentiable function. Y and y can be linked through an aggregation matrix $A = I_N \otimes \iota_N$, so that $Y = Af(y) = (I_N \otimes \iota_N)f(y)$.

some trial value of the vector of disaggregated variables.[2] This method can be shown to be equivalent to quasi–maximum likelihood estimation, which is the approach we take for our application.

A simple approach to the estimation of model (3) starts by ignoring the nonlinearity in the error term and estimating β based on a specification where the disturbance is defined at the level of the aggregated variable (N_i) instead of at the bilateral level,

$$\mathbf{N} = \mathbf{S}\exp(\mathbf{X}\beta) + \eta, \tag{4}$$

which allows to estimate β using nonlinear least squares or pseudo maximum likelihood methods. Assuming independence, normality and homoskedasticity for the disturbance term, the likelihood of the model can be written as

$$L(\beta, \sigma_\eta|\mathbf{N}) = \prod_{i=1}^{n} f\,(N_i|\beta, \sigma_\eta), \tag{5}$$

with the corresponding log-likelihood function

$$\ell(\beta, \sigma_\eta|\mathbf{N}) = \sum_{i=1}^{n} \ln f\,(N_i|\boldsymbol{\theta}). \tag{6}$$

Assuming normality of the errors, we can write the log-likelihood function as

$$\begin{aligned}\ell(\beta, \sigma_\eta|\mathbf{N}) &= \sum_{i=1}^{n} \ln\left[\frac{1}{\sigma_\eta\sqrt{2\pi}} \exp\frac{\eta_i^2}{2\sigma^2}\right] \\ &= -n\ln\sigma_\eta - n\ln(\sqrt{2\pi}) + \frac{\sum_{i=1}^{n}\left(N_i - \sum_{j\neq i}\exp(X_{ij}\beta) + \sum_{j\neq i}\exp(X_{ji}\beta)\right)^2}{2\sigma_\eta^2} = \\ &= -n\ln\sigma_\eta - n\ln(\sqrt{2\pi}) + \frac{1}{2\sigma_\eta}(\mathbf{N} - \mathbf{S}\exp(\mathbf{X}\beta)'(\mathbf{N} - \mathbf{S}\exp(\mathbf{X}\beta), \end{aligned} \tag{7}$$

which can be maximized using standard optimization methods.

2.2 Maximum likelihood estimation of the net migration model: Simulation results

In a first step we evaluate the method proposed using simulated data. We obtain 9900 observations of simulated log migration flows m_{ij}, which are generated by the process

$$m_{ij} = 1 + .1x_{1,ij} + 0.5x_{2,ij} - 0.5x_{3,ij} + u_{ij}, \tag{8}$$

where the observations for x_1, x_2 and x_3 are drawn from standard normal distributions. The noise term, u_{ij}, is assumed normally distributed with mean zero and variance σ_u^2. In different simulation settings we draw errors with variances which

[2] Badinger and Crespo Cuaresma (2012) use a similar approach to estimate bilateral trade flows.

lead to signal-to-noise ratios corresponding to R^2 values which range from 0.95 to 0.7. The simulated values of m_{ij} are aggregated as in equation 1 to obtain 100 observations of simulated net migration flows N_{ij}. We use these 100 net migration observations to obtain estimates of the parameters in the model following the maximum likelihood method sketched in section 2. This exercise is repeated 1000 times for different noise-to-ratio levels. Table 1 presents the mean and root mean square error (RMSE) of the estimated coefficients for each one of the settings (which correspond to R^2 values of 0.95, 0.9, 0.85, 0.8, 0.75 and 0.7).

Table 1 – Simulation results for different levels of noise

	$R =$	0.95	0.90	0.85	0.80	0.75	0.70
$\beta_0(1.0)$	RMSE	0.082	0.121	0.156	0.215	8.922	12.748
	Mean	1.01	1.02	1.02	1.04	0.65	0.11
$\beta_1(.1)$	RMSE	0.017	0.027	0.036	0.041	0.083	0.970
	Mean	0.10	0.10	0.10	0.10	0.10	0.06
$\beta_2(-.5)$	RMSE	0.027	0.039	0.050	0.067	0.863	1.970
	Mean	-0.50	-0.50	-0.50	-0.51	-0.55	-0.63
$\beta_3(.5)$	RMSE	0.026	0.039	0.050	0.066	1.659	2.180
	Mean	0.50	0.50	0.51	0.51	0.57	0.64

The results indicate that the method works well for noise levels which correspond to an R^2 of about 0.75. Since net migration is defined as a difference of nonlinear functions of the parameters, the identification of the intercept is weak, leading to less satisfactory estimates for the constant term even for an R^2 of 0.8, while the estimates of the slope parameter present better properties throughout the simulation settings. The empirical literature on the estimation of gravity models for migration flows using (fragmentary) bilateral data tends to report high explanatory power even in parsimoniously parameterized specifications, which makes us believe that the method proposed should work acceptably well in this setting.

3 Empirical analysis: Assessing migration flow determinants

We present a simple econometric specification that should serve as an application of the model to highlight the usefulness of the approach. In particular, we construct a specification for bilateral migration flows where the respective flow depends on the distance between the two countries, the GDP per capita as well as the population of the source and destination country, as well as other geographical and cultural aspects which are summarized in a dummy variable measuring geographical contiguity, one identifying common colonial history and another one controlling for common official language, 21 world-region dummies for the destination country and 21 world-region dummies for the source country. In addition, we control for the bilateral stock of migrants already present in the destination country (measured as the share of population in the origin country) to control for network effects.

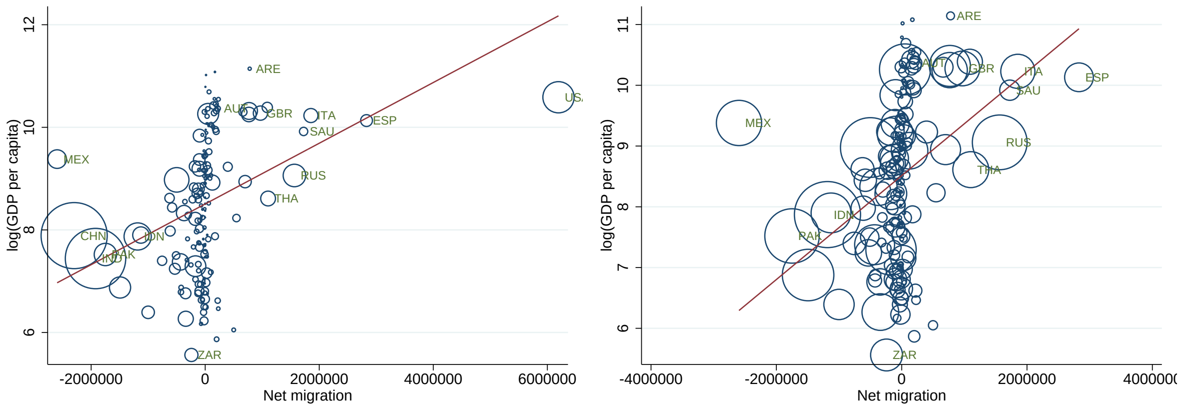

Figure 1 – Net migration flows vs. income per capita (size of the bubbles is proportional to population size). The United States, India and China are omitted in the right panel

In order to assess potential parameter heterogeneity with respect to the level of development of the source and destination countries, we interact the variables described above with two dummies representing migration flows from the *South* or from the *North*. Furthermore, dummy variables indicating the direction of the migration flows, i.e. from North to North, North to South, South to North and South to South, are also used in interactions with selected covariates, so as to evaluate potential parameter heterogeneity depending on the direction of migration flows. According to the World Bank's classification of income groups, we classify a country as belonging to the South if it belongs to income group *Low income* or *Lower middle income* and as belonging to the North if it is part of the *High income* or *Higher middle income* groups.[3]

Net migration flows as well as the GDP and population data are sourced from the World Bank's World Development Indicators. Net migration is evaluated at the period 2000-2005 and measures the difference between the total number of immigrants and the number of emigrants. As such, it represents the net total of immigrants of a given country over this period. The net migration estimates are based on a number of national sources. In cases where no official source of net migration is available, it is calculated by the difference between total population growth and natural increase in a country for a given period.[4] GDP and population are measured in the year 2000. Data on common official language, common borders, colonial history and bilateral distance corresponding to a country pair are obtained from the CEPII Gravity Dataset (Head, Mayer, and Ries, 2010). Bilateral migration stocks for the year 2000 are obtained from the World Bank's Global Bilateral Migration Database (Özden, Parsons, Schiff, and Walmsley, 2011). Dummy variables representing world regions are based on the United Nations Statistics Division's geographical sub-regions classification. The dataset contains information for a cross-section of 172 countries.

The relationship between net migration flows, GDP per capita and population at the

[3]A complete list of countries and the corresponding income groups is provided in the Appendix.

[4]Notice that the "quality" of each data point is thus not necessarily the same. Exploiting the existing information on the quality of observations to develop a weighting scheme that can be embedded in the estimation method is a potentially fruitful avenue of further research which is outside the scope of this contribution.

country level is displayed in Figure 1. The scatterplots link net migration to income per capita, the size of the bubbles in the figures is proportional to the population of each country. The red line represents the estimated least square slope. Figure 1 shows that the absolute values of net migration flows tend to be higher for countries that are larger in terms of population. Countries with relatively high GDP per capita are associated with positive net migration flows, indicating that income acts as a pull factor for migration. The left panel in Figure 1 includes all countries used in the analysis, whilein the right panel the United States, China and India are omitted, in order to show that the findings are not driven solely by these countries.

Table 2 shows the estimates of the different specifications described above, obtained using the nonlinear maximum likelihood estimation method sketched in section 2. The results in column (1) of Table 2 suggest that the core variables of the gravity model (per capita GDP of destination and source countries, the populations of both countries, the distance between the countries as well as colonial relationships, common language and contiguity) are important determinants of global bilateral migration flows. The estimated coefficients support the predictions of the standard gravity model and in addition provide new quantitative insights to the determinants of bilateral migration flows. A higher per capita GDP in the destination country attracts migrants and thus increases the bilateral flows, whereas better economic conditions in the source country, measured by the GDP per capita, reduces migration flows. Geographical contiguity increases the flow between countries on average by approximately 115% while migration flows between pairs of countries having a common colonial history tend to be more than the double of those without colonial links, keeping all other variables constant. A common official language between two countries, assumed to reduce the cost of migration, increases migration flows by roughly 35%, given all other characteristics. The positive relation between migration stocks and bilateral flows provides evidence for network effects. Existing networks and communities in the destination country facilitate migration as they support a potential migrant by the provision of information regarding legal matters, infrastructure or employment opportunities. Additionally, many countries explicitly support family reunifications in their immigration laws, an effect that is also captured by this variable.

In Column (2) in Table 2 the effects of the covariates are allowed to vary depending on the income level of the source country. Low income countries are denoted as countries in the South and high income countries are referred to as countries in the North. The geographical location of the countries is disregarded in this definition. The results show that geographical distance appears to be a larger barrier when the origin country belongs to a low income group and that network effects are significant only for migration flows originating in developing countries. Column (3) shows the results of the estimation of a more flexible specification in terms of parameter heterogeneity. In this model, some covariates are interacted with dummy variables indicating the direction of migration flows. We find that GDP per capita in the destination country has the highest effect for migration flows within the group of developing countries. While for flows to the north and within the group of northern countries a higher GDP per capita in the destination country attracts more migrants, this is not the case for flows from high to low income countries. Higher GDP per capita in the source country decreases out-migration in most cases, although for mi-

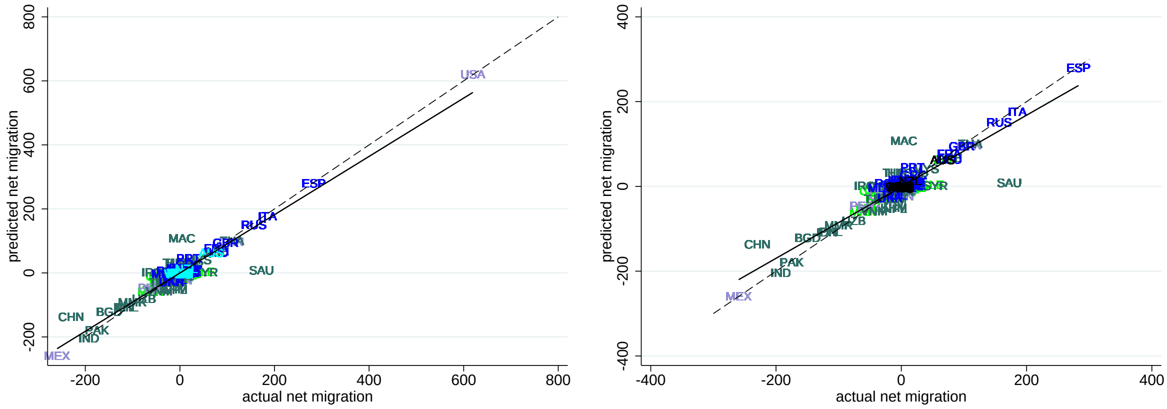

Figure 2 – Actual vs. predicted net migration flows (in 10.000s), full sample (left panel) and full sample excluding United States (right panel)

gration between countries in the North this result can not be validated. A common colonial history of two countries multiplies migration flows by roughly three within the group of high income countries and for South-North migration flows. We gain further insights about the effect of the migration stock in the destination country when interactions with direction dummies are used. The effects of the existing stock of migrants found in Columns (1) and (2) seem to be mainly driven by the relevance of this variable for flows from developing to developed countries. Although a significant effect is also found for North-North migration, its magnitude is comparably small.

As a cross-validation check, we compute the net migration flows implied by our model estimates for 2000-2005 and compare them to the actual data. Figure 2 plots actual versus estimated net migration rates for each country. The left panel of Figure 2 shows net migration flows for all countries and the right panel excludes the United States, as immigration to the United States is significantly higher than to any other country. Comparing the least squares fit (solid line) to the 45-degree line (dotted line) shows that the net migration figures implied by our model estimates are very much in line with actual net migration flow data. The slope parameter estimate of the line is not significantly different from unity and estimated with an extremely high degree of precision.

4 Projecting migration flows to Europe: An illustration

The elasticities provided by the estimates obtained can be used to obtain projections of migration flows using assumptions on global population and income dynamics. As an illustration of this type of analysis, we carry out a simple migration projection exercise for the period 2010-2050, where we concentrate on the migration trends to Europe.

We combine the parameter estimates presented in Table 2 with population and GDP projections for most countries of the world which have been recently developed in the framework of the 5th Assessment Report of the Intergovernmental Panel

Table 2 – Maximum Likelihood estimation results

	(1)		(2)		(3)	
ln(distance)	-0.7271***	[0.0765]				
× Origin North			-0.3809***	[0.0520]		
× Origin South			-0.6495***	[0.0465]		
× North-North					-0.5469***	[0.0916]
× North-South					-0.2397**	[0.1150]
× South-North					-0.7564***	[0.0883]
× South-South					-0.6625***	[0.0950]
ln(GDP pc destination)	0.4335***	[0.0922]				
× Origin North			1.5736***	[0.2583]		
× Origin South			0.6241***	[0.0718]		
× North-North					0.7552***	[0.1653]
× North-South					-1.6009***	[0.2442]
× South-North					0.4820**	[0.2014]
× South-South					1.7540***	[0.3417]
ln(GDP pc × Origin)	-0.3332***	[0.0399]				
× Origin North			0.6749***	[0.1166]		
× Origin South			-0.0414	[0.0771]		
× North-North					1.1179***	[0.1427]
× North-South					-5.6341***	[1.2347]
× South-North					-0.3907**	[0.1588]
× South-South					-0.1738	[0.3713]
ln(Pop. destination)	0.6433***	[0.0443]				
× Origin North			1.0799***	[0.0962]		
× Origin South			0.8178***	[0.0457]		
× North-North					1.1115***	[0.1030]
× North-South					-0.1363	[0.1650]
× South-North					0.8398***	[0.1198]
× South-South					0.6653***	[0.0729]
ln(Pop. × Origin)	0.5544***	[0.0307]				
× Origin North			0.7322***	[0.0618]		
× Origin South			0.6451***	[0.0232]		
× North-North					0.8484***	[0.1036]
× North-South					2.0524***	[0.3541]
× South-North					0.5847***	[0.1155]
× South-South					0.9086***	[0.1765]
Contiguity	1.1478***	[0.2325]	1.7603***	[0.1493]	1.2658***	[0.2550]
Colony	2.6209***	[0.1309]				
× Origin North			3.5571***	[0.2153]		
× Origin South			0.8475***	[0.1670]		
× North-North					3.5113***	[0.2718]
× North-South					-11.6176	[610912]
× South-North					2.8741***	[0.2608]
× South-South					0.1576	[0.4067]
Common language	0.3484***	[0.0652]	0.2949***	[0.0984]	0.3125*	[0.1808]
Share migration stock	0.0969***	[0.0023]				
× Origin North			0.0040	[0.0115]		
× Origin South			0.0950***	[0.0027]		
× North-North					0.0307***	[0.0078]
× North-South					0.0356	[0.0916]
× South-North					0.1000***	[0.0055]
× South-South					-0.3835	[0.2967]
South Origin			0.8562***	[0.2995]		
log likelihood	-144381.1		-137685.2821		-134883.9	

Nonlinear maximum likelihood estimation based on net migration as a dependent variable in the model given by (3). The model includes 21 destination and 21 source region dummy variables, whose parameter estimates are not shown in the table. Net migration corresponds to the period 2000-05, while the explanatory variables are evaluated in the year 2000.

for Climate Change (IPCC) by Lutz and K.C. (2013) (for population) and Crespo Cuaresma (2013) (for GDP). Projections are constructed around five narrative scenarios which correspond to different challenges in terms of mitigation and adapta-

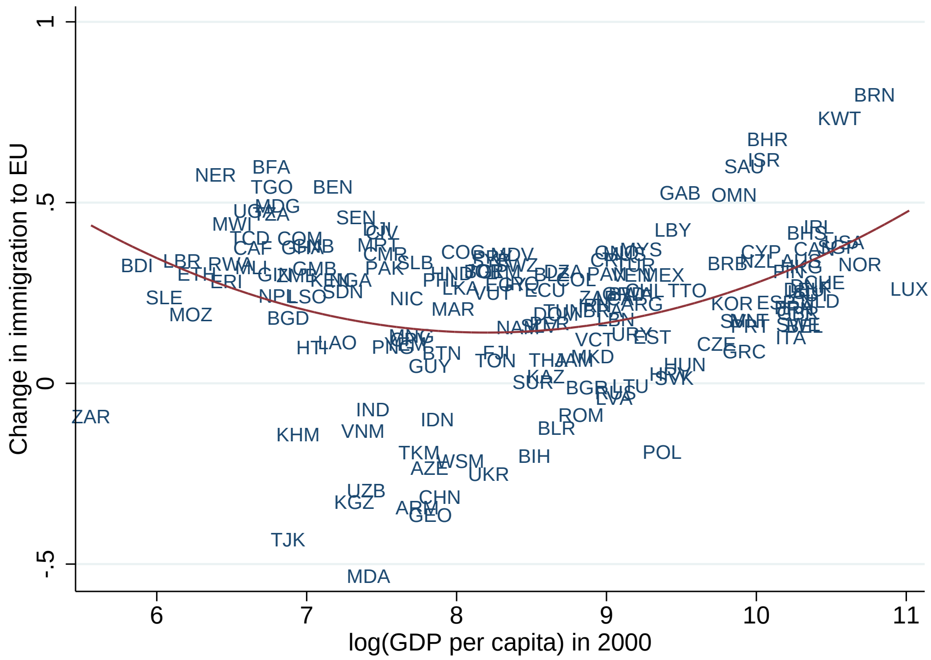

Figure 3 – Projected change in migration to EU15

tion to climate change. These scenarios are dubbed *Shared Socioeconomic Pathways* (Kriegler, O'Neill, Hallegatte, Kram, Lempert, Moss, and Wilbanks, 2013). We obtain projections of population and GDP for the Shared Socioeconomic Pathway which depicts the "middle-of-the-road" scenario, and as such is neither too optimistic nor too pessimistic concerning fertility reduction in developing economies and income convergence dynamics at the global level. Such a projection scenario provides a realistic benchmark to assess the changes in migration flows to Europe in the coming decades.

Using the projected population and GDP paths for all countries of the world obtained by the methods put forward by Lutz and K.C. (2013) and Crespo Cuaresma (2013), we compute the changes in migration flows to EU-15 countries for the period 2010-2050. We concentrate in the EU-15 group in order to explicitly address also the change in migration flows from Eastern Europe, which has been a prominent component of migration within Europe in the last decades. Figure 3 depicts the projected percent changes in migration flows towards Europe for the period 2010-2050 (by country of origin) against the current GDP per capita levels of the source countries. Such a graphical representation informs us about the expected change in the profile of migrants to Europe by country of origin over the coming decades.

The results in Figure 3 suggest that the projected demographic and economic developments at the global level are expected to increase migration flows to Europe in the next 35 years. The relative increase in migration flows by source country, however, is expected to be heterogeneous. Migration flows from Central and Eastern European countries to EU-15 economies are expected to remain roughly constant over the coming 35 years. The U-shaped relation between current income levels and expected increase in migration flows points towards a changing source country composition of immigrants, as in particular migrants from countries with currently low income levels are expected to significantly increase their share in total migration to Europe.[5]

This type of projection exercise can serve to inform policy makers in recipient countries of disaggregated migration trends and provide signals about, for example, changes in the skill profiles of immigrants.

5 Conclusions and paths of further research

A large body of literature is devoted to understanding the causes of bilateral migration flows. The majority of the empirical studies focus on North-South, North-North or South-North migration, as available data sets only cover immigration flows for receiving industrialized countries. We propose a method that allows to assess global migration flows using the fact that available net migration rates are nonlinear aggregates of bilateral migration flows. We show that a simple quasi-maximum likelihood method performs well for underlying bilateral specifications with relatively good eplanatory power for migration flows. Modelling the bilateral migration flows with the aid of simple gravity models and linking them to the net migration flows allows estimating the response of bilateral migration flows to changes in the explanatory variables.

Using a simple projection exercise for bilateral migration flows to Europe based on a realistic scenario for population and income dynamics, we exemplify how the method can be used to monitor future trends in migration and inform policy makers of changes in the composition of migrants by country of origin.

The specification used in the analysis has an illustrative character and can be extended further to account for parameter heterogeneity across world regions. The maximum likelihood estimation framework allows for a natural extension to Bayesian estimation methods, which in addition should allow for a straightforward (albeit arguably computationally expensive) assessment of model uncertainty. This avenue of research is already being carried out by the authors.

[5]The income convergence trends embodied in the GDP projections used for the middle-of-the-road scenario of the Shared Socioeconomic Pathways is a central driving force of such a result. While income equalization over the period 2010-2100 is assumed in three out of the five Shared Socioeconomic Pathways, the U-shaped relationship in Figure 3 may change if population and GDP per capita projections based on diverging global income per capita dynamics are used.

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Appendix

Table 3 – List of countries and corresponding income groups

South		**North**		
Low income	Lower middle income	Higher middle income	High income: OECD	High income: non-OECD
Bangladesh	Angola	Albania	Australia	Bahamas, The
Benin	Armenia	Algeria	Austria	Bahrain
Burkina	Belize	Argentina	Belgium	Barbados
Burundi	Bhutan	Azerbaijan	Canada	Brunei Darussalam
Cambodia	Bolivia	Belarus	Czech Republic	Croatia
Central Afr Rep	Cameroon	Bosnia and Herz	Denmark	Cyprus
Chad	Cape Verde	Botswana	Finland	Equatorial Guin
Comoros	China	Brazil	France	Estonia
Congo, Dem Rep	Congo, Rep.	Bulgaria	Germany	Hong Kong SAR
Eritrea	Cote d'Ivoire	Chile	Greece	Israel
Ethiopia	Djibouti	Colombia	Hungary	Kuwait
Gambia, The	Ecuador	Costa Rica	Iceland	Latvia
Ghana	Egypt, Arab Rep.	Dominican Rep	Ireland	Macao SAR
Guinea	El Salvador	Fiji	Italy	Malta
Guinea-Bissau	Georgia	Gabon	Japan	Oman
Haiti	Guatemala	Grenada	Korea, Rep	Qatar
Kenya	Guyana	Iran, Islamic Rep.	Luxembourg	Saudi Arabia
Kyrgyz Rep	Honduras	Jamaica	Netherlands	Singapore
Lao PDR	India	Kazakhstan	New Zealand	Trinidad and Tob
Liberia	Indonesia	Lebanon	Norway	United Arab Emir
Madagascar	Iraq	Libya	Poland	
Malawi	Jordan	Lithuania	Portugal	
Mali	Lesotho	Macedonia, FYR	Slovak Republic	
Mauritania	Maldives	Malaysia	Slovenia	
Mozambique	Micronesia, Fed St	Mauritius	Spain	
Myanmar	Moldova	Mexico	Sweden	
Nepal	Mongolia	Namibia	Switzerland	
Niger	Morocco	Panama	United Kingdom	
Rwanda	Nicaragua	Peru	United States	
Sierra Leone	Nigeria	Romania		
Solomon Islands	Pakistan	Russian Fed		
Tajikistan	Papua New Guin	South Africa		
Tanzania	Paraguay	St Lucia		
Togo	Philippines	St Vincent & Gren		
Uganda	Samoa	Suriname		
Zambia	Senegal	Turkey		
	Sri Lanka	Uruguay		
	Sudan	Venezuela		
	Swaziland			
	Syrian Arab Rep			
	Thailand			
	Timor-Leste			
	Tonga			
	Tunisia			
	Turkmenistan			
	Ukraine			
	Uzbekistan			
	Vanuatu			
	Vietnam			
	Yemen, Rep			

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Institutions and the Location Decisions of Highly Skilled Migrants to Europe

DRAFT VERSION

Author: Klaus Nowotny (WIFO, University of Salzburg)

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Institutions and the Location Decisions of Highly Skilled Migrants to Europe

Klaus Nowotny*

Draft version: May 19, 2013

Abstract

The economic literature provides ample evidence that immigration of highly skilled workers can be beneficial for the host economy. Yet, when compared to countries such as the U. S. or Canada, Europe receives a lower share of migrants with tertiary education, raising concerns that the EU does not attract enough highly skilled migrants. There is, however, considerable heterogeneity in the share of highly-skilled migrants across EU-15 countries which is even more pronounced at the regional level. This paper uses the heterogeneity to investigate the economic, labor market and institutional factors that make regions and countries attractive for highly skilled migrants vis-à-vis low-skill migrants. Controlling for a variety of regional characteristics, the regressions show both similarities and differences in the determinants of location choice between high- and low-skilled migrants.

JEL classification numbers: F22, R23, C35

Keywords: highly-skilled migration, regional location decisions, institutions, migration policy

1 Introduction

The economic literature provides ample evidence that the migration of highly skilled workers is beneficial for the host economy: highly skilled migrants

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can contribute to enhance technology adaption and adoption by innovation or knowledge spillovers (Hunt and Gauthier-Loiselle, 2008; Kerr, 2007), their skills are more likely to be complementary to those of natives relative to low-skill migrants (see, for example, Fujita and Weber, 2004; Alesina and La Ferrara, 2005; Ottaviano and Peri, 2006; Niebuhr, 2006), they are more often entrepreneurially-minded (Saxenian, 2000) and can also provide information which increases trade and FDI flows between sending and receiving countries (Docquier and Lodigiani, 2010). Furthermore, highly skilled migrants rely less on public services and tend to be net contributors to the welfare system (Razin et al., 2011). Given this evidence, it is not surprising that the focus of migration policy in many countries has shifted toward the skill composition of migrants, contributing to an increasing international competition for highly skilled labor.

Highly skilled migrants are also vital for the competitiveness of European economies (Huber et al., 2010), especially in the face of aging societies and increasing pressures on welfare systems. Yet when compared to countries such as the U. S. or Canada, Europe receives a lower share of migrants with tertiary education, raising concerns that the EU does not attract enough highly skilled migrants: according to the OECD's Database on Immigration in OECD Countries (DIOC), the (unweighted) average share of highly skilled among the foreign-born is only 20 % in the OECD EU countries, compared to 26 % in Australia and the U. S., 31 % in New Zealand and 38 % in Canada (Huber et al., 2010, p. 32). Focusing on the foreign-born age 25–64, the (unweighted) average of the share of highly skilled across 19 EU OECD countries is only 25 %, compared to 35 % in the U. S., 36 % in Australia, 38 % in New Zealand and 46 % in Canada (OECD, 2007a, p. 133). This holds true even after controlling for differences in the sending country structure between the EU and the non-EU OECD countries.

However, there is considerable heterogeneity across countries in the EU: the share of highly skilled among the foreign-born ranges from less than 15 % in Austria, Italy or Germany to more than 35% in Denmark, Sweden, the U. K. and Ireland (Huber et al., 2010), and the heterogeneity is even more pronounced at the regional level, where the share of highly skilled among the foreign-born ranges from as low as 5 % in some to more than 50 % in other regions according to data from the European Union Labour Force Survey (EU-LFS) for 2006/2007.

This paper uses the heterogeneity across EU countries and regions to analyze the economic, labor market and institutional factors that make regions and countries attractive for highly skilled migrants and favor the immigration of the highly skilled. The paper contributes to both the literature on the impact of institutions on migration, where it extends previous approaches by differentiating migrants by skill levels, as well as to the literature on the determinants of highly-skilled migration.

The paper also adds to the literature by using a special evaluation of the EU-LFS provided by Eurostat which contains detailed information on migrants' country of birth, length of stay in the host country and educational attainment. This unique data set allows an analysis for (almost) all EU-15 countries, while previous approaches (see, for example, Geis et al., 2008, 2011) focused only on selected European countries for which data was available.

2 Literature

The empirical literature on the determinants of migration is manifold. But while early works (see, for example, Sjaastad, 1962; Todaro, 1969) focused mainly on economic determinants such as wages, unemployment rates or migration costs, more recent contributions increasingly focus on the impact of institutional factors on migration: for example, following Borjas' (1999) paper on the "welfare magnet hypothesis", various papers analyzed the impact of the generosity of the welfare system. The evidence provided by the empirical literature is, however, far from being conclusive. While Borjas (1999) concludes that welfare-receiving immigrants in the U.S. show a higher degree of clustering, Levine and Zimmerman (1999) find no support for the welfare magnet hypothesis in their analysis of moves within the U. S. In addition, there are only few studies for the EU or single European countries. In their analysis of migration flows to 22 OECD countries, Pedersen et al. (2008) find only weak results for their welfare generosity proxy (public social expenditure as a percentage of GDP) which are even negative in some regressions. On the other hand, results by Åslund (2005) or Damm (2009) point to welfare seeking behavior by immigrants to Sweden and Denmark, respectively.[1]

Geis et al. (2008) analyzed the effect of welfare variables and institutional determinants of target country choice but find mixed effects for their proxies for welfare generosity in a study covering France, Germany, the UK and the U. S. The authors estimate a negative effect of pension replacement rates on country choice, which can—according to the authors—be attributed to a higher "implicit tax rate" associated with more generous pension systems. On the other hand, they find positive effects on migrants' choice of a host country for the quality of health care and educational systems as well as the unemployment replacement rate. Similar results were found by Nowotny (2011) for 13 of the EU-15 countries. With respect to the institutional variables, Geis et al. (2008) found positive effects of employment protection or union coverage on migrants' location choices, but also pointed to insider-outsider problems with these institutions if unemployment was large.

While there already are some studies analyzing the effect of institutions on migration decisions, the number of contributions that consider the effect of institutions on the skill composition of migration is limited. Belot and Hatton (2012) investigate the selection by skill among migrants to 21 OECD countries using an extended Roy model; in an additional regression they also control for a limited set of institutional variables capturing two aspects of migration policy. Their dummy variables for low restrictions on the migration of professionals and having a points system that favors highly-skilled immigration have a positive effect on skill selection. Geis et al. (2008) also investigate differences between skill groups, but only differentiate between unskilled and skilled migrants but do not consider the highly skilled as defined in this paper (see next section) as a separate group. Additionally, they focus on a limited set of institutional variables and do not include aspects of migration policy

[1] However, because the generosity of the welfare system hardly varies within European countries, effects are hard to identify in single-country studies because of low (or missing) variation in the explanatory variables.

in their analysis. Geis et al. (2011), on the other hand, differentiate between low-, medium and highly skilled, but provide only descriptive evidence.

This paper therefore extends the existing literature which captures the effect of individual institutional variables on the skill structure of migration by considering a broader range of institutional, welfare and migration policy variables; in addition, it is—to the author's best knowledge—the first study of this kind for a larger set of European Union countries.

3 Data and empirical strategy

3.1 Migration data

Since most datasets that distinguish between high- and low-skill migrants are not available on a place-to-place basis (such as the DIOC) or at the regional level (such as the data used by Docquier and Marfouk, 2006), this paper uses a special evaluation of the 2007 EU-LFS to estimate the determinants of highly-skilled migrants' location choice at the regional level. The EU-LFS is a periodical survey conducted among private households in the EU. While EU-LFS data disseminated by Eurostat usually contain only aggregated information on the sending countries, the special evaluation available to the author provides detailed information on migrants' country of birth as well as the region of residence at the NUTS-2 level. Furthermore, the data distinguish between migrants who moved during the last 10 years before the survey (i. e., during the 1998-2007 period) and migrants who moved more than ten years ago. It also includes information on the skill level based on the UNESCO's International Standard Classification of Education (ISCED).[2] For the empirical analysis we consider all individuals born outside their country of residence as migrants, and distinguish between low-skilled (ISCED

[2]Of course, the level of formal education is not the only aspect of a migrant's skill level; motivation, informal education and on-the-job experience also constitute important components of an individual's "skill" but are, unfortunately, unobserved. This paper therefore assumes that the highest completed level of education is representative for (or at least highly correlated with) the skill level.

0–2 equivalent level of education), medium-skilled (ISCED 3–4) and highly skilled migrants (ISCED levels 5 or 6).

The empirical analysis will model the location decisions of migrants to the EU-15 countries and therefore focuses on all individuals born outside the EU-15 while migrants from within the EU-15 are not considered.[3] We furthermore focus only on those who migrated during the last 10 years. Those who migrated more than 10 years ago are used to calculate migration networks (see section 3.4).

The EU-LFS data have two drawbacks: first, the data only provide information about those who have been living in the respective member country at the time of the interview, so there is no information about repeat and return migration which would be important for the calculation of migrant networks (see below). Second, the EU-LFS does not contain information on country of birth for Germany and Ireland. For the German data, information on nationality is therefore used to identify migrants. Although it is an imperfect measure of migrant status because migrants who have attained German citizenship through naturalization can no longer be identified as migrants, the error will be rather small because the focus of the empirical analysis is on more recent migrants and immigrants usually have to be German residents for several years before they can apply for the citizenship. It will, however, affect the calculations of migrant networks. Information about nationality is also missing for Ireland which is excluded as a receiving country. The empirical analysis therefore considers only 14 of the EU-15 countries as receiving countries.

[Table 1 about here.]

The number of observations in each skill category is shown in table 1. The table shows both the (unweighted) number of observations in the sample as well as the (weighted) number of migrants in the population. According to

[3]In principle, data on migrants in the new member states that joined the European Union in 2004 and 2007 are included in the LFS. But given the low number of migrants in these countries they are less reliable and the new member states are therefore not used as receiving countries in the analysis.

the weighted population projections, about 19.2 % of the 9.6 m migrants from 160 countries who moved to the 14 EU-15 countries considered between 1998 and 2007 are highly skilled, while the number of low- and medium-skilled immigrants is more than twice as high. The EU-LFS data thus confirm the figures mentioned in the introduction that highlighted a share of highly skilled among the foreign-born in the EU of about 20 %.

3.2 Empirical specification

To motivate the empirical specification consider the location choice of migrant i who intends to migrate to the EU-15 and faces R alternative regions with choice-specific attributes X_{ir}. Assuming that the utility function is linear in the attributes of the regions, i's utility of moving to region s is a linear function of the choice-specific characteristics X_{is} as well as an unknown utility component ε_{is} which is treated as random:

$$u_{is} = \beta' X_{is} + \varepsilon_{is} \tag{1}$$

The utilities are, of course, not observed, but assuming that migrants maximize their individual utility we can use the information that the individual chose to migrate to region s if and only if $u_{is} > u_{ir}\ \forall\ r \in R \neq s$ to predict the final outcome in terms of probability.

Under the assumption that the errors ε_{is} are i. i. d. extreme value, the probability that migrant i chose region s can then be estimated by the well-known conditional logit model (McFadden, 1974):[4]

$$Pr(y_{is} = 1|X_i) = \frac{\exp(\beta' X_{is})}{\sum_{r=1}^{R} \exp(\beta' X_{ir})} \tag{2}$$

[4] See also Bartel (1989), Bauer et al. (2000, 2002, 2005), Gottlieb and Joseph (2006), Jaeger (2007), Geis et al. (2008) or Christiadi and Cushing (2008) for related applications of the conditional logit model.

with log-likelihood function

$$LL(\beta) = \sum_{i=1}^{N} \sum_{s=1}^{R} y_{is} \ln Pr(y_{is} = 1 | X_i)$$

where $y_{is} = 1$ if migrant i chose region s and zero otherwise. The conditional logit approach has the advantage that all variables z which do not vary across alternatives (such as individual or sending country characteristics) are canceled out:

$$\begin{aligned} P_{ks} &= \frac{\exp(\beta' X_{is} + \gamma z_i)}{\sum_{r=1}^{R} \exp(\beta' X_{ir} + \gamma z_i)} = \frac{\exp(\gamma z_i) \exp(\beta' X_{is})}{\exp(\gamma z_i) \sum_{r=1}^{R} \exp(\beta' X_{ir})} \\ &= \frac{\exp(\beta' X_{is})}{\sum_{r=1}^{R} \exp(\beta' X_{ir})} \end{aligned}$$

This allows estimation without sending country data based on receiving region characteristics alone, which not only reduces the amount of data required (cf. Ortega and Peri, 2009), but also controls for any unobserved and unobservable individual or sending country characteristics which could lead to omitted variable bias in a cross-section regression.

But the approach also has some drawbacks. The most well known is the fact that the relative probabilities of two regions s and t should depend only on the characteristics of the two regions, a property known as "independence from irrelevant alternatives" (IIA). While IIA has some advantages if satisfied (for example it allows the consistent estimation of parameters on a subset of R) its validity in empirical applications can often be questioned.

Whether IIA holds can be tested by comparing the parameters of the unrestricted model (including all alternative regions) to the parameters of a restricted model where some alternatives are excluded (Hausman and McFadden, 1984). A significant test statistic provides evidence against IIA. However, the test does not offer guidelines which subset of alternatives should be excluded from R. Given that there are 200 possible tests that can be performed if only one alternative is excluded at a time, 19,900 possible tests where two alternatives are excluded and 1,313,400 tests where three alternative regions are excluded in the restricted model it is highly likely to find at least one restricted model that indicates a violation of IIA (cf. Christiadi and Cushing, 2008).

Although there are alternatives to the conditional logit that do not exhibit the IIA property—most notably the nested logit and the random parameters logit models, (see Train, 2009, chs. 4 and 6 for a discussion)—the conditional logit is a good starting point for the empirical analysis if the model is not too parsimoniously specified (see Dahlberg and Eklöf, 2003; Christiadi and Cushing, 2008; Train, 2009), so the empirical analysis will stick to the conditional logit model.

3.3 Institutional variables

The main variables of interest in the empirical analysis should capture different aspects of migration, welfare and tax policy which can be expected to affect the location decisions of highly skilled migrants. Because these variables hardly vary within the EU-15 countries considered, they are measured at the national level.[5]

To capture the effect of the generosity of the welfare system on location choice, the paper includes the net replacement rate during the initial phase of unemployment (following any waiting period, for single individuals without kids) at the average wage for 2007 from the OECD Benefits and Wages Statistics as well as the pension net replacement rate (for men, at average wage) published in OECD (2007b). Although migrants are usually not eligible for unemployment benefits right after arriving in the host country, a positive effect of the net replacement rate can be expected if migrants expect to become (temporarily) unemployed at some point in the future. For the pension replacement rate, a positive effect can be expected as well. The unemployment and pension replacement rates differ widely across the 14 EU

[5] As shown above, variables specific to the source countries (such as institutional variables, unemployment or wage levels, or sending country fixed effects) cannot be considered in the conditional logit model, since variables which have the same value for all choices cancel out in the logit formula unless they are interacted with alternative-specific variables (see page 8). The same holds true for individual characteristics like age, gender or educational attainment.

countries considered, with levels ranging from 36 % to 87 % and 41.1 % to 110.1 % (see table 2).

[Table 2 about here.]

Because welfare provisions must be financed by taxes and social security contributions, variables capturing aspects of the taxation system should be considered to control for the costs of living in a more generous welfare system; the regression therefore includes the average personal income tax and employee social security contribution (SSC) rate as a percentage of gross wage earnings measured at the average income from the OECD Tax Database (2007 figures). The combined income tax and SSC rate is chosen because it directly affects net income and is therefore one of the most important aspect of the tax system for work-related migration; a negative effect on location choice can be expected. Also included in the regression is the net income ratio which measures the progressivity of the income tax system. Define $t(\cdot)$ as the function of the combined tax and SSC rates and $\overline{y}$ as average income; then, the net income ratio at 133 % and 100 % of the average wage is (see Schratzenstaller and Wagener, 2009):

$$NIR(1, 1.33) = \frac{1 - t(1.33\overline{y})}{1 - t(\overline{y})}.$$

Values of $NIR < 100$ indicate a progressive income tax system, and progression is higher the lower the net income ratio.

The progressivity of the income tax system can also be seen as a proxy for the returns to skill, and different effects can be expected for high- and low-skilled migrants: while a higher progressivity will decrease the attractiveness of a country for highly skilled migrants because it—ceteris paribus—implies lower returns to skill, it can make a country more attractive for low-skilled migrants because they can profit from a lower tax rate on low incomes if progression is approximately linear. Low-skill migrants can also profit from tax progression if the higher taxes on high-income workers are used to finance public services or transfers to low-income households.

As table 2 shows, the average combined tax and SSC rates evaluated at the average income range from 20.5 % to 46.9 % in the 14 EU countries considered according to the OECD data, with an average rate of 32.4 %. As the summary statistics for the net income ratio shows, almost all countries apply progressive income tax schedules (at least in the 100 % to 133 % average income range). The countries with the lowest progressivity in the sample are Luxembourg ($NIR = 100.0$) and the U. K. ($NIR = 98.5$), while Denmark ($NIR = 91.2$) and Sweden ($NIR = 91.7$) are the most progressive when comparing the net income rates at 100 % and 133 % of average income.

Finally, the regressions also include data from the British Council's "Migrant Integration Policy Index" (MIPEX II) project, which provides comparable indices on different aspects of migration and integration policy for the EU and some other countries based on 140 policy indicators (see Niessen et al., 2007, for a detailed description of the data and methodology). MIPEX supplies indices in six policy areas: labor market access, family reunion, long-term residence, political participation, access to nationality and anti-discrimination. Within each area, policy indicators are grouped into four dimensions which cover different aspects of the policy area,[6] and the area index is constructed by taking the average over all four dimensions. Each index ranges from 0 to 100, with 0 representing "critically unfavorable" circumstances and 100 representing "best practice" examples.[7] In addition, an overall index of migration policy is defined as the average score over all six policy areas. While the MIPEX project provides comprehensive and comparable data about migration and integration policy, it must be noted that the indices only represent the legal framework, which might be different from the actual situation in the host country.

[6]For example, the labor market access index covers the dimensions eligibility ("Are migrants excluded from taking some jobs?"), labor market integration ("What is the state doing to help migrants adjust to the demands of the labor market?"), security of employment ("Can migrants easily lose their work permit?") and associated rights ("What rights do migrants have as workers?"), see Niessen et al. (2007).

[7]What constitutes a "best practice" example is defined on the basis of European Commission directives, Council of Europe conventions, European Commission presidency conclusions, etc., see Niessen et al. (2007).

The country with the highest overall score (and the only country to achieve a “best practice” rating of 100 in one policy area) is Sweden (88 points), followed by Portugal (79) and Belgium (69). The EU member states with the lowest overall ratings among the 14 countries considered are Greece (40 points) and Austria (39). A better value of the index will increase the attractiveness of a country as target location, so that a positive coefficient can be expected. But it can also be expected that some of the individual policy areas will have different effects on high- and low-skilled migrants. For example, highly skilled migrants may care more about labor market access, while low-skilled migrants may care more about family reunion.

3.4 Control variables

The choice of control variables follows other studies on the topic (for example Bartel, 1989; Davies et al., 2001; Geis et al., 2008; Nowotny, 2011) and includes both region specific variables as well as variables specific to a given pair of sending and receiving countries.

Among the region specific attributes included in X_i is the area of the region (measured in 100,000 km^2) because all else equal, larger regions can be expected to attract a larger number of migrants. In addition, the population (in millions) enters the regression. To control for differences in economic opportunities, the unemployment rate (in %) as well as the average annual income per employed person (in € 1,000) are included. Data for population and unemployment (in 2007) as well as average annual income per employee (in 2007) are taken from Eurostat.

To proxy for the costs of migration (or the costs of visiting relatives at home), the distance (in 1,000 km, measured as the crow flies) between the capital of the migrants' home country and the largest city in the region of residence and its squared value are also included as is a dummy variable for the national capitals; the capitals can be expected to receive a ceteris paribus higher share of migrants because they are usually the cultural, political and administrative centers of a target country. A negative effect of the unemployment rate and a positive effect of average annual income on the probability of choosing a specific region can be expected. Distance can be expected to have a negative (but possibly nonlinear) effect on location choice.

Furthermore, a dummy variable is included for regions with a major airport with at least 10 m passengers (dis-)embarking per year (= 1, zero otherwise) based on passenger data provided by Eurostat for 2007. Major (international) airports increase a region's accessibility and can therefore be assumed to contribute to the attractiveness of a region. In addition, the regression also controls for the number of bed-places in tourist accommodation establishments per inhabitant (2007 data; source: Eurostat). The variable can capture two possible effects: first, regions that are attractive to tourists can be assumed to have natural or cultural amenities which raise the attractiveness of a region. Second, a large number of tourists can increase the costs of living, thereby decreasing the attractiveness of a region for migrants. Whether the first or the second effect dominates cannot be said a priori and will therefore be left to the empirical analysis. To capture the effect of climatic conditions the regression will also control for the number of heating-degree days (Eurostat, 2007 data). Although usually used as a measure of energy consumption, the number of heating-degree days will be higher the colder the climate in a region.

Because an extensive literature shows that migrant networks play an important role in the location decision (see, for example, Bartel, 1989; Munshi, 2003; Åslund, 2005; Bauer et al., 2005; Damm, 2009, or Beine and Salomone, 2013, for a recent contribution), the regression controls for the influence of networks by including the share of migrants born in the same country of origin who have been living in this region for more than 10 years. This share is calculated from the EU-LFS data at hand, which includes information on time since migration (see section 3.1). For a migrant from sending country j, the network size in region s is defined as:

$$Network = \frac{m_{js}^{10+}}{\sum_{r=1}^{R} m_{jr}^{10+}}$$

where m_{jr}^{10+} is the number of migrants from sending country j who have been living in region r for more than 10 years (see also Nowotny, 2011; Nowotny and Pennerstorfer, 2012). Because the positive network effect can decrease with network size (see Heitmueller, 2006; Portnov, 1999; Bauer et al., 2002), the squared network size will also enter the regression.

Among the country-pair specific control variables is a dummy measuring whether a migrant's home and host country share a common official language (1, zero otherwise) from Melitz and Toubal (2012). According to their data, 7.5 % of all sending-receiving country pairs in the sample share a common official language, and a positive effect can be expected. Also included is a neighborhood dummy assuming the value 1 if the host and home countries share a common border (zero otherwise). Again, a positive effect can be expected because a common border facilitates not only legal, but also illegal immigration and can ceteris paribus lead to higher migration between two countries. Colonial ties can also affect the location choice of migrants, and a dummy variable is included which captures whether two countries were in a colonial relationship after 1945 (= 1, zero otherwise; source: Mayer and Zignano, 2011). According to the data, a colonial relationship after 1945 can be found for 3.6 % of all sending-receiving country pairs in the sample, most of them with France or the U. K. as the former colonial power.

4 Empirical analysis

Some of the institutional and control variables will not only affect the location choice of highly skilled migrants, but also the location choice of low-skill migrants. If a regional characteristic attracts both migrant groups, it will be of interest to test whether the effect is stronger for high- or low-skill migrants. The conditional logit model is therefore estimated using both high- and low-skilled migrants in a single regression which includes interaction terms for all variables with a dummy variable for highly skilled migrants. If the interaction terms are statistically significant we can conclude that there are differences in behavior of highly skilled and low-skill migrants.[8]

The results of the conditional logit regression are shown in table 3. The first specification includes only the composite MIPEX index, while the second specification includes the individual policy area indices. Both specifications use the full set of control variables from section 3.4. For each specification, the column on the left shows the estimated coefficients, while the column on the right gives the estimated interaction terms of the explanatory variables with a dummy for highly skilled migrants.

[Table 3 about here.]

Both specifications lend support to the hypothesis that a higher income tax and SSC rate decreases the attractiveness of a region. The interaction terms are negative but not statistically significant; the effect of the average personal income tax and social security contribution rate is the same for high- and low-skill migrants. A less progressive income tax system (a higher value of the net income ratio) on the other hand increases the attractiveness of a region or country. In the second specification that includes the full set of MIPEX indices the interaction term of highly skilled migrants with the net income ratio is significantly positive, indicating that highly skilled migrants care more about the progressivity of the income tax system. This result is not surprising; all else equal, a more progressive income tax system implies lower returns-to-skill.

The design of the income tax system therefore affects the location decisions of both high- and low-skill migrants: the higher the tax and SSC rate and the higher the progressivity of the income tax, the lower the attractiveness of a region. But since highly skilled migrants can expect to earn higher incomes in the target country the progressivity of the tax system affects them more than low-skill migrants. A less progressive tax system will be attractive to both groups of migrants, but relatively more attractive to the highly skilled.

[8]The regressions were also performed separately for high- and low-skilled migrants, which leads to the same qualitative results. The results are available from the author upon request.

The effects of the two variables used to proxy for the generosity of the welfare system also differ between high- and low-skill migrants once migration policy is controlled for in detail. The unemployment replacement rate has a significantly positive overall effect on location choice in both specifications, but once all MIPEX indices are included, the interaction term for highly skilled migrants becomes significantly negative. While low-skill migrants prefer to move to countries with more generous unemployment insurance, the highly skilled may care more about its implicit tax price. The pension net replacement rate on the other hand has a positive effect on the location decisions of both groups if the MIPEX composite index is used. When the index is split into its individual policy areas, the coefficient turns negative for low-skill migrants while the interaction term becomes significantly positive for the highly skilled, and the coefficient and interaction term seem to cancel each other out. The regression suggests that low-skill migrants care about short-term support in the target country if unemployed, but not about long-term support in the form of pensions. Highly skilled migrants' location choice on the other hand is less dependent on the welfare system, and may be more determined by the implicit tax price of welfare provisions.

The design of migration policy also affects location decisions. The coefficient of the MIPEX composite index is significantly positive; a higher score on the Migrant Integration Policy Index contributes to the attractiveness of a country and its regions. But if the index is divided into its components, there are some differences in the effect of different policy areas on the location choice of the two skill groups.

More favorable conditions concerning labor market access, for example, have a positive impact on the attractiveness of a region for both groups of migrants, but the effect is significantly stronger for highly skilled migrants than for low-skill migrants. In contrast, highly skilled migrants appear to pay less attention to policies governing family reunion and long-term residence, as indicated by the significantly negative interaction term. Highly skilled migrants may for example be concerned about statistical discrimination if more generous policies for family reunion and long-term residence favor the immigration of low-skill workers, while their own partners—which are more likely to be highly skilled as well—would benefit more from less strict labor market access than family reunion regulations. The interaction terms of highly skilled migrants with political participation and access to nationality, on the other hand, are significantly positive while the overall coefficients are insignificant or negative. Highly skilled migrants are therefore more attracted by countries which offer favorable conditions concerning political participation and access to nationality than low-skill migrants. Finally, stricter anti-discrimination regulations have a negative effect on both groups, with no significant differences between high- and low-skill migrants. This finding could be explained by anti-discrimination laws being stricter in countries where discrimination against migrants is more widespread. To sum up, the analysis of the migration policy indices shows that highly skilled migrants care more about labor market access, political participation and access to nationality than low-skill migrants. Countries that offer such policies should attract a higher share of highly skilled migrants. For low-skill migrants on the other hand, the most attractive factors are labor market access (albeit to a smaller extent than for the highly skilled) and long-term residence.

Most of the effects found for the control variables show the expected signs: after controlling for region size and population, a region is more attractive the larger the size of the migrant network, although the effect is smaller for the highly skilled. On the other hand, the unemployment rate seems to affect only low-skill migrants, as the interaction term for highly skilled migrants is significantly positive. No significant differences between the groups can be found for the positive coefficient of the average annual income per employed person and the negative coefficient of the number of bed-places in tourist accommodation establishments. The variable was included to proxy either for (natural) amenities or for the costs of living, and obviously the latter effect dominates the former so that the overall effect is negative.

Regions that are easily accessible by plane are also more attractive, but the effect is stronger for the highly skilled. The negative effect of distance, on the other hand, is significantly smaller for highly skilled migrants, supporting the hypothesis that the highly skilled find it easier to cover the costs of migration. Capital regions are less attractive for the low-skilled while the significantly positive interaction term indicates that the highly skilled are not less inclined to move to capital regions than to other regions. The negative effect for the low-skilled can be explained by the sectoral composition of capital regions, which tend to have a higher share of services and lower shares of agriculture and industry than other regions. Since these sectors employ a higher share of low-skilled workers, capital regions will be less attractive to low-skill migrants.

A common border between the sending and receiving countries has a significantly positive effect for low-skill migrants in the second specification, which may again be related to the costs of moving abroad. On the other hand, a past colonial relationship raises the attractiveness of a region or country only for the highly skilled, while the coefficient of common official language does not differ significantly between the skill groups. Finally, the number of heating degree days, which was used as a proxy for climatic conditions, has a significantly negative impact on location choice, but the effect is smaller for highly skilled migrants.

5 Robustness

To assess the robustness of the results the regressions were estimated again for specific subgroups of the variables. First, the model was estimated separately for male and female migrants. In the literature on household or family migration decisions (see Mincer, 1978, or Rabe, 2011, for a recent paper), female migrants are often considered as "tied movers" who move for the sake of their partner and not for their own sake. There may, however, be differences between high- and low-skilled female migrants.

[Table 4 about here.]

All in all, the results of the regressions by gender (table 4) are in line with the results for the full sample in table 3. However, comparing the results for women to the results for men, there are some instances where the behavior of female migrants differs from the behavior of male migrants. For example, the average tax rate does not affect the location decisions of female migrants, so that the negative effect in table 3 derives mainly from the choices of male migrants. On the other hand, the progressivity of the income tax system affects high- and low-skill female migrants alike, while among male migrants only the highly skilled prefer countries with a less progressive income tax rate. Male and female migrants therefore prefer different tax systems: while female migrants of both skill groups prefer countries with lower progressivity irrespective of the tax rate, male migrants prefer countries with lower income tax rates, and only the highly skilled attach additional importance to the progressivity of the tax system.

In contrast, the effects of the unemployment and pension replacement rates do not differ substantially between men and women. The coefficients are about the same size, although strictly speaking the size of the estimated parameters cannot be compared across groups unless one assumes that there is no unobserved heterogeneity which may lead to differences in scaling.

Looking at the effects of migration policy we can identify some more differences between the sexes: on the one hand, female migrants prefer countries with more favorable conditions concerning labor market access, irrespective of their skill level. On the other hand, only the interaction term is statistically significant for male migrants, indicating that only the highly skilled are concerned about labor market access. Differences can also be observed for the MIPEX Family Reunion index: countries with less strict family reunion regulations are less attractive for highly skilled male migrants, while there is no effect on female migrants or low-skill men. The other effects are relatively similar for men and women, although stricter anti-discrimination regulations have a stronger negative effect on the location choice of highly skilled male migrants.

Most of the effects of the control variables are rather similar for female and male migrants. Among the most notable exceptions are the effect of migrant networks (which is significantly smaller for highly skilled female migrants), the unemployment rate (which affects high- and low-skill female migrants alike but has a smaller negative effect for highly skilled men), the capital dummy (which has no effect on female migrants but significantly reduces the attractiveness of a region for low-skill men) and past colonial relationships (which increase the attractiveness of a country for all female migrants but only for the highly skilled among the male migrants).

To sum up, although there are some similarities between the sexes the differences in the regression results could be interpreted as evidence against women being "tied movers": if all women in the sample were tied movers who migrate to the same regions as men, there should be no differences in the determinants of location choice: modeling female migrants' location decisions would then be equivalent to modeling their partners' location decisions, and we would find the same regional and country characteristics that are affecting men's location choice to also affect women's location choice. Since this is not the case, it can at least be concluded that not all female migrants in our sample are tied movers.

As a second robustness test, the model was estimated for migrants between 30 and 54 years of age to control for educational migration of the younger and retiree migration of the older cohorts and to focus on migrants in prime working age. The comparison of the results in the last two columns of table 4 to the second specification in table 3 reveals that the main regression results do not change considerably when focusing on migrants in prime working age, and the results for the tax and welfare system variables are also mostly in line with those for male migrants. Although there are some differences with respect to the statistical significance of the parameters, the signs never differ from those in table 3 where the coefficients are statistically significant in both models. It can therefore be concluded that our main regression already captures the most important effects that drive the attractiveness of regions and countries for working-age migrants.

[Table 5 about here.]

As a final robustness check, the model was estimated separately for those born in one of the ten Central and Eastern European countries (CEECs) that joined the European Union in 2004 and 2007 and those born in other countries. The regression for migrants from the CEEC does not include the dummy variables for common official language and common official language because they are all zero.

Comparing the coefficients between the regressions for CEE and non-CEE migrants in table 5 and to the coefficients of the regression including all sending countries in table 3 there are some differences in the significance of the estimated parameters. For example, the labor market access area of the MIPEX index is insignificant for migrants from the CEECs while it is significant for migrants from non-CEE countries and in the regression including all sending countries. Where the coefficients or interaction terms are significant in all specifications their sign does not differ, with four exceptions: first, the coefficient for access to nationality is significantly positive for migrants from the CEECs, while it is significantly negative for migrants from other countries, which is surprising given that receiving citizenship of the target country should be less important for migrants within the European Union. Second, the coefficient for population is significantly positive for migrants from CEE countries but significantly negative for migrants from other countries. Third, the interaction term of distance with the highly skilled dummy is significantly negative for CEE migrants but significantly positive for non-CEE migrants. Finally, the interaction term of distance squared is significantly positive for migrants from the CEE countries while it is significantly negative for migrants from other countries. Distance therefore has a negative effect on location choice for migrants from all countries. For the low-skilled from the CEEC the effect does not change with distance because the coefficient on the distance squared is insignificant. For low-skill migrants from other countries, however, the negative effect of distance decreases as distance rises, as indicated by the positive sign of squared distance. For the highly skilled from CEE countries the negative effect of distance is even stronger than for the low-skilled from the same countries, but it decreases as distance rises. On the other hand, for the highly skilled from other countries the negative effect of distance is weaker than for the low-skilled from the same countries (as indicated by the positive interaction term) and also decreases with distance, but at a smaller rate than for low-skill migrants from the same countries.

To sum up, although there are some differences between subgroups and between the subgroup regressions and the pooled regression of section 4, the results of this section show that the empirical approach produces consistent results.

6 Conclusions

This paper uses the heterogeneity across EU countries and regions to analyze the economic, labor market and institutional factors that make regions and countries attractive for highly skilled migrants vis-à-vis low-skill migrants. The analysis reveals some similarities, but also differences between the skill groups: for example, networks increase the attractiveness of a region for both groups, but the effect is smaller for highly skilled migrants. A higher unemployment rate on the other hand decreases the attractiveness of a region only for low-skill migrants and capital regions are less attractive for the low-skilled, but not for the highly skilled. In general, distance has a smaller negative effect for highly skilled migrants, and regions in neighboring countries are more attractive for the low-skilled but not for the highly skilled. Accessibility, measured by large airports, is however more important for the highly skilled than for the low-skilled. All else equal, a past colonial relationship increases the attractiveness of the former colonial power only for highly skilled migrants.

While most of the above variables can not (or only to a limited extent) be influenced by policy makers, the analysis of the welfare and tax system variables as well as different aspects of migration policy reveals some scope for interventions that could help improve the skill structure of immigration: for example, the empirical analysis shows that compared to low-skill migrants highly skilled migrants prefer countries with more favorable regulations concerning access to the labor market, political participation and access to nationality. More favorable rules for family reunion make a country less attractive for the highly skilled, probably because they are afraid of statistical discrimination if such policies attract a disproportionately large number of low-skill immigrants. On the other hand, the highly skilled set a lower value on the generosity of the welfare system than low-skill migrants and may be more concerned about the implicit tax price of welfare provisions. The progressivity of the income tax system also has a stronger effect on the highly skilled, reflecting the impact of the design of the tax system on returns-to-skill.

Countries aiming at increasing the share of highly skilled immigrants should therefore focus on increasing the returns-to-skill by lowering the progressivity of the income tax system and on facilitating labor market access, especially for migrants with tertiary education. This applies in particular to countries which currently still admit a large portion of foreigners under family reunion regulations. They could profit from a switch to a more labor-market oriented migration system which favors highly skilled migrants if they want to improve the skill structure of immigrants, for example via a system that awards points for educational attainment. Facilitating political participation of migrants could also improve the skill structure of migration, as it reflects a society that is more open to immigrants. Countries could also increase the skill structure of immigration by providing more favorable conditions for gaining access to nationality, for example by allowing migrants to hold dual nationalities.[9]

Concerning the welfare system, the results show that highly skilled migrants are rather repelled than attracted by more generous welfare provisions, possibly because they are concerned about the implicit tax price of welfare payments. It must be noted however that the results for the low-skilled are not clear cut: although the results for unemployment benefits support the "welfare magnet" hypothesis, the results for pension payments do not. Whether the welfare system should be more or less generous to attract more highly skilled migrants relative to low-skill migrants therefore remains an open question that should be addressed by future research.

[9]Whether naturalizing citizens or children born in the country to migrants can have dual nationality and the conditions under which dual nationality is granted is one of the policy dimensions used to generate the Access to Nationality area index, see Niessen et al. (2007, p. 190).

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	Number of observations			
	Unweighted		Weighted	
Educational attainment	N	%	N	%
N. A.	713	2.26	164,000	1.71
Low skilled (ISCED 0–2)	11,139	40.98	3,750,400	39.10
Medium skilled (ISCED 3–4)	10,315	37.95	3,839,700	40.03
Highly skilled (ISCED 5–6)	5,016	18.45	1,838,500	19.17
Total	27,183	100.00	9,592,700	100.00

Table 1: Number of migrants by skill levels. N. A.: not available. Weighted numbers based on weights provided in EU-LFS. Source: EU-LFS 2007 for EU-15 countries except Ireland.

Variable	Mean	S. D.	Min.	Max.
Avg. tax and SSC rate (in %)	32.40	8.20	20.54	46.94
Net income ratio (in %)	95.21	2.41	91.23	100.00
Unemp. replacement rate (in %)	60.36	14.30	36.00	87.00
Pension replacement rate (in %)	76.45	18.67	41.10	110.10
MIPEX II Overall score	60.43	14.05	39.00	88.00
MIPEX II Labor Market Access	65.00	20.66	40.00	100.00
MIPEX II Family Reunion	59.79	17.55	34.00	92.00
MIPEX II Long Term Residence	63.07	8.94	48.00	76.00
MIPEX II Political Participation	60.43	21.68	14.00	93.00
MIPEX II Access to Nationality	47.07	16.54	22.00	71.00
MIPEX II Anti-discrimination	66.57	18.41	33.00	94.00
Region size (in 1,000 km^2)	15.73	21.53	0.16	165.30
Population (in 1,000)	1915.93	1660.31	26.92	11598.87
Unemployment rate (in %)	6.82	3.10	2.10	17.40
Avg. income p.a. (in € 1,000)	35.50	9.84	16.36	130.45
Bed-places (per 1,000 inhab.)	86.62	93.73	6.91	564.44
Capital (=1)	0.07	0.26	0.00	1.00
Major airport (=1)	0.16	0.36	0.00	1.00
Heating degree days	2471.42	837.42	649.23	6164.04
Network (in %)	6.12	9.97	0.00	100.00
Distance (in 1,000 km)	4.60	3.59	0.06	18.98
Common border (= 1)	0.04	0.19	0.00	1.00
Common official language (= 1)	0.35	0.48	0.00	1.00
Colony after 1945 (= 1)	0.13	0.34	0.00	1.00

Table 2: Summary statistics for independent variables. Sources: EU Labour Force Survey, Eurostat, Mayer and Zignano (2011), Melitz and Toubal (2012), Niessen et al. (2007), OECD, own calculations.

Specification	Base 1		Base 2	
	Coef.	Int.	Coef.	Int.
Avg. tax and SSC rate (in %)	-0.041^{***}	-0.003	-0.019^{***}	-0.005
	(0.005)	(0.009)	(0.005)	(0.009)
Net income ratio (in %)	0.039^{***}	0.023	0.037^{**}	0.062^{**}
	(0.012)	(0.022)	(0.015)	(0.026)
Unempl. replacement rate (in %)	0.004^{**}	0.000	0.010^{**}	-0.037^{***}
	(0.002)	(0.003)	(0.004)	(0.008)
Pension replacement rate (in %)	0.006^{***}	0.003	-0.012^{***}	0.012^{***}
	(0.001)	(0.002)	(0.002)	(0.004)
MIPEX II Overall Score	0.014^{***}	-0.004		
	(0.002)	(0.004)		
MIPEX II Labor Market Access			0.017^{***}	0.025^{***}
			(0.004)	(0.009)
MIPEX II Family Reunion			0.003	-0.026^{***}
			(0.005)	(0.009)
MIPEX II Long Term Residence			0.031^{***}	-0.053^{***}
			(0.007)	(0.012)
MIPEX II Political Participation			-0.003	0.021^{***}
			(0.004)	(0.006)
MIPEX II Access to Nationality			-0.008^{**}	0.030^{***}
			(0.004)	(0.007)
MIPEX II Anti-discrimination			-0.029^{***}	-0.007
			(0.003)	(0.005)
Region size (in 100,000 km^2)	0.147^{***}	-0.512^{**}	0.172^{***}	-0.400^{*}
	(0.011)	(0.229)	(0.013)	(0.228)
Population (in millions)	0.382^{***}	-0.006	0.011	0.022
	(0.130)	(0.017)	(0.128)	(0.022)
Network (in %)	0.172^{***}	-0.035^{*}	0.172^{***}	-0.035^{*}
	(0.013)	(0.019)	(0.014)	(0.019)
Network^2	-0.002^{***}	-0.000	-0.003^{***}	-0.000
	(0.000)	(0.001)	(0.000)	(0.001)
Unemployment rate (in %)	-0.080^{***}	0.097^{***}	-0.073^{***}	0.061^{***}
	(0.009)	(0.015)	(0.009)	(0.016)
Avg. income p.a. (in € 1,000)	0.013^{***}	0.004	0.015^{***}	0.001
	(0.002)	(0.003)	(0.002)	(0.002)
Bed-places (per inh.)	-1.951^{***}	-0.500	-1.173^{***}	-0.482
	(0.222)	(0.457)	(0.220)	(0.434)
Major airport (=1)	0.512^{***}	0.328^{***}	0.219^{***}	0.305^{***}
	(0.055)	(0.087)	(0.057)	(0.091)
Distance (in 1,000 km)	-1.031^{***}	0.908^{***}	-0.924^{***}	0.458^{***}
	(0.062)	(0.126)	(0.060)	(0.120)
Distance^2	0.046^{***}	-0.045^{***}	0.037^{***}	-0.021^{***}
	(0.005)	(0.008)	(0.005)	(0.007)
Capital (=1)	-0.546^{***}	0.371^{***}	-0.305^{***}	0.316^{**}
	(0.087)	(0.133)	(0.090)	(0.145)
Common border (= 1)	-0.178	0.148	0.451^{***}	-0.490^{**}
	(0.118)	(0.241)	(0.112)	(0.221)
Common off. language (= 1)	1.691^{***}	0.239^{*}	1.480^{***}	0.138
	(0.078)	(0.138)	(0.080)	(0.136)
Colony after 1945 (= 1)	-1.029^{***}	1.575^{***}	0.104	1.085^{***}
	(0.095)	(0.172)	(0.113)	(0.179)
Heating degree days	-0.000^{***}	0.000^{***}	-0.000^{***}	0.000^{***}
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	16,155		16,155	

Table 3: Conditional logit regressions of location choice for high- and low-skill migrants, estimated coefficients (Coef.) and interaction terms (Int.) for highly skilled migrants. Standard errors in parentheses. ***significant at 1 %, **significant at 5 % and *significant at 10 % level. Sources: EU Labour Force Survey, Eurostat, Mayer and Zignano (2011), Melitz and Toubal (2012), Niessen et al. (2007), OECD, own calculations.

Specification	Female migrants		Male migrants		Age 30–54	
	Coef.	Int.	Coef.	Int.	Coef.	Int.
Avg. tax and SSC rate (in %)	−0.002	−0.011	−0.038***	0.001	−0.031***	0.011
	(0.007)	(0.012)	(0.008)	(0.014)	(0.007)	(0.012)
Net income ratio (in %)	0.073***	−0.007	−0.006	0.142***	0.001	0.077**
	(0.021)	(0.033)	(0.022)	(0.040)	(0.023)	(0.034)
Unempl. replacement rate (in %)	0.011**	−0.038***	0.008	−0.036***	0.001	−0.027***
	(0.006)	(0.010)	(0.006)	(0.013)	(0.006)	(0.010)
Pension replacement rate (in %)	−0.010***	0.012**	−0.014***	0.012**	−0.010***	0.012**
	(0.003)	(0.005)	(0.004)	(0.006)	(0.004)	(0.005)
MIPEX II Labor Market Access	0.025***	0.014	0.008	0.039***	0.013**	0.028***
	(0.006)	(0.010)	(0.006)	(0.014)	(0.006)	(0.011)
MIPEX II Family Reunion	−0.002	−0.015	0.008	−0.042***	0.015*	−0.038***
	(0.007)	(0.012)	(0.008)	(0.015)	(0.008)	(0.012)
MIPEX II Long Term Residence	0.036***	−0.061***	0.026**	−0.046**	0.026***	−0.037**
	(0.009)	(0.015)	(0.010)	(0.019)	(0.010)	(0.015)
MIPEX II Political Participation	−0.004	0.018**	−0.001	0.026***	0.005	0.015*
	(0.005)	(0.008)	(0.006)	(0.010)	(0.006)	(0.008)
MIPEX II Access to Nationality	−0.010*	0.026***	−0.007	0.036***	−0.012**	0.026***
	(0.005)	(0.009)	(0.006)	(0.011)	(0.006)	(0.009)
MIPEX II Anti-discrimination	−0.029***	0.001	−0.028***	−0.019**	−0.036***	0.006
	(0.004)	(0.006)	(0.005)	(0.008)	(0.004)	(0.006)
Region size (in 100,000 km^2)	0.167***	−0.159	0.177***	−0.732**	0.175***	−0.264
	(0.017)	(0.301)	(0.021)	(0.345)	(0.019)	(0.284)
Population (in millions)	0.018	0.059**	0.000	−0.031	−0.115	0.030
	(0.174)	(0.028)	(0.188)	(0.035)	(0.183)	(0.027)
Network (in %)	0.177***	−0.066***	0.165***	0.006	0.160***	−0.032
	(0.014)	(0.022)	(0.024)	(0.032)	(0.020)	(0.025)
Network^2	−0.003***	0.001	−0.002***	−0.001	−0.002***	0.000
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Unemployment rate (in %)	−0.055***	0.031	−0.096***	0.099***	−0.084***	0.080***
	(0.013)	(0.021)	(0.012)	(0.024)	(0.013)	(0.020)
Avg. income p.a. (in € 1,000)	0.014***	0.001	0.016***	−0.000	0.019***	−0.007**
	(0.002)	(0.003)	(0.002)	(0.004)	(0.002)	(0.003)
Bed-places (per inh.)	−1.233***	0.007	−1.160***	−1.063	−1.147***	0.145
	(0.300)	(0.543)	(0.323)	(0.712)	(0.310)	(0.533)
Major airport (=1)	0.225***	0.278**	0.217***	0.336**	0.223***	0.224*
	(0.078)	(0.121)	(0.084)	(0.137)	(0.082)	(0.120)
Distance (in 1,000 km)	−0.874***	0.507***	−0.986***	0.455***	−0.838***	0.411***
	(0.090)	(0.156)	(0.077)	(0.173)	(0.085)	(0.148)
Distance^2	0.036***	−0.025**	0.037***	−0.019*	0.030***	−0.015
	(0.007)	(0.010)	(0.007)	(0.011)	(0.007)	(0.010)
Capital (=1)	−0.197	0.216	−0.445***	0.462**	−0.320**	0.407**
	(0.122)	(0.184)	(0.134)	(0.234)	(0.127)	(0.181)
Common border (= 1)	0.611***	−0.369	0.267	−0.636	0.673***	−0.393
	(0.152)	(0.253)	(0.166)	(0.399)	(0.175)	(0.306)
Common off. language (= 1)	1.516***	0.329*	1.458***	−0.030	1.598***	0.054
	(0.110)	(0.184)	(0.118)	(0.188)	(0.118)	(0.180)
Colony after 1945 (= 1)	0.427***	0.986***	−0.250	1.344***	0.255	0.729***
	(0.154)	(0.264)	(0.166)	(0.250)	(0.165)	(0.247)
Heating degree days	−0.000***	0.000	−0.000***	0.000***	−0.001***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	7,147		9,008		9,000	

Table 4: Conditional logit regressions of location choice for high- and low-skill migrants by gender and for age group 30–54 years, estimated (Coef.) and interaction terms (Int.) for highly skilled migrants. Standard errors in parentheses. ***significant at 1 %, **significant at 5 % and *significant at 10 % level. Sources: EU Labour Force Survey, Eurostat, Mayer and Zignano (2011), Melitz and Toubal (2012), Niessen et al. (2007), OECD, own calculations.

Specification	CEE migrants		Non-CEE migrants	
	Coef.	Int.	Coef.	Int.
Avg. tax and SSC rate (in %)	-0.094^{***}	0.059^{**}	-0.011^{*}	-0.016
	(0.018)	(0.026)	(0.006)	(0.010)
Net income ratio (in %)	0.442^{***}	0.085	-0.011	0.060^{**}
	(0.049)	(0.074)	(0.017)	(0.029)
Unempl. replacement rate (in %)	0.022	0.011	0.013^{***}	-0.043^{***}
	(0.017)	(0.026)	(0.005)	(0.009)
Pension replacement rate (in %)	-0.031^{***}	0.021^{**}	-0.013^{***}	0.014^{***}
	(0.006)	(0.009)	(0.003)	(0.005)
MIPEX II Labor Market Access	0.004	0.035	0.019^{***}	0.020^{**}
	(0.016)	(0.025)	(0.005)	(0.010)
MIPEX II Family Reunion	0.008	-0.015	-0.003	-0.023^{**}
	(0.019)	(0.028)	(0.006)	(0.011)
MIPEX II Long Term Residence	0.104^{***}	-0.090^{**}	0.029^{***}	-0.051^{***}
	(0.023)	(0.035)	(0.008)	(0.013)
MIPEX II Political Participation	-0.014	-0.006	0.002	0.022^{***}
	(0.012)	(0.018)	(0.004)	(0.007)
MIPEX II Access to Nationality	0.063^{***}	0.034^{*}	-0.017^{***}	0.033^{***}
	(0.013)	(0.019)	(0.004)	(0.008)
MIPEX II Anti-discrimination	-0.083^{***}	-0.004	-0.024^{***}	-0.008
	(0.010)	(0.014)	(0.003)	(0.006)
Region size (in 100,000 km^2)	0.191^{***}	-1.123^{**}	0.181^{***}	-0.305
	(0.033)	(0.520)	(0.015)	(0.249)
Population (in millions)	2.884^{***}	-0.035	-0.424^{***}	0.031
	(0.297)	(0.047)	(0.140)	(0.025)
Network (in %)	0.196^{***}	0.047	0.169^{***}	-0.042^{**}
	(0.030)	(0.049)	(0.014)	(0.019)
Network^2	-0.003^{**}	-0.002	-0.002^{***}	0.000
	(0.001)	(0.002)	(0.000)	(0.001)
Unemployment rate (in %)	-0.082^{***}	0.072^{*}	-0.074^{***}	0.065^{***}
	(0.021)	(0.037)	(0.010)	(0.018)
Avg. income p.a. (in € 1,000)	0.003	0.013^{**}	0.018^{***}	-0.002
	(0.004)	(0.006)	(0.002)	(0.003)
Bed-places (per inh.)	-3.908^{***}	0.896	-1.004^{***}	-0.455
	(0.801)	(1.154)	(0.233)	(0.482)
Major airport (=1)	-0.117	0.912^{***}	0.241^{***}	0.189^{*}
	(0.159)	(0.225)	(0.061)	(0.100)
Distance (in 1,000 km)	-1.845^{***}	-1.791^{*}	-1.366^{***}	0.854^{***}
	(0.573)	(0.932)	(0.058)	(0.139)
Distance^2	-0.132	0.620^{**}	0.062^{***}	-0.043^{***}
	(0.163)	(0.268)	(0.005)	(0.008)
Capital (=1)	0.266	-0.374	-0.449^{***}	0.416^{***}
	(0.194)	(0.346)	(0.104)	(0.160)
Common border (= 1)	1.551^{***}	-2.484^{***}	0.398^{***}	-0.225
	(0.303)	(0.459)	(0.129)	(0.335)
Common off. language (= 1)			1.664^{***}	0.072
			(0.085)	(0.143)
Colony after 1945 (= 1)			0.000	1.106^{***}
			(0.124)	(0.188)
Heating degree days	-0.001^{***}	0.001^{***}	-0.000^{***}	0.000^{*}
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	2,238		13,917	

Table 5: Conditional logit regressions of location choice for high- and low-skill migrants by country groups, estimated (Coef.) and interaction terms (Int.) for highly skilled migrants. Standard errors in parentheses. ***significant at 1 %, **significant at 5 % and *significant at 10 % level. Sources: EU Labour Force Survey, Eurostat, Mayer and Zignano (2011), Melitz and Toubal (2012), Niessen et al. (2007), OECD, own calculations.

Does migration threaten the sustainability of European welfare states?

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Does migration threaten the sustainability of European welfare states?

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Abstract

We investigate the relative contributions of migrant and native households to welfare states. Using two step Oaxaca-Blinder decompositions that control for selection into benefit take-up, we are able to identify the individual variables contributing to differences in welfare receipt by native and migrant households. We find that most of the differences are explained by observable characteristics such as size of the household as well as age and education of its head and income in some countries. In contrast, significantly lower net contributions of migrant households to the state budget persist in many countries even after controlling for observable factors. The reasons for this are primarily lower tax payments of migrant households. Selective migration and sound integration policies and as well as policies avoiding marginalization of migrants in informal labor markets are therefore the most effective means to avoid fiscal burdens of migration.

Keywords: Oaxaca-Blinder decomposition, EU-countries, migration, net contributions, welfare state

JEL-Codes: J61, J15, H53, I38

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1 Introduction

Demographic forecasts for most countries of the European Union (EU) suggest that in the next decades the financial sustainability of their welfare states will *inter alia* be threatened by aging and demographic decline. For instance the European Commission's (EC, 2012) recent aging report suggests that strictly age related budgetary expenditure in the EU will increase by 4.1 percentage points of GDP until 2060 and by 4.5 percentage points of GDP in the Euro zone, with countries such as Belgium, Cyprus, Luxembourg, Malta, the Netherlands, Slovenia, and Slovakia experiencing increases in excess of 7 percentage points. Faced with such projections some analysts (e.g. Zimmermann, 2005) have called for increased migration to the EU, since this—at least in the short run—will provide the European pay as you go social benefit systems a young labor force with higher fertility rates, that may potentially also involuntarily finance benefit systems through "social free riding" on the contributions of return migrants.

This call for increased migration is, however, somewhat at odds with the fear of many Europeans (documented for instance by Boeri and Monti, 2007) that migrants are a fiscal burden to the welfare state. This may be the case if migrants are poorer than natives or have other personal characteristics making them more likely to benefit from social transfers, or, alternatively, if they have access to cash transfers over and beyond what rules for eligibility to transfers would imply, as is often claimed in the popular debate. In this paper we therefore set out to analyze two questions with respect to the impact of migrants on the financial sustainability of the welfare state: First, we investigate whether migrants indeed receive more benefits and deliver lower net contributions to the welfare state than native households. Second, we ask what factors account for the differences found.

Quite a few contributions have analyzed the welfare dependence of migrants in EU and other countries before us. As recently pointed out by OECD (2013) these studies have followed a number of approaches such as static accounting models (Wadensjö, 2000; Ekberg, 1999), generational accounting (Fehr et al, 2004; Mayr, 2005) or macro-economic modeling (Stroresletten, 2003; Monso, 2008). These approaches are relatively demanding on data since they require information on consumption of public goods and contributions to indirect taxes by migrants and natives and (for dynamic approaches) on demographic forecasts, growth projections and projections on government consumption. Furthermore, as also shown by OECD (2013) the results of these studies often hinge on assumptions on the consumption of public goods by foreign born, government discount rates and on the base line scenario chosen. Since we lack international comparable data on many of the variables necessary to perform generational accounting or model based analysis and want to avoid the strong assumptions necessary for these methods, we follow a static accounting approach. In this we compare migrants' tax and social security contributions as well as their receipt of social benefits (see Barret and McCarthy, 2008, for a survey of this literature) to those of natives.

Previous studies following this approach are primarily interested in the residual welfare dependence of migrants (i.e. the question of whether after controlling for individual characteristics migrants still have a significantly higher chance to receive welfare than natives). More recent comparative works that use the same approach include OECD (2013), which presents a detailed analysis of the net contributions of migrants to the welfare state, and Boeri and Monti (2007), who focus on the benefits received by migrants. Boeri and Monti (2007) find that after controlling for individual characteristics, migrants appear to be under-represented among the recipients of contributory benefits, while the opposite is true for non-contributory allowances and that after controlling for individual characteristics net residual dependence of migrants in terms of net contribution to state budgets can be found only in Denmark, Finland, Ireland, and Iceland, while in Austria, Spain, and Luxembourg non-EU migrants contribute more to the welfare system than natives.[1] OECD (2013), by contrast, finds that in most countries migrants' net fiscal position is less favorable than that of natives and that migrants' employment rates, age and migrant-entry category are the most important factors impacting on the relative fiscal position of migrant households, so that in most countries no residual dependence remains.

While therefore comparative studies suggest residual welfare dependence only in some countries, the results of individual country studies for Sweden (Hansen and Lofstrom, 2003), Denmark (Blume and Verner, 2007), and Ireland (Barret and McCarthy, 2007) point in the opposite direction. As a consequence a recent survey by Barret and McCarthy (2008) summarizing the European literature concludes that "the general picture to emerge is one of higher immigrant use" of welfare programs. This conclusion is supported by a more recent country study on Italy (Pellizari, 2011), but seems to be contradicted by the results in Dustman *et al.* (2010) for recent EU-8 migrants to the UK. In sum—judging from previous literature—it is still an open question whether migrants are a boon or a burden to European welfare states and the answer to this question is likely to differ between countries.

Our contribution to this literature is twofold. First, we provide a detailed comparative study for 19 European countries on the contribution of migrants to the welfare state. Using 2009 EU-SILC data we differentiate between transfers from and to the welfare state and further distinguish between different benefit and household types. Second, we methodologically improve on previous contributions by taking into account the censoring that arises when focusing on benefit transfers and by using Oaxaca-Blinder decompositions to analyze the causes of asymmetries in benefits payments to native and migrant households. Accounting for censoring allows us to avoid the parameter bias that arises if the sample of households that obtain benefit payments is not representative of the whole population (see Cameron and Trivedi, 2005). In order to obtain unbiased

[1] Similar results with respect to unemployment benefits were found in a previous study by Brücker *et al.* (2002). They find residual dependency in Denmark, the Netherlands, Austria, and Finland.

results we therefore perform two-stage Heckman (1979) regressions. This also allows us to separately analyze the determinants of the differences between native and migrant households in benefit up-take and benefit levels. Using Oaxaca-Blinder decompositions, finally, allows us to decompose the difference in benefit levels between the two groups into a part explained by discrepancies in observable characteristics, an unexplained component that is caused by differences in parameters, and a part that is due to differences in selection probabilities. This selection effect can be further decomposed into an explained and unexplained part.[2]

Using this approach, we are able to identify the contribution of every explanatory variable to each of these components. This leads to some new, policy relevant findings. For instance benefit differences between native and migrant households are primarily due to disparities in household size as well as age and education of its head. In addition, lower tax payments are the main drivers of lower net contributions of migrant households to the state budget. This implies that attracting migrants with more appropriate characteristics (for instance higher education levels), avoiding marginalization of migrants in informal labor markets, and ensuring tax compliance among migrants are likely to be the most effective measures to reduce welfare payments to migrant households.

The article is structured as follows. Section 2 describes the dataset and provides some descriptive statistics concerning welfare benefits. The estimation framework is outlined in Section 3. It describes the methodologies of two-stage Heckman estimations and Oaxaca-Blinder decompositions, followed by a summary of the model specifications. In Section 4 we report descriptive analyses and regression results concerning benefit transfers, while Section 5 deals with net contributions to the welfare state. Finally, Section 6 concludes and draws some policy conclusions.

[2]To the best of our knowledge the only other study using Oaxaca-Blinder decompositions in this literature is OECD (2013), which, however, relies on linear decompositions without considering selection effects.

2 Data and Stylized Facts

We make use of the 2009 EU Survey of Income and Living Conditions (EU-SILC). This provides information on the country of birth and the citizenship of individuals, which allows to identify natives as well as EU and non-EU migrants. We define individuals as natives if they were born in the country of residence and as foreigners if they were born in other (EU or non-EU) countries[3] than the country of residence[4] and conduct our analysis on a country by country level since data limitations impede modeling the country choice of migrants, which is endogenous to the welfare state. Focusing on household level data we distinguish between households composed of only native adults (aged 16 or more years), households consisting of only foreign born adults (exclusively migrant households) and households composed of at least one native and one foreign born adult (mixed households).[5] In the main analysis we group mixed and exclusively migrant households together and refer to them as migrant households.

The data provide information on all sources of income of interviewees and their households. It is therefore possible to distinguish between contributory welfare benefits (like unemployment benefits, old-age benefits, survivors pensions, sickness benefits, and disability benefits) that are measured at the individual level, and social benefits (like housing, family and children related allowances, and payments to those at risk of social exclusion) which are available at the household level.[6] Also income taxes and social insurance contributions are reported at the household level.[7]

[3]We do not distinguish between EU and non-EU migrants because—due to a low number of observations—a separate analysis of these migrant groups would not allow us to identify effects for both groups in many countries.

[4]We give preference to this definition over one based on citizenship because the latter would introduce bias due to cross-country differences in naturalization laws (see Boeri, 2010; OECD, 2013).

[5]Native-born children of migrants living in the same household with their parents are classified as migrants. If no other native born person lives in that household, such a household is classified as exclusively migrant household.

[6]All of the different benefit types potentially vary in levels (often they are earnings-related payments) once receipt has been granted (see EU-SILC database description, 2010).

[7]Further information concerning adjustments of the dataset for the empirical analysis can be found in Appendix A.

As a first variable of interest we analyze the total benefits received by different household types. For this we aggregate the total amount of contributory benefits received by individuals to the household level and add this to the total amount of non-contributory benefits.[8] Rows 2 to 4 of Table 1 show the average (log of) total benefits received by native and migrant households in each of the 19 EU countries analyzed. Ireland is the country which on average pays the highest benefits to native households, while Germany is the country with the highest benefit level for households in which at least one foreign born resides. The lowest benefits to both native and migrant households are paid in Spain. There is also substantial heterogeneity among EU countries in the difference in welfare benefits received by native and migrant households. In 8 of the 19 countries (Czech Republic, Germany, Estonia, France, Lithuania, Latvia, Sweden and Slovenia) migrant households receive more benefits than native households. In the remaining 11 countries (Austria, Belgium, Cyprus, Spain, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and the UK) the opposite applies (column 4 of Table 1). Also the magnitude of differences in benefit levels received between migrant and native households vary substantially among countries. The largest positive differences are found in Germany, where migrant households on average receive about 1.6 fold the benefits of natives, and the largest negative ones in Greece, where migrants only receive about half of the benefits of natives.

[Table 1: Around here]

One potential explanation for these vast differences are composition effects. These could stem from potential heterogeneity of migrants residing in different countries, but could also apply to different shares of mixed and exclusively migrant households, or to differences in the relative importance of contributory and non-contributory benefits in individual countries. For instance, if different types of households have different access

[8]For Italy contributory benefits received equal the sum of unemployment benefits, old-age benefits, survivors pension, and disability benefits because no information on sickness benefits is available.

to benefits[9] then, everything else equal, countries with a high share of one household type will pay more benefits to migrant households than countries with a high share of the other household type. Alternatively if migrant households have easier access to non-contributory benefits than to contributory benefits as for instance suggested by Boeri and Monti (2007), differences in policy mix between countries could drive results.[10]

According to the data such compositional effects are, however, at best of second order importance at least with respect to household types. In most countries where migrant households receive more benefits than natives this applies both to exclusively as well as mixed migrant households (see columns 5 to 10 of Table 1). The only exception to this are Slovenia and the Netherlands for mixed migrant households and Austria, Belgium, and Luxembourg, for exclusively migrant households. With respect to benefit types (see Table 2) total benefits received by migrant households relative to native households are most closely related to the structure of contributory benefits. Interestingly this is not true for non-contributory benefits. In countries in which migrant households receive more contributory benefits than natives as a rule they receive less non-contributory benefits. Exceptions to this are France and Slovenia, that provide higher benefits of both types to migrant households, and Cyprus, where migrant household receive less than natives irrespective of benefit type.[11]

[Table 2: Around here]

[9]Such differences could arise either because mixed migrant households have better access to welfare benefits than exclusively migrant households on account of of better information on legal and administrative procedures or because they do not need such benefits to the same extent as exclusively migrant ones, on account of a lower level of labor market discrimination against them.

[10]In addition compositional effects could arise from different sending country structures or a different structure of migrant entry categories. Unfortunately our data are not informative on this, since we cannot distinguish between entry-category and/or sending country. The only possibility to assess this is to consider EU and non-EU migrants separately. Looking at descriptive results when differentiating between EU and non-EU migrants suggests substantial differences in the level of benefit receipts between these two household types in only very few cases (see Table A.13 in the Annex).

[11]Further differentiating between exclusively and mixed migrant households shows that there are also few general differences between these household types in terms of contributory and non-contributory benefits. In 7 countries exclusively migrant households receive more contributory benefits than non-migrant households and in 8 countries mixed households receive more non-contributory benefits than exclusively migrant households (see Table B1 in the Annex).

Also, part of the cross country differences in average benefit levels could potentially be explained by different eligibility rules for welfare receipt (Castronova et al., 2001). If eligibility rules impact differently on native and migrant households this could lead to a higher or lower probability of migrant households to obtain benefits. Table 3 therefore reports the shares of households receiving benefits. Differences in these take-up rates between native and migrant households are closely associated to the relative level of benefits received. In almost all countries in which total benefits received are higher among migrant than among native households, the share of migrant households receiving benefits is also higher. In most countries in which migrant households receive fewer benefits the same is true for share of migrant households receiving benefits. The only exception is the Netherlands.[12]

[Table 3: Around here]

In sum, a first look at the descriptive evidence suggests substantial heterogeneity in the relative amounts of benefits received by native and migrant households from European welfare states. In about half of the 19 EU countries analyzed migrants on average receive a higher benefits than natives, while in the other half the opposite applies. These asymmetries are closely related to the selection of migrant households into benefit receipt, but seem to be largely unassociated with compositional effects.

3 Estimation framework

3.1 Heckman model

Given these insights we model welfare receipt as a two step process, where in the first step migrants (indexed by m) and natives (indexed by n) are selected into receiving benefits

[12]The same applies when considering different benefit types (see Table B2 in the Annex) . In particular for both contributory and non-contributory benefits, the levels received are closely related to differences in take-up rates.

or not. In the second step, given participation, the level of benefits is determined for both groups. In particular, in the first step we assume that the latent variable governing the participation in benefits for the j^{th} individual (T_j^*) depends linearly on a vector of individual and household characteristics (Z_j) influencing the probability to receive benefits (i.e. $T_j^* = \gamma^i Z_j + \eta_j$, where i is defined over migrant status, γ^i is a vector of parameters for group i and η_j is an identically and independently normally distributed error term with mean zero and variance σ_η). We denote this equation, which we will call *participation equation* below, by:

$$P(T_j^* > 0) = \Phi(\gamma^i Z_j) \tag{1}$$

where

$$T_j = 1 \quad \text{if} \quad T_j^* > 0$$

$$T_j = 0 \quad \text{if} \quad T_j^* \leq 0$$

and Φ is the standard normal cumulative density function, and T_j is an indicator if individual j receives a benefit or not.

In the second step, conditional on participation, the level of the benefits (τ_j) is determined by a number of further household characteristics X_j. Taking into account that both native and migrant households are selected into receiving benefits this equation can be consistently estimated by the standard Heckman (1979) two step procedure. A consistent estimate for the determinants of the benefit level of the j^{th} individual conditional on participation is obtained by estimating the equation:

$$E(\tau_j | T_j^* > 0) = \beta^i X_j + \theta^i \lambda_j + \upsilon_j \tag{2}$$

by ordinary least squares, where $\lambda_j = \phi(\gamma^i Z_j)/\Phi(\gamma^i Z_j)$ (with $\phi(\cdot)$the density function of the normal distribution) is the inverse mills ratio and $\theta^i = \rho^i \sigma_\eta$. This model is identified if at least one variable is included in Z_j, but not in X_j. In the following we will refer to equation (2) as the *level equation* and will use measures of social contacts and leisure activities of the household head for identification, since previous results (Bertrand et al., 2000) suggest that such networks foster information transfer concerning the availability of and application for social benefits and, thus, reduce fixed costs that arise when applying for welfare benefits. This will lead to these variables influencing the probability to receive benefits but not the level of benefits.

3.2 Oaxaca-Blinder decompositions

Given estimates of equations (1) and (2) a natural question that arises is to which extent the differences found can be attributed to differences in observable characteristics (such as age or education) between native and migrant households or to differences in unobservable characteristics (such as lower language skills of migrants or psychological traumata) or any kind of discrimination against migrants. Previous literature has mostly addressed this issue by *residual dependence* regressions. In such a framework the level of benefits (see Boeri and Monti, 2007; Brücker *et al.*, 2002), or the probability of receiving such transfers (see Boeri, 2006; Borjas and Hilton, 1996; Barret and McCarthy, 2008; Hansen and Lofstrom, 2003) is regressed on a number of individual characteristics and a migrant status dummy. The sign of a significant coefficient of the migrant status dummy indicates positive or negative residual dependence.

While this approach is informative as to whether migrants are significantly overrepresented in the group of welfare recipients or not, it does not provide for further insights into the causes for the found differences. Such insights can, however, be gained by separately estimating the model in equations (1) and (2) for migrant and native households and then applying Oaxaca-Blinder decompositions (see Yun, 2005b and Madden, 2000 for recent applications, and Jann, 2005 for standard errors). Defining $\widehat{\beta}^m$, $\widehat{\beta}^n$ as the coefficient estimates for the *level equation* (2) and omitting individual subscripts j for simplicity, differences between native and migrant households can be decomposed into three effects by noticing that:

$$
\begin{aligned}
&E(\tau^m|T^{m*}>0) - E(\tau^n|T^{n*}>0) = \\
&\quad = [\overline{X}^m\widehat{\beta}^m - \overline{X}^n\widehat{\beta}^m] + [\overline{X}^n\widehat{\beta}^m - \overline{X}^n\widehat{\beta}^n] + [\widehat{\theta}^m\overline{\lambda}^m - \widehat{\theta}^n\overline{\lambda}^n]
\end{aligned}
\tag{3}
$$

with $\overline{X}^m$ and $\overline{X}^n$ the mean characteristics of migrant and native households and λ^i and θ^i the mills ratios and their coefficients. The first term in square brackets on the right hand side of equation (3) is the part of the total difference of welfare transfers that can be explained by differences between migrants and natives with respect to observable characteristics (*difference in characteristics effect*), the second term in square brackets reflects unexplained differences between native and migrant households with respect to the level of benefits received (*difference in coefficients effect*), and the third term in square brackets captures any differences in the eligibility of migrants into receiving welfare transfers (*selection effect*).

Furthermore, (see Yun, 2005a; Bauer and Sinning, 2008; Fairlie, 2005) also the selection effect can be further decomposed. Defining $\widehat{\gamma}^m$ and $\widehat{\gamma}^n$ as the parameter estimates of equation (1) for migrants and natives respectively, different take-up rates of welfare transfers for native and migrant households can be decomposed as

$$
P(T^m) - P(T^n) = [\bar{\Phi}(Z^m\widehat{\gamma^m}) - \bar{\Phi}(Z^n\widehat{\gamma^m})] + [\bar{\Phi}(Z^n\widehat{\gamma^m}) - \bar{\Phi}(Z^n\widehat{\gamma^n})] \tag{4}
$$

where once more the first term in square brackets is a difference in characteristics effect and the second term an unexplained difference in parameters effects.

In the *level equation* (2) the contribution of the k^{th} variable to the difference in characteristics effect is given by $\overline{X}_k^m\widehat{\beta}_k^m - \overline{X}_k^n\widehat{\beta}_k^m$ and the contribution to the unexplained component by $\overline{X}_k^n\widehat{\beta}_k^m - \overline{X}_k^n\widehat{\beta}_k^n$ respectively. For the nonlinear *participation equation* (1) Yun (2005a) proposes a detailed decomposition where the difference in characteristics effect can be calculated by $\frac{(\bar{Z}_k^m - \bar{Z}_k^n)\widehat{\gamma_k^m}}{(\bar{Z}^m - \bar{Z}^n)\widehat{\gamma^m}}[\bar{\Phi}(Z^m\widehat{\gamma^m}) - \bar{\Phi}(Z^n\widehat{\gamma^m})]$ and the unexplained component by $\frac{\bar{Z}_k^n(\widehat{\gamma_k^m} - \widehat{\gamma_k^n})}{\bar{Z}^n(\widehat{\gamma^m} - \widehat{\gamma^n})}[\bar{\Phi}(Z^n\widehat{\gamma^m}) - \bar{\Phi}(Z^n\widehat{\gamma^n})]$.[13]

3.3 Model specification

We specify a set of control variables that is common for the *level* and the *participation equation.* This set of variables consists of four groups: personal characteristics of the household head[14] (i.e. age, age squared, indicator variables for higher secondary and tertiary education, and an indicator variable for single persons), income (the logarithm of equivalized gross household income, and its square), characteristics of the dwelling (indicator variables for densely populated area, and house ownership), and household characteristics (an indicator variable for children living in the household, and indicator variables for a household size of three, and four or more persons). Furthermore, as explained above, to identify the *participation equation* we additionally include network variables that measure the intensity of contacts with friends and family an individual has (an indicator variable for regular meetings with friends and relatives, and an indicator variable for regular participation in leisure activities).

The motivation for including the variables common to the *participation* and the *level equation* is quite straightforward. Personal characteristics are included to account for the higher probability of older persons (e.g. pensioners) to obtain benefits, while the education variables accounts for higher unemployment rates of lower educated persons. As some transfers are related to marital status (e.g. pensions for widowers) we include the indicator for singles.[15] Variables like income, house-, and household characteristics impact on benefits as many of them are aimed to provide income support to low income

[13]Standard errors for these detailed decompositions are developed in (Yun, 2008).

[14]For a definition of the household head see Appendix A.

[15]We do not include indicator variables for unemployed individuals, pensioners, or widowers directly as these would lead to a perfect prediction of benefit receipt.

groups or households with many children.

[Table 4: Around here]

The descriptive statistics for this data (see Table 4) show that the heads of both mixed and exclusively migrant households are on average younger and better educated than natives. Also the household heads are single more often than natives in exclusively migrant households but less often in mixed households.[16] On account of their above average education as well as the fact that migrants tend to settle in the high income regions of Europe equivalized household incomes of migrant households are somewhat higher than those of native households. This is, however, primarily driven by higher income levels of mixed households, as exclusively migrant households have a lower income on average than natives. Similarly, mixed households own their own dwellings more often than natives, while the opposite is true for exclusively migrant households. Both mixed and exclusively migrant households, however, more often reside in urban areas, have larger household sizes and live with children more frequently than natives. Finally, mixed households meet their friends and family more regularly than native households, while opposite is true for exclusively migrant households. In total migrant household, however, have slightly fewer contacts with friends and family than natives.

4 Results

Table 5 shows the results of the Oaxaca-Blinder decompositions for total benefits. The first three columns report results for the *participation equation*, column 1 shows total differences in the take-up of benefits, which is decomposed into an explained and unexplained part in columns 2 and 3, respectively. These two columns therefore show the percentage point contribution of the respective effect to the total differences found.

[16] The reason for this may be that households consisting of only one migrant are automatically classified as exclusively migrant households.

Columns 5 to 8 report results of the *level equation* column 5 presents the average difference in log levels of benefits, while column 6 reports that part of this difference which remains after controlling for selection. This is then further decomposed in an explained part an unexplained part in columns 7 and 8. Additionally for reference, residual dependence coefficients for both the *participation* and the *level equation* can be found in columns 4 and 9, respectively.[17]

Both, the residual dependence regressions as well as the Oaxaca-Blinder decompositions lead to similar quantitative and qualitative results for the *participation equation.* They provide only very little indication of significant differences in benefit take-up rates once observable characteristics are controlled for. In most countries in which migrant households have a significantly higher welfare take-up rate than natives, this can be explained by observable characteristics (Czech Republic, Estonia, France, Sweden). The only 2 exceptions are Germany and Latvia. In these countries migrant households have higher benefit take-up rates even after controlling for observables. Similarly, in countries where migrants have significantly lower benefit take-up rates than natives, this difference can be explained by their characteristics in most cases (Cyprus, Greece, Ireland, Italy), while part of the difference remains unexplained only in Spain, Portugal, and the UK. Finally among the remaining countries where no significant differences could be found in total take-up rates the unexplained part of the Oaxaca-Blinder decomposition is significantly negative only in Austria and Belgium and significantly positive only in Lithuania.[18]

[17]Table A3 in the annex reports the results of residual dependence regressions for different household and benefit types. The results for Oaxaca-Blinder decompositions for different benefit and household types can be found in Tables A4 and A5 respectively.

[18]In addition, both Table A3 in the Appendix on residual dependence and Table A4 and A5 on Oaxaca-Blinder decompositions estimates for different household and benefit types show that for contributory benefits quite a few countries have significant positive residual dependence as well as a significantly positive unexplained part of the Oaxaca-Blinder decomposition is significantly positive. This is, however, mostly countered by a negative residual dependence (respectively significantly negative unexplained parts of the Oaxaca distribution) for non-contributory benefits. In addition positive residual welfare dependence and significant positive unexplained parts of the Oaxaca-Blinder decomposition are found more often for mixed migrant households, while negative residual dependence significant negative unexplained parts of the Oaxaca-Blinder decomposition apply mostly to exclusively migrant households.

The differences in characteristics effect therefore is more important in explaining differences in benefit take-up rates than the unexplained part of the Oaxaca-Blinder decomposition. As a consequence this effect is also more often found to be statistically significant. In 8 countries (Austria, Belgium, Czech Republic, Germany, Estonia, France, Sweden, and Slovenia) it is positively significant and therefore indicates that unfavorable characteristics of migrant households significantly contribute to increasing benefit uptake rates of migrants relative to natives. In a further 7 countries (Cyprus, Spain, Greece, Ireland, Italy, Portugal, and the UK) it is significantly negative and therefore implies that migrant households have characteristics that all else equal would make them significantly less likely to take-up benefits than natives.

[Table 5: Around here]

For explaining differences in the levels of benefits, by contrast, accounting for different selection probabilities of migrant and native households is particularly important (Table 5). For most of the countries in which migrant households on average receive higher benefits levels than native households, the largest part of these (unconditional) differences can be explained by higher take-up rates of migrant households (Czech Republic, Germany, France, Sweden, and Slovenia). For instance in the Czech Republic while migrant households unconditionally receive welfare benefits that are by around 60% higher than those of native households (column 6 of Table 5) once we account for selection migrant households receive welfare benefits that are by (an insignificant) 0.01% lower than those of natives (column 7 of Table 5). The selection effect therefore fully explains the unconditional differences in welfare benefits of migrant households in this country. Similar observations also apply France (where an around 30% advantage turns into a 15% disadvantage after accounting for selection), Sweden (where an approximately 30% advantage turns into a 24% disadvantage) and Slovenia (where a 10% advantage turns into a 7% disadvantage). Thus after accounting for selection, conditional on participating, significantly higher benefit levels for migrant households than for native ones are paid only in Germany, Estonia, Lithuania, and Latvia. In Latvia and Lithuania this can, however, solely be attributed to the characteristics of migrant households, and only in Estonia and Germany is this partly due to a significant unexplained part of the Oaxaca-Blinder decomposition.[19]

In the relative majority of countries (11 of 19), however, migrant households receive significantly lower benefits than native households after accounting for selection. Among these countries the unexplained part of the Oaxaca-Blinder decomposition is significant only in five countries (Belgium, Cyprus, Spain, Italy, and Luxembourg). The difference in characteristics effect, by contrast is significantly negative in almost all of these countries. After adjusting for selection therefore in the vast majority of countries migrants receive lower benefits on account of having characteristics that favor lower benefits.

In contrast to results for the participation equation, for the level equation the unexplained part of the Oaxaca-Blinder decompositions, however, differ considerably both in signs and magnitudes from residual dependence estimates. For instance in Cyprus, the Oaxaca-Blinder results suggest negative and statistically significant discrimination against migrant households, while residual dependence regressions lead to positive and statistically significant estimates. In total the residual dependence results find significantly positive residual dependence in 8 out of our 19 countries, while this is true for only 4 countries based on Oaxaca-Blinder decomposition results. The reason for these sizable discrepancies is that by estimating pooled regressions for both native and migrant households, residual dependence estimations do not fully capture the nonlinearity of selection into benefits. As a consequence residual dependence regressions—at least

[19]These results are robust to a separate analysis of mixed and exclusively migrant households. For the levels equation the unexplained part of the Oaxaca-Blinder decomposition is significantly positive only in Austria for exclusively migrant households and in Germany and the Baltic countries for mixed households. The same applies to a disaggregated analysis for contributory and non-contributory benefits. For non-contributory benefits a positive unexplained part of the decomposition is found only in France, Ireland and Italy. For contributory benefits a significantly positive unexplained part is found in Estonia and Sweden.

partially—mistakenly allocate the selection effect to the residual welfare dependence component. This highlights the importance of separately accounting for selection of native and migrant households, when analyzing differences in the level of welfare benefits to different household types.

4.1 The influence of characteristics

Our evidence so far therefore suggests that in countries in which migrant households on average receive more benefits than natives—or where these households are more likely to participate in welfare—both, higher benefit transfers as well as more frequent selection into benefits can be explained by differences in observable characteristics between migrant and native households in most cases. One advantage of Oaxaca-Blinder decompositions—aside from appropriately accounting for selection—is that they allow for a detailed analysis of how much of the *differences in characteristics* and *parameters effects* can be attributed to individual groups of variables such as the personal characteristics, income status, housing characteristics, and household size as well as network variables included in the Oaxaca-Blinder decomposition regressions. Looking at the results of these detailed decompositions (see Table 6), the individual groups of variables mostly remain insignificant contributors to the unexplained part of the Oaxaca-Blinder decomposition for both the *participation* and *levels equation.* This reflects the relatively low importance of this component.

[Table 6: Around here]

The terms of the differences in characteristics effect, by contrast, are more often significant and suggest that personal characteristics of the household head (age, education, marital status) and household size (number of persons in the household and presence of children) are the strongest contributors. For countries where a positively significant difference in characteristics effect suggests that migrant households' characteristics significantly increase their benefit up-take relative to natives, the majority of this effect can be attributed either to differences in personal characteristics of household heads (i.e. age and education) or to differences in household size. For instance in Austria, Belgium, France, Sweden, and Slovenia more than the total difference in characteristics effect in the participation in welfare benefits can be explained by differences in household size, with this contribution being significant in Austria, France, and Belgium. In the other countries, by contrast, a large part of the positive difference in the characteristics effect arises due to differences individual characteristics of household heads. As a consequence, in most countries where unfavorable characteristics of migrants contribute significantly to increasing their benefit up-take relative to natives, this is predominantly due to the personal characteristics of household heads and household size. In these countries therefore selecting more able migrants could contribute to reducing relative welfare up-take by migrant households.

The income and the network variables, by contrast, significantly contribute to the difference in characteristics effect only in a few countries. For the income variable this is the case for Austria, Czech Republic, Germany, Estonia and France. In these countries therefore lower incomes of migrant households, which could in part be due to labor market discrimination, contribute significantly to increasing welfare participation of migrant households relative to native households. Reducing income gaps between migrant and native households—for instance by avoiding discrimination—could also reduce relative welfare dependence of migrant households.

The network variables contribute significantly to increasing relative benefit up-take among migrant households only in some countries (Austria, Belgium, Germany, Estonia, Spain, France and Italy), where in addition the quantitative importance of this variable is rather low.

Similar observations also apply to the difference in characteristics effects with respect to the level of benefits received. This is significantly positive in Germany and the

Baltic countries. Among these countries large significant contributions to the difference in characteristics effect are made by both household size and individual characteristics in Germany, Estonia and Latvia, while in Lithuania the majority of this effect is due to household size. In addition in Spain, Greece, Italy and Portugal individual characteristics of household heads contribute substantially to increasing the welfare dependence of migrants. In the Czech Republic the same applies to household size, while the income variable only contributes significantly positively to the difference in characteristics in Estonia, Lithuania, and Portugal but negatively in many other countries. In sum therefore differences in age, education and marital status of the household head as well as differences in household sizes between native and migrant households contribute most to the difference in characteristics effect in benefits between natives and foreign born. In addition in a number of further countries, lower incomes of migrant households—which may be a result of labor market discrimination—also contribute significantly. Actively attracting more able migrants and avoiding discrimination against migrants in terms of income levels, therefore are likely to be the most effective measures to reduce relative welfare receipt of migrant households in countries where migrants receive higher benefits than natives.

5 Net contributions

Most analysts would, however, agree that judgments on the contribution of migrants to the welfare state should not be based on a partial analysis of benefit receipt alone. Rather also the payments of migrant households to the state budget in the form of taxes and social security contributions should be considered. Therefore Table 7 reports net contributions of migrant and native households to the welfare state by subtracting the sum of benefits obtained by a household from its income taxes and social security contributions paid. According to these numbers native households contribute to the state budget on net in only 6 out of 19 countries (Belgium, Germany, Latvia, Netherlands, Sweden and Slovenia), and are net receivers of benefits in the remaining of countries. Migrant households, by contrast, are net contributors to the state budget in 10 countries. Thus migrant households on net contribute to the state budget in more countries than native households.[20]

[Table 7: Around here]

When considering relative net contributions of migrant households a very similar picture as for total benefits is found (compare with Table 1). In all countries but Austria relative net contributions are negative when relative benefit receipt is positive and vice versa. In consequence in slightly more than half of the countries (10 out of 19) migrant households make higher net contributions to the welfare state than native households. In the rest of countries the opposite applies.[21]

Oaxaca-Blinder decompositions for net benefits, however, are substantially simplified by the fact that—since almost all native and migrant households either pay taxes or receive benefits from the state budget—selection does not have to be taken into consideration. In consequence, this analysis can be based on OLS regressions. Another difference to the analysis of before is that we do not take logarithms of net benefits as they are not restricted to take positive values. The results of these Oaxaca-Blinder decompositions as well as of the residual dependence regression,[22] suggest that observable characteristics cannot fully account for differences in net transfers to the state budget to the same extent as for benefits. In 7 of the 19 countries the unexplained part of the

[20] The same is true for exclusively migrant households (column 4) and mixed migrant households (column 6). The latter are net contributors in 11 countries the former are net contributors in 10 countries.

[21] Many of the observations for benefit levels carry over to the analysis of net contributions for different household types. In Austria, Belgium, and Slovenia exclusively migrant households receive fewer benefits than natives but contribute less to the total budget, while in Belgium, France, Luxembourg, Latvia, and Sweden mixed households receive higher benefits than natives but make higher net contributions.

[22] In this case residual dependence estimations closely correspond both quantitatively as well qualitatively to the unexplained part of the Oaxaca-Blinder decomposition. The two exceptions are Luxembourg and Slovenia, where residual dependence estimations lead to statistically significant results, while the unexplained part of the Oaxaca-Blinder decomposition is insignificant.

Oaxaca-Blinder decomposition is significantly negative and thus suggests that after controlling for observed characteristics migrant households still contribute less to the state budget than native households.[23] These differences are also quite substantial in a number of countries. For instance in Germany, after controlling for observable characteristics migrant households on net contribute by around EUR 4400 less than native households. In the case of Latvia, this lower contribution still amounts to EUR 161 per year. There are, however, also 4 countries (Ireland, Italy, Portugal, and the UK) in which migrant households contribute more to the state budget than natives, even after controlling for household characteristics. In these countries the size of these excess contributions range from EUR 1530 in Ireland to EUR 851 in Italy.[24]

[Table 8: Around here]

Interestingly, also the explained part of the difference between net budgetary contributions of native and migrant households suggests that in the majority of countries migrant households have characteristics, which suggest that their net contributions to the welfare state should be higher than native households' net contributions.[25] This result is the mirror image of our earlier finding that migrants often have characteristics that should lead them to receive higher or lower benefits. In all countries where the explained part of the Oaxaca-Blinder decomposition for net contributions is significantly negative its counterpart for net contributions is significantly positive or insignificant.

[23]Interestingly negative net residual contributions are more common among mixed households than among exclusively migrant households (see Table A11 in the appendix). In the case of exclusively migrant households significant negative net residual contributions remain only in Belgium, Germany, the Netherlands and Sweden and a significant positive net residual dependence is found for the Czech Republic, Spain, Greece, Ireland, Italy, Lithuania, Luxembourg Latvia, Portugal and the UK. In the case of mixed households, by contrast, net negative residual contributions are found in the case of Austria, Belgium, Czech Republic, Germany, Estonia, Lithuania, Luxembourg, Latvia and Slovenia, while significant positive net residual contributions are found in Portugal and the Netherlands only.

[24]The Oaxaca-Blinder decompositions by household types (Table A11 in the Appendix) suggest that the unexplained part of the decomposition is more often negative for mixed households (Austria, Belgium, Czech Republic, Germany, Estonia, Lithuania, Luxembourg, Latvia and Slovenia) but less often so for exclusively migrant households (Germany, Netherlands, and Sweden).

[25]This applies to Belgium, Cyprus, Spain, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, and the UK.

Similarly, in all countries where the explained part of the Oaxaca-Blinder decomposition for net contributions is significantly positive the opposite applies for benefit receipt.

[Table 9: Around here]

In addition, the detailed Oaxaca-Blinder decompositions also suggest that among those countries in which the unexplained component of the Oaxaca-Blinder decomposition is significantly negative, this is mostly due to a negative contribution of the income variables. Its contribution to the overall unexplained component is significantly negative in Austria, Belgium, Czech Republic, Germany, Greece, Latvia, and Slovenia, while the contribution of personal characteristics is significantly negative only in the Czech Republic, Germany and Slovenia. All other variables contribute either very little and/or insignificantly to this component. This suggests that given their income, migrants in Austria, Belgium, Czech Republic, Germany, Greece, Latvia, and Slovenia pay lower taxes than natives. This finding could be due to either a higher share of informal activities or a higher share of self-employed among migrant households, who have higher discretion over tax payments than employees. In a large number of other countries, by contrast, the contribution of income to the unexplained component of the Oaxaca-Blinder decomposition is significantly positive, indicating that in these countries migrants—given their income level—are paying higher taxes than natives (Cyprus, France, Ireland, Italy, Lithuania, the Netherlands, Portugal, Sweden, and the UK).

6 Summary and Discussion

The contribution of this paper to the literature is twofold. We provide a recent and detailed comparative study for 19 European countries on the relative contribution of migrant and native household to the welfare state. Furthermore, we explicitly account for the censoring that arises when focusing on the amount of benefits received, and use Oaxaca-Blinder decompositions to break down the differences between native and migrant households into a part that can be explained by differences in characteristics between native and migrant households and an unexplained part. With respect to this methodological contribution we show that using the method proposed in this paper allows for a substantially more detailed analysis of residual welfare dependence than has previously been available. Also we point out that methods that have been used so far may give rise to misleading results in cases where the selection of migrants into benefits receipt is an important factor.

We find substantial heterogeneity in the transfers of native and migrant households from and to the welfare state. Not controlling for observed characteristics, in about half of the 19 EU countries analyzed, migrants receive more benefits than natives. Similarly, in about half of the countries migrants, on net, contribute more to the welfare state than natives. The opposite is true for the other half.

In all countries, but Germany and the Baltic countries, in which migrant households on average receive more benefits than natives, or where these households a more likely to participate in welfare, both higher transfers as well as higher benefit take-up rates can be explained by differences in observable characteristics between migrant and native households. Among the differences in characteristics differences in age, education and marital status of the household head as well as differences in household sizes between native and migrant households contribute most to this finding. In addition in a number of further countries, lower incomes of migrant households—which may be a result of labor market discrimination—also contribute significantly. Actively attracting more able migrants and avoiding discrimination against migrants in terms of income levels, therefore are likely to be the most effective measures to reduce relative welfare receipt of migrant households in countries where migrants receive higher benefits than natives.

For net contributions to the state budget, by contrast—even after controlling for observable characteristics—migrant households contribute less to the budget than native households in substantially more countries. Significant negative residual contributions of migrant households are found in 8 countries (Austria, Belgium, Czech Republic, Germany, Estonia, Lithuania, Latvia, and Slovenia) and significantly positive ones in only 5 (Ireland, Italy, Luxembourg, Portugal, and the UK). The lower net contributions of migrant households in these countries are therefore—at least in part—due to behavioral differences between native and migrant households. This is mostly due to a significantly negative contribution of income levels to the unexplained part of the Oaxaca-Blinder decomposition, which indicates that—after controlling for observable characteristics migrants in these countries are paying lower taxes than could be expected. This could be due to black marketeering or higher discretion over tax payments among migrant households, due to a high share of self-employed. In other countries, in which positive residual net contributions of migrant households are found (Ireland, Italy, Portugal, and the UK), however, migrants—given their observable characteristics—pay higher taxes than natives. Avoiding marginalization of migrants into informal and black market activities therefore is likely to be a further effective measure to increase net contributions of migrant households to the welfare state in countries where migrants make low net contributions.

In sum, in the face of decreasing population levels which will necessitate a continued increase of the migrant population in Europe if labor supply is to be maintained, selective migration and sound integration policies as well as avoiding marginalization of migrants into informal and black market activities would probably be the most effective policy measures to avoid detrimental fiscal effects of increased migration on state budgets, even in countries in which migrants receive more from and pay less to the welfare state than natives.

A Appendix: Data preparation

Before we started our analysis we checked or data in order to remove potential bias arising from misreporting and to make sure to focus on the same number of observations throughout all of our analysis. We therefore dropped individuals reporting negative income, benefits, and social security contributions from our data for plausibility reasons. In addition—to avoid problems with individual outliers—household in the top 0.1 percentile of the distribution of those variables were omitted from the data. Furthermore, we also dropped individuals with missing observations in the variables used as regressors.[26]

For identifying household heads we followed Eurostat in defining the head of the household as the person with the highest personal income in the household. If we could not identify the household head based on income (if two or more members in the household had the same income, which applies to about 16% of households), we made decisions based on working hours (13% of unclear cases remained), children-parents relations (12%), pension payments (2%), educational attainment(1%), and work experience.

In the regressions we use use the control variables that are explained in Section 3.3. Usually we use the same set of regressors for each country—where exceptions apply this is indicated in the regression tables. For the Netherlands and Slovenia, information on population density is not available, therefore this variable is always excluded from the regressions for those countries. As income variable we use the equivalised total gross household income to avoid biased results due to different household sizes of migrants and natives (which were controlled for separately). This variable was calculated by dividing total gross income of the household by the equivalized household size.

[26]See Section 3.3 in the main text for a list of these variables.

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Table 1: Total log benefits received by different household types and country of residence

	Total benefits						
	native household	**migrant household**	**difference to native**	**exclusively migrant**	**difference to native**	**mixed household**	**difference to native**
AT	7.359	7.18	-0.178	6.677	-0.682	8.011	0.653
BE	7.061	6.835	-0.226	6.048	-1.013	7.735	0.674
CY	7.129	6.369	-0.76	4.772	-2.357	7.094	-0.035
CZ	6.137	6.785	0.648	6.512	0.375	6.961	0.824
DE	6.672	8.302	1.631	8.039	1.367	8.482	1.81
EE	6.588	7.049	0.462	7.2	0.613	6.915	0.327
ES	5.061	3.645	-1.416	3.225	-1.836	4.199	-0.862
FR	7.47	7.795	0.324	8.053	0.583	7.545	0.075
GR	5.695	3.807	-1.888	3.271	-2.424	4.697	-0.998
IE	8.269	7.76	-0.509	7.358	-0.911	8.138	-0.13
IT(a)	6.85	5.533	-1.317	4.788	-2.062	6.233	-0.617
LT	6.584	6.827	0.242	6.715	0.13	6.888	0.304
LU	7.812	7.233	-0.58	6.957	-0.855	8.144	0.332
LV	6.187	6.542	0.355	6.611	0.424	6.477	0.289
NL	5.895	5.862	-0.032	6.362	0.468	5.556	-0.339
PT	6.138	4.912	-1.226	4.118	-2.021	5.293	-0.846
SE	5.971	6.29	0.319	6.471	0.501	6.063	0.092
SI	6.416	6.516	0.099	6.406	-0.01	6.572	0.156
UK	7.137	6.102	-1.034	5.958	-1.179	6.274	-0.863

Source: EU-SILC, 2009. Table shows average log benefits received. (a) No data on sickness benefits.

Table 2: Types of benefits received by household type and country of residents

	Contributory benefits			Non contributory benefits		
	native household	**migrant household**	**difference to native**	**native household**	**migrant household**	**difference to native**
AT	5.317	4.854	-0.463	2.971	3.893	0.921
BE	4.971	4.186	-0.785	2.818	3.89	1.072
CY	4.569	3.76	-0.809	3.735	3.55	-0.185
CZ	5.403	6.007	0.604	1.195	1.184	-0.011
DE	4.633	6.929	2.296	2.805	2.092	-0.713
EE	5.081	6.322	1.241	2.801	1.941	-0.86
ES	4.802	3.278	-1.524	0.392	0.576	0.184
FR	5.452	5.71	0.258	3.27	4.114	0.844
GR	5.085	2.606	-2.478	1.485	1.959	0.475
IE	6.574	4.955	-1.619	5.411	5.775	0.364
IT(a)	6.076	4.183	-1.894	1.947	2.518	0.572
LT	5.954	6.401	0.447	1.663	1.264	-0.398
LU	5.42	3.098	-2.322	3.21	5.333	2.123
LV	5.148	6.004	0.856	2.389	1.658	-0.731
NL	3.291	2.8	-0.491	3.162	3.814	0.653
PT	4.634	2.87	-1.764	1.942	2.53	0.588
SE	4.438	3.974	-0.465	2.766	3.922	1.156
SI	4.027	4.14	0.113	3.331	3.405	0.074
UK	5.209	3.438	-1.772	3.096	3.666	0.57

Source: EU-SILC, 2009. Table shows average log benefits. (a) No data on sickness benefits.

Table 3: Share of households receiving benefits by household types and country of residence

	Total benefits						
	native household	**migrant household**	**difference to native**	**exclusively migrant**	**difference to native**	**mixed household**	**difference to native**
AT	0.786	0.78	-0.006	0.735	-0.051	0.854	0.068
BE	0.789	0.774	-0.015	0.682	-0.107	0.879	0.09
CY	0.85	0.787	-0.063	0.594	-0.256	0.875	0.025
CZ	0.748	0.806	0.058	0.779	0.031	0.824	0.075
DE	0.739	0.873	0.134	0.859	0.119	0.883	0.143
EE	0.878	0.904	0.026	0.921	0.043	0.889	0.011
ES	0.563	0.427	-0.136	0.392	-0.17	0.472	-0.09
FR	0.825	0.853	0.028	0.879	0.054	0.827	0.002
GR	0.63	0.46	-0.171	0.411	-0.22	0.541	-0.09
IE	0.874	0.843	-0.032	0.804	-0.07	0.879	0.005
IT(a)	0.759	0.674	-0.085	0.614	-0.146	0.732	-0.028
LT	0.866	0.877	0.01	0.856	-0.011	0.888	0.022
LU	0.781	0.763	-0.019	0.74	-0.041	0.838	0.057
LV	0.837	0.863	0.026	0.865	0.028	0.862	0.025
NL	0.683	0.697	0.014	0.73	0.047	0.677	-0.005
PT	0.756	0.644	-0.112	0.545	-0.211	0.692	-0.064
SE	0.68	0.724	0.044	0.737	0.057	0.707	0.028
SI	0.812	0.828	0.016	0.827	0.015	0.829	0.017
UK	0.797	0.706	-0.091	0.682	-0.116	0.735	-0.062

Source: EU-SILC, 2009. Table shows the share of households receiving benefits . (a) No data on sickness benefits.

Table 4: Descriptive statistics for explanatory variables (averages over all countries)

	Total	**Native household**	**Migrant household**	**Exclusively migrant**	**Mixed household**
Personal characteristics					
age	50.577	51.054	47.723	47.809	47.636
	(16.704)	(16.768)	(16.025)	(16.852)	(15.131)
secondary education (d)	0.39	0.392	0.375	0.337	0.414
	(0.488)	(0.488)	(0.484)	(0.473)	(0.493)
tertiary education (d)	0.29	0.283	0.335	0.314	0.357
	(0.454)	(0.450)	(0.472)	(0.464)	(0.479)
single (d)	0.48	0.492	0.412	0.528	0.293
	(0.500)	(0.500)	(0.492)	(0.499)	(0.455)
Income status					
equivalized gross household income	22571.217	22512.936	22919.783	21888.939	23977.307
	(19444.590)	(18914.992)	(22348.879)	(23809.766)	(20691.391)
Housing situation					
urban area (d)	0.436	0.416	0.552	0.605	0.493
	(0.496)	(0.493)	(0.497)	(0.489)	(0.500)
house owner (d)	0.728	0.747	0.614	0.461	0.771
	(0.445)	(0.435)	(0.487)	(0.499)	(0.420)
Household size					
one child in household (d)	0.269	0.257	0.342	0.34	0.344
	(0.444)	(0.437)	(0.474)	(0.474)	(0.475)
three-person household (d)	0.181	0.177	0.204	0.161	0.248
	(0.385)	(0.381)	(0.403)	(0.368)	(0.432)
at least four-person household (d)	0.246	0.236	0.306	0.263	0.351
	(0.431)	(0.424)	(0.461)	(0.440)	(0.477)
Network variables					
social contacts (d)	0.785	0.789	0.763	0.722	0.804
	(0.411)	(0.408)	(0.425)	(0.448)	(0.397)
leisure activities (d)	0.552	0.558	0.519	0.47	0.568
	(0.497)	(0.497)	(0.500)	(0.499)	(0.495)

Source: EU-SILC, 2009. Table shows means and standard deviations (in parentheses) for explanatory variables over all countries. (d) Indicates a dummy variable.

Table 5: Results of Oaxaca-Blinder decompositions and residual dependence analyses for total benefits

	Total benefits								
	Participation equation				**Level equation (in logs)**				
		Difference		**Residual**		**Difference**			**Residual**
	total	**explained**	**unexplained**	**dependence**	**unconditional**	**adjusted**	**explained**	**unexplained**	**dependence**
AT	-0.007	0.033 ***	-0.040 ***	-0.035 ***	-0.178	-0.069	-0.381 ***	0.312 ***	0.192 ***
BE	-0.015	0.018 *	-0.033 ***	-0.035 ***	-0.226 *	-0.146 **	-0.279 ***	0.133 **	0.169 ***
CY	-0.063 ***	-0.069 ***	0.006	-0.004	-0.760 ***	-0.966 ***	-0.381 ***	-0.586 ***	0.120 *
CZ	0.057 ***	0.039 ***	0.019	0.016	0.648 ***	-0.001	-0.015	0.014	0.094
DE	0.133 ***	0.110 ***	0.023 ***	0.026 ***	1.630 ***	0.486 ***	0.251 ***	0.235 ***	0.149 ***
EE	0.026 **	0.020 ***	0.006	0.006	0.461 ***	0.400 ***	0.044 *	0.355 ***	0.193 **
ES	-0.136 ***	-0.084 ***	-0.051 ***	-0.056 ***	-1.416 ***	-0.752 *	-0.050	-0.702 *	0.104
FR	0.027 ***	0.025 ***	0.001	0.001	0.324 ***	-0.148 **	-0.119 ***	-0.029	0.143 ***
GR	-0.171 ***	-0.173 ***	0.001	-0.001	-1.888 ***	-0.256	-0.045	-0.211	-0.142
IE	-0.032 **	-0.016 *	-0.016	-0.003	-0.509 ***	-0.209 ***	-0.136 ***	-0.073	-0.085 **
IT(a)	-0.084 ***	-0.070 ***	-0.014	-0.013	-1.317 ***	-0.924 ***	-0.333 ***	-0.591 **	-0.064
LT	0.010	-0.017	0.027 *	0.014 **	0.242 **	0.202 **	0.121 ***	0.081	0.034
LU	-0.018	-0.010	-0.008	-0.010	-0.580 ***	-0.678 ***	-0.499 ***	-0.179 ***	-0.038
LV	0.026 **	0.009	0.018 *	0.008	0.355 ***	0.199 ***	0.114 ***	0.084	0.065 *
NL(b)	0.014	-0.001	0.015	0.014	-0.032	-0.274 ***	-0.241 ***	-0.033	0.019
PT	-0.112 ***	-0.025 **	-0.086 ***	-0.087 ***	-1.226 ***	-1.158 **	-0.411 ***	-0.747	0.249 *
SE	0.044 ***	0.037 **	0.007	0.011	0.319 **	-0.241 **	-0.234 ***	-0.007	0.065
SI(b)	0.015	0.013 **	0.002	0.000	0.099	-0.070	-0.033 *	-0.038	0.005
UK	-0.093 ***	-0.040 ***	-0.053 ***	-0.038 ***	-1.034 ***	-0.293 ***	-0.227 ***	-0.066	-0.039

Source: EU-SILC, 2009. (a) No data on sickness benefits. (b) Urbanization dummy are not included as regressors. Columns headed residual dependence report the coefficients of a dummy variable for migrant status after controlling for characteristics that also included in the Oaxaca-Blinder decomposition.

Table 6: Detailed Oaxaca-Blinder decompositions for levels of total benefits and participation

	Total benefits										
	explained difference					unexplained difference					
	personal	income	house	household	network	personal	income	house	household	network	constant
Participation equation											
AT	-0.0439***	0.0125***	0.0031	0.0590***	0.0027*	-0.0897	-0.2831	-0.0088**	0.0104***	0.0009	0.3304
BE	-0.0307***	0.004	-0.0016	0.0446***	0.0018*	-0.0342	-0.7352	-0.0015	0.0075***	0.0048	0.7254
CY	-0.1283***	-0.0004	0.0015	0.0621***	-0.0042**	-0.0427	0.0108	-0.0015	-0.0037	0.0006	0.0427
CZ	0.0381***	0.0051**	-0.0030***	-0.0051**	0.0036***	0.3815	-5.2372	0.0239	-0.0093	0.0105	4.8491
DE(a)	0.1280***	0.0125***	0.0001	-0.0335***	0.0031***	-0.1378	-2.0987	0.002	0.138	0.0036	2.1154
EE	0.0508***	0.0056**	0.0105	-0.0498*	0.0031	-0.0051	-0.0334	0.0128	-0.0066	-0.0012	0.0397
ES	-0.0771***	-0.0055	-0.0096***	0.0047**	0.0032***	0.3005	-0.8906	-0.0008	-0.0004	0.0014	0.5386
FR	-0.0279**	0.0150***	-0.0017	0.0360***	0.0040***	-0.015	1.4707	-0.0001	-0.0011	-0.0024	-1.4506
GR	-0.1715***	0.0088	-0.0380***	0.0293***	-0.0013	-0.0216	-0.3535	-0.0001	9.69E-06	-0.0025	0.3791
IE	0.0706	0.0037	-0.0089	-0.0836	0.0022	0.0943	0.16	0.0051	-0.0003	0.005	-0.28
IT(b)	-0.0834***	0.0018	-0.0058***	0.0161***	0.0010***	0.1771*	-0.0996	0.001	0.0018	0.0041	-0.0981
LT	-0.0041	-0.0031	-0.0045**	-0.0057*	0.0007	-0.3219	2.8871	-0.0238	0.0048	-0.0032	-2.5164
LU(c)	-0.0472	0.0107	-0.0052	0.03	0.0013	0.2265	0.5137	-0.0001	-0.0035	0.0009	-0.7452
LV	-0.5561	-0.0619	0.1144	0.5492	-0.0371	0.423	-1.9062	-0.0253	-0.1039	0.0078	1.6222
NL(d)	0.0524	-0.0001	-0.0039	-0.0486	-0.0011	0.1574	0.4825	-0.0082	-0.0256	0.0282	-0.6193
PT	-0.0599***	-0.0034*	0.0019*	0.0381***	-0.0022*	-0.1299	-3.1038*	0.0271**	-0.0012	-0.0065	3.1282
SE	-0.1487	-0.0931	0.0108	0.2349	0.0336	0.0485	-0.7834	0.0025	0.0023	-0.0005	0.7375
SI(d)	0.0662	-0.0724	-0.0047	0.0304	-0.0069	-0.0084	-0.2433	-0.001	-0.0003	-0.0018	0.2567
UK	-0.0969***	-0.0116***	0.0061***	0.0629***	-0.0002	0.0996*	0.0574	-0.004	0.0115***	0.0026	-0.2205
Level equation (in logs)											
AT	-0.0204*	-0.1106***	-0.0358***	-0.2142***		0.4066	-8.1171**	0.0212*	-0.0052		8.0066
BE	-0.0474***	-0.0248***	-0.0134*	-0.1933***		-0.5103	-2.7236	0.0051	0.0043		3.3577
CY	-0.1724***	0.0026	-0.0006	-0.2101***		-0.8888	7.6862	-0.014	0.1172**		-7.4864
CZ	-0.0226**	-0.0250***	-0.0038	0.0361**		1.1733***	-0.2464	-0.0052	-0.0749		-0.8324
DE	0.1282***	0.0077	0.0006	0.1150***		-0.0308	0.3517	-0.0003	0.1690***		-0.255
EE	0.0555***	0.0096*	-0.0738***	0.0532***		0.2371	-0.0865	0.0646	0.0702		0.0699
ES	0.1464***	-0.0760***	-0.0231**	-0.0975***		-0.2571	0.031	0.0018	0.0108		-0.4887
FR	0.0257***	-0.0605***	-0.0035	-0.0808***		-1.8592***	2.6386	-0.0148	-0.0041		-0.7891
GR	0.3302***	-0.0840***	0.0249**	-0.3164***		0.9168	-16.6815*	0.003	-0.0028		15.5534
IE	-0.1048***	-0.0008	0.0375***	-0.0679***		-0.2504	-4.0179	0.026	0.0496***		4.1197
IT(b)	0.1695***	-0.0945***	-0.0103*	-0.3982***		0.1259	-5.2415	0.0166	0.0043		4.504
LT	0.0069	0.0093**	0.0379***	0.0673***		0.7907	-4.8456	0.022	-0.0586		4.1722
LU	0.0573	-0.1040***	0.0013	-0.4539***		-0.8242**	-9.6137	0.0079	0.1044***		10.147
LV	0.0488***	-0.0008	-0.0078	0.0741***		-0.2709	-1.8654	-0.0043	0.0748		2.1501
NL(d)	-0.0961***	0.0007	-0.0022	-0.1438***		-0.6018	-9.6498	-0.0233	-0.0245		10.2668
PT	0.1600***	0.0764***	-0.0034	-0.6443***		-0.3651	17.4474***	0.061	0.1807**		-18.0706
SE	-0.0409**	-0.0256***	-0.0149*	-0.1522***		-0.0295	5.5326	-0.0514**	0.0256		-5.4847
SI(d)	-0.0171	-0.0042*	-0.0019	-0.0094		0.2567	3.8634	-0.0592**	0.0332		-4.1318
UK	-0.0330**	-0.0323***	0.0398***	-0.2016***		-0.2516	-2.7742	0.0088	0.0146		2.9363

Source: EU-SILC, 2009. (a) Dummy for household size of four or more persons substituted by dummy for three or more persons. (b) No data on sickness benefits available. (c) Children dummy is not included. (d) Urbanization dummy is not included. Table reports detailed Oaxaca-Blinder decomposition results. Constant calculated as total unexplained difference minus the sum of individual variables' contributions. No significance level reported for this variable.

Table 7: Total net contribution to the state budget by household types and country of residence

	Net contributions						
	native household	**migrant household**	**difference to native**	**exclusively migrant**	**difference to native**	**mixed household**	**difference to native**
AT	-1293	-1994	-701	-1910	-618	-2131	-838
BE	2126	2237	111	810	-1316	3870	1744
CY	-4578	-2122	2456	-2071	2507	-2146	2433
CZ	-1697	-3037	-1340	-2914	-1216	-3117	-1420
DE	764	-8998	-9762	-8119	-8883	-9598	-10362
EE	-737	-1747	-1009	-2296	-1559	-1257	-519
ES	-2077	294	2371	414	2492	134	2212
FR	-4566	-4593	-27	-7171	-2605	-2104	2462
GR	-1071	1685	2756	1694	2764	1671	2742
IE	-8354	-2345	6009	-5451	2903	585	8940
IT(a)	-1592	2738	4330	2664	4256	2809	4400
LT	-1264	-1518	-253	-1954	-690	-1279	-15
LU	-9806	1747	11553	3438	13245	-3851	5955
LV	41	-600	-642	-1360	-1402	130	89
NL	12582	15191	2609	3792	-8790	22178	9596
PT	-1570	2563	4133	1294	2864	3170	4740
SE	6547	5388	-1159	1801	-4746	9870	3323
SI	4143	3086	-1056	1929	-2214	3690	-453
UK	-2413	3026	5439	582	2995	5933	8346

Source: EU-SILC, 2009. Table shows average net contributions (in EURO) made. (a) No data on sickness benefits.

Table 8: Results of Oaxaca-Blinder decompositions and residual dependence analyses for net contributions

	Net contributions			
		Difference		Residual
	total	explained	unexplained	dependence
AT	-701	553	-1254**	-1110*
BE	111	1616***	-1505***	-1635***
CY	2456***	2853***	-397	-191
CZ	-1340***	-660***	-681***	-687***
DE	-9762***	-5401***	-4361***	-4354***
EE	-1009***	-631***	-379***	-411***
ES	2371***	2118***	253	297
FR	-27	254	-280	-196
GR	2756***	2580***	176	337
IE	6009***	4479***	1530**	1411*
IT(a)	4330***	3479***	851***	945***
LT	-253	25	-279**	-257*
LU	11553***	10554***	999	3113***
LV	-642***	-481***	-161**	-162**
NL(b)	2609***	2349***	261	298
PT	4133***	2640***	1493***	1460***
SE	-1159**	-721	-438	-247
SI(b)	-1056***	-817***	-239	-266*
UK	5439***	3996***	1443***	1355***

Source: EU-SILC, 2009. (a) No data on sickness benefits. (b) Urbanization dummy not included. Columns headed residual dependence report coefficient of a dummy variable for migrant status after controlling for characteristics that are also included in the Oaxaca-Blinder decomposition results.

Table 9: Results of detailed Oaxaca-Blinder decompositions for levels of net contributions

	Net contributions								
	explained difference				unexplained difference				
	personal	income	house	household	personal	income	house	household	constant
AT	2457***	-2746***	-29	871***	3589*	-3015***	510**	374	-2712
BE	1502***	-1730***	470***	1374***	2450	-4643***	267	362*	59
CY	2583***	5	-77	342**	5782***	4989***	220	-170	-11218
CZ	-325***	-301**	68***	-101***	-2333***	-1242***	-64	238	2720
DE	-3594***	-1530***	-30	-247***	-4172**	-2596***	79	-194	2522
EE	-307***	-322***	-17	14	377	-239	-72	6	-451
ES	1612***	-860***	550***	817***	2159**	99	32	-102	-1935
FR	-227	-450***	-83	1014***	7896***	3321***	99	-155	-11441
GR	1923***	-1995***	826***	1825***	307	-2474***	-36	128	2251
IE	1955***	2062***	-565***	1027***	-1669	7998***	-516**	122	-4405
IT(a)	2758***	-1954***	694***	1981***	2275**	867**	-142	110	-2259
LT	-8	22	-22	33**	1097*	853***	-276	-87	-1866
LU	8812***	-2411***	1572**	2581***	16331***	1599	84	182	-17197
LV	-203***	-242***	-46*	10	447	-247**	-23	-128	-210
NL(b)	1725***	-148	22	750***	2597	7180***	183	88	-9787
PT	1205***	678***	-102**	859***	1267	3082***	-141	136	-2851
SE	876***	-2366***	18	751***	1862*	2084***	59	133	-4576
SI(b)	176**	-1124***	18**	113**	-1256**	-759**	94	-136	1818
UK	1880***	1702***	-415***	828***	2673*	1436***	414	-320	-2760

Source: EU-SILC, 2009. (a) No data on sickness benefits. (b) Urbanization dummy not included. Table reports detailed Oaxaca-Blinder decomposition results. Constant calculated as total unexplained difference minus the sum of individual variables' contributions. No significance level reported for this variable.

Table A.1: Types of benefits received by household and benefit types and country of residence

	Contributory benefits					Non contributory benefits				
	native household	**exclusively migrant**	**difference to native**	**mixed household**	**difference to native**	**native household**	**exclusively migrant**	**difference to native**	**mixed household**	**difference to native**
AT	5.317	4.479	-0.837	5.472	0.155	2.971	3.902	0.93	3.878	0.907
BE	4.971	3.636	-1.335	4.816	-0.155	2.818	3.325	0.507	4.536	1.718
CY	4.569	3.154	-1.415	4.035	-0.534	3.735	2.077	-1.658	4.219	0.484
CZ	5.403	6.049	0.646	5.98	0.577	1.195	0.774	-0.421	1.447	0.252
DE	4.633	6.64	2.006	7.127	2.493	2.805	2.174	-0.631	2.036	-0.769
EE	5.081	6.726	1.645	5.962	0.881	2.801	1.189	-1.612	2.612	-0.189
ES	4.802	2.788	-2.013	3.925	-0.877	0.392	0.64	0.248	0.492	0.1
FR	5.452	5.857	0.406	5.567	0.115	3.27	4.707	1.436	3.543	0.273
GR	5.085	1.961	-3.123	3.677	-1.408	1.485	1.971	0.486	1.94	0.455
IE	6.574	4.394	-2.18	5.484	-1.089	5.411	5.582	0.171	5.957	0.545
IT(a)	6.076	3.472	-2.605	4.852	-1.225	1.947	2.3	0.353	2.724	0.777
LT	5.954	6.438	0.484	6.382	0.427	1.663	0.891	-0.771	1.468	-0.194
LU	5.42	2.655	-2.765	4.565	-0.855	3.21	5.528	2.319	4.686	1.476
LV	5.148	6.333	1.185	5.688	0.54	2.389	1.182	-1.207	2.116	-0.273
NL	3.291	3.3	0.01	2.493	-0.798	3.162	4.252	1.091	3.545	0.384
PT	4.634	1.892	-2.742	3.338	-1.296	1.942	2.596	0.654	2.499	0.556
SE	4.438	4.066	-0.372	3.857	-0.581	2.766	4.227	1.461	3.54	0.774
SI	4.027	3.652	-0.375	4.395	0.368	3.331	3.71	0.378	3.247	-0.085
UK	5.209	3.252	-1.957	3.658	-1.551	3.096	3.842	0.746	3.457	0.361

Source: EU-SILC, 2009. Table shows average log benefits received. (a) No data on sickness benefits.

Table A.2: Share of households receiving benefits by household and benefit types and country of residence

	native household	migrant household	difference to native	exclusively migrant	difference to native	mixed household	difference to native
Contributory benefits							
AT	0.551	0.529	-0.022	0.502	-0.050	0.575	0.024
BE	0.534	0.456	-0.077	0.396	-0.138	0.526	-0.008
CY	0.496	0.421	-0.075	0.362	-0.134	0.447	-0.049
CZ	0.656	0.707	0.051	0.721	0.065	0.698	0.042
DE	0.494	0.710	0.216	0.697	0.202	0.719	0.225
EE	0.676	0.809	0.133	0.854	0.178	0.769	0.093
ES	0.528	0.379	-0.150	0.334	-0.194	0.438	-0.091
FR	0.584	0.617	0.033	0.635	0.051	0.600	0.016
GR	0.551	0.298	-0.252	0.234	-0.316	0.404	-0.147
IE	0.696	0.544	-0.153	0.496	-0.200	0.589	-0.108
IT(a)	0.652	0.492	-0.160	0.440	-0.213	0.541	-0.111
LT	0.778	0.821	0.042	0.819	0.040	0.822	0.044
LU	0.515	0.316	-0.198	0.278	-0.236	0.441	-0.073
LV	0.688	0.782	0.094	0.819	0.132	0.745	0.058
NL	0.346	0.307	-0.040	0.358	0.011	0.275	-0.071
PT	0.522	0.329	-0.193	0.215	-0.307	0.383	-0.139
SE	0.516	0.468	-0.048	0.473	-0.044	0.463	-0.053
SI	0.495	0.507	0.012	0.455	-0.040	0.534	0.039
UK	0.565	0.382	-0.183	0.363	-0.202	0.404	-0.161
Non contributory benefits							
AT	0.367	0.465	0.098	0.467	0.101	0.460	0.094
BE	0.357	0.485	0.128	0.407	0.050	0.574	0.217
CY	0.532	0.507	-0.025	0.300	-0.233	0.601	0.069
CZ	0.168	0.166	-0.002	0.112	-0.055	0.201	0.033
DE	0.350	0.260	-0.090	0.268	-0.082	0.254	-0.096
EE	0.437	0.316	-0.122	0.206	-0.232	0.414	-0.023
ES	0.053	0.078	0.024	0.087	0.034	0.065	0.012
FR	0.421	0.514	0.093	0.583	0.162	0.448	0.027
GR	0.202	0.272	0.070	0.275	0.073	0.267	0.065
IE	0.687	0.687	0.000	0.653	-0.034	0.719	0.032
IT	0.303	0.371	0.068	0.327	0.024	0.412	0.109
LT	0.285	0.220	-0.064	0.172	-0.113	0.247	-0.038
LU	0.365	0.593	0.228	0.613	0.248	0.528	0.163
LV	0.406	0.300	-0.106	0.228	-0.179	0.370	-0.036
NL	0.414	0.496	0.082	0.533	0.119	0.473	0.059
PT	0.306	0.396	0.089	0.388	0.082	0.399	0.093
SE	0.352	0.489	0.137	0.519	0.167	0.450	0.098
SI	0.471	0.488	0.017	0.530	0.059	0.466	-0.006
UK	0.385	0.454	0.069	0.463	0.078	0.443	0.058

Source: EU-SILC, 2009. Table shows average log benefits. (a) no data on sickness benefits.

Table A.3: Results of residual dependence analyses by household and benefit types and country of residence

	Contributory benefits			Non contributory benefits			Total benefits		
	migrant household	**exclusively migrant**	**mixed household**	**migrant household**	**exclusively migrant**	**mixed household**	**migrant household**	**exclusively migrant**	**mixed household**
Level Equation (in logs)									
AT	-0.175 ***	-0.188 **	-0.196 **	0.018	-0.008	0.052	0.192 ***	0.183 **	0.214 **
BE	0.184 **	0.383 ***	-0.036	-0.025	-0.136 ***	0.107 **	0.169 ***	0.125 **	0.215 ***
CY	-0.152 **	-0.241 *	-0.175 **	-0.270 ***	-0.152	-0.620 ***	0.120 *	0.206 ***	0.018
CZ	0.150 **	-0.005	0.241 ***	0.053	0.009	0.193	0.094	0.105	0.034
DE	0.024	-0.054	0.071	0.021	0.008	0.043	0.149 ***	0.252 ***	-0.006
EE	-0.021	-0.133	0.166	-0.199 ***	-0.185 **	-0.232 **	0.193 **	0.434 ***	-0.033
ES	0.015	-0.026	0.024	0.029	0.113	-0.022	0.104	0.132	0.056
FR	0.008	0.075	-0.045	0.078 **	-0.055	0.187 ***	0.143 ***	0.142 **	0.159 **
GR	-0.111	-0.196 *	-0.064	-0.062	-0.053	-0.051	-0.142	-0.063	-0.224 *
IE	-0.08	0.046	-0.187	-0.026	-0.005	-0.083	-0.085 **	-0.015	-0.178 ***
IT(a)	-0.164 ***	-0.436 ***	0.022	0.047	-0.012	0.128 *	-0.064	0.001	-0.172
LT	0.016	-0.071	0.059	0.026	-0.029	0.192	0.034	0.09	-0.077
LU	-0.266 ***	-0.377 ***	-0.176 ***	0.02	-0.026	0.033	-0.038	0.042	-0.112 ***
LV	-0.012	-0.064	0.032	-0.267 ***	-0.339 ***	-0.109	0.065 *	0.171 ***	-0.03
NL(b)	-0.212 ***	-0.194 **	-0.229 ***	0.052	-0.059	0.211 ***	0.019	-0.022	0.081
PT	-0.095	0.031	-0.169 **	-0.036	-0.059	0.029	0.249 *	0.169	0.405 *
SE	0.208 *	0.216	0.209	0.083	-0.133 *	0.242 ***	0.065	0.015	0.124 *
SI(b)	0.039	0.073	0.021	-0.118 ***	-0.106 **	-0.137 **	0.005	0.031	-0.052
UK	-0.127 ***	-0.072	-0.187 ***	-0.045	-0.016	-0.082	-0.039	-0.064	-0.016
Participation Equation									
AT	0.041 **	-0.017	0.111 ***	-0.108 ***	-0.105 ***	-0.136 ***	-0.035 ***	-0.089 ***	0.018
BE	-0.038 *	-0.172 ***	0.076 ***	-0.056 **	-0.065 *	-0.059	-0.035 ***	-0.098 ***	0.018
CY	0.119 ***	-0.084 *	0.192 ***	-0.172 ***	-0.345 ***	-0.089 **	-0.004	-0.148 ***	0.041 ***
CZ	0.002	-0.092 **	0.032 *	0.009	-0.006	0.018	0.016	-0.075 **	0.042 ***
DE	0.090 ***	0.002	0.142 ***	-0.063 ***	-0.005	-0.111 ***	0.026 ***	0.003	0.039 ***
EE	0.079 ***	0.057 ***	0.088 ***	-0.143 ***	-0.029	-0.242 ***	0.006	0.009	-0.002
ES	-0.039 **	-0.100 ***	0.031	-0.009 **	-0.011 ***	-0.006	-0.056 ***	-0.110 ***	0.006
FR	0.042 ***	0.008	0.068 ***	0.009	0.063 **	-0.051 *	0.001	-0.01	0.007
GR	-0.022	-0.063 *	0.042	0.036 **	0.033	0.035	-0.001	-0.02	0.029
IE	0.001	-0.072 **	0.057 **	-0.002	-0.060 *	0.028 *	-0.003	-0.028 **	0.008 *
IT(a)	-0.018	-0.040 **	0.004	-0.025 **	-0.052 ***	-0.005	-0.013	-0.034 **	0.007
LT	0.021 *	-0.027	0.037 ***	-0.017	0.049	-0.058 **	0.014 **	-0.007	0.023 ***
LU	0.01	-0.046 *	0.113 ***	-0.043	-0.009	-0.135 ***	-0.01	-0.026 ***	0.017 ***
LV	0.045 ***	0.002	0.076 ***	-0.051 **	0.002	-0.120 ***	0.008	-0.006	0.020 ***
NL(b)	0.061 **	0.048	0.070 **	0.04	0.158 ***	-0.092 *	0.014	0.048 ***	-0.016
PT	-0.060 *	-0.264 ***	0.018	-0.067 ***	-0.056	-0.071 ***	-0.087 ***	-0.183 ***	-0.047 *
SE	-0.044 **	-0.048	-0.046	0.045 *	0.078 **	-0.023	0.011	0.023	-0.006
SI(b)	0.01	-0.052 *	0.042 **	-0.018	0.041	-0.046 **	0	-0.007	0.003
UK	-0.059 ***	-0.141 ***	0.013	-0.158 ***	-0.226 ***	-0.080 *	-0.038 ***	-0.088 ***	-0.003

Source: EU-SILC, 2009. (a) No data on sickness benefits. (b) Urbanization dummy not included.

Table A.4: Results of Oaxaca-Blinder decomposition by benefits types and country of residence

	Participation in benefits			residual	Log (Level of benefits)				residual
	total	explained	unexplained	dependence	unconditional	adjusted	explained	unexplained	dependence
Contributory benefits									
AT	-0.022	-0.059 ***	0.036 **	0.041 **	-0.463 ***	-0.392 ***	-0.11 ***	-0.282 **	-0.175 ***
BE	-0.077 ***	-0.035 **	-0.042 **	-0.038 *	-0.785 ***	0.175	-0.039	0.215	0.184 **
CY	-0.076 ***	-0.167 ***	0.092 ***	0.119 ***	-0.809 ***	0.311	0.139 **	0.172	-0.152 **
CZ	0.051 **	0.049 ***	0.002	0.002	0.604 ***	0.032	0.001	0.031	0.150 **
DE	0.214 ***	0.172 ***	0.042 ***	0.090 ***	2.296 ***	0.019	0.07 ***	-0.052	0.024
EE	0.132 ***	0.065 ***	0.067 ***	0.079 ***	1.241 ***	0.214 *	-0.036	0.249 **	-0.021
ES	-0.149 ***	-0.113 ***	-0.036 **	-0.039 **	-1.524 ***	-0.084	0.089 ***	-0.173	0.015
FR	0.032 **	-0.009	0.04 ***	0.042 ***	0.258 **	0.051	-0.07 ***	0.12	0.008
GR	-0.252 ***	-0.236 ***	-0.016	-0.022	-2.478 ***	0.496	0.212 ***	0.283	-0.111
IE	-0.154 ***	-0.146 ***	-0.009	0.001	-1.619 ***	0.145	0.347 ***	-0.201	-0.08
IT(a)	-0.16 ***	-0.143 ***	-0.017	-0.018	-1.894 ***	-0.755 **	-0.11 ***	-0.645 *	-0.164 ***
LT	0.042	0.014	0.028 *	0.021 *	0.447 ***	0.029	0.042 ***	-0.013	0.016
LU	-0.2 ***	-0.231 ***	0.031 *	0.01	-2.322 ***	-0.064	-0.106 **	0.041	-0.266 ***
LV	0.093 ***	0.046 ***	0.048 ***	0.045 ***	0.856 ***	0.184 **	0.109 ***	0.075	-0.012
NL(b)	-0.04 **	-0.068 ***	0.028 **	0.061 **	-0.491 ***	-0.024	-0.04	0.016	-0.212 ***
PT	-0.194 ***	-0.15 ***	-0.044 *	-0.060 *	-1.764 ***	0.004	0.265 ***	-0.261	-0.095
SE	-0.048 **	-0.011	-0.037 *	-0.044 **	-0.465 ***	0.866	-0.06	0.926 *	0.208 *
SI(b)	0.011	0.005	0.006	0.01	0.113	-0.093	0.004	-0.097	0.039
UK	-0.183 ***	-0.14 ***	-0.043 ***	-0.059 ***	-1.772 ***	-0.326 ***	-0.01	-0.317 ***	-0.127 ***
Non contributory benefits									
AT	0.096 ***	0.143 ***	-0.046 ***	-0.108 ***	0.921 ***	0.194	0.237 ***	-0.044	0.018
BE	0.127 ***	0.145 ***	-0.019 *	-0.056 **	1.072 ***	0.157	0.171 ***	-0.014	-0.025
CY	-0.023	0.054 ***	-0.078 ***	-0.172 ***	-0.185	-0.185	0.246 ***	-0.431 *	-0.270 ***
CZ	-0.006	-0.013 **	0.006	0.009	-0.011	-0.041	-0.075	0.033	0.053
DE	-0.091 ***	-0.074 ***	-0.017 ***	-0.063 ***	-0.713 ***	0.004	0.022	-0.018	0.021
EE	-0.121 ***	-0.057 ***	-0.065 ***	-0.143 ***	-0.86 ***	-0.094	-0.113 **	0.018	-0.199 ***
ES	0.025 ***	0.049 ***	-0.025 ***	-0.009 **	0.184 ***	3.141	0.081	3.059	0.029
FR	0.094 ***	0.089 ***	0.004	0.009	0.844 ***	0.435 ***	0.201 ***	0.234 ***	0.078 **
GR	0.070 ***	0.040 ***	0.030 *	0.036 **	0.475 ***	-0.187	-0.130 ***	-0.057	-0.062
IE	0.001	0.008	-0.007	-0.002	0.364 **	0.707 ***	0.591 ***	0.116 *	-0.026
IT(a)	0.069 ***	0.097 ***	-0.029 **	-0.025 **	0.572 ***	1.393 ***	0.416 ***	0.977 *	0.047
LT	-0.065 ***	-0.050 ***	-0.016	-0.017	-0.399 ***	-0.997	-0.207 **	-0.79	0.026
LU	0.226 ***	0.254 ***	-0.028 ***	-0.043	2.123 ***	0.067	0.241 ***	-0.174 ***	0.02
LV	-0.106 ***	-0.076 ***	-0.030 **	-0.051 **	-0.731 ***	-0.393	-0.339 ***	-0.055	-0.267 ***
NL(b)	0.082 ***	0.067 ***	0.015	0.04	0.653 ***	0.03	0.014	0.015	0.052
PT	0.089 ***	0.149 ***	-0.060 ***	-0.067 ***	0.588 ***	0.431	0.112 *	0.319	-0.036
SE	0.137 ***	0.120 ***	0.016	0.045 *	1.156 ***	0.179	0.087 *	0.092	0.083
SI(b)	0.015	0.024 ***	-0.008	-0.018	0.074	0.003	0.028	-0.025	-0.118 ***
UK	0.063 ***	0.122 ***	-0.060 ***	-0.158 ***	0.57***	-0.008	0.087 **	-0.095	-0.045

Source: EU-SILC, 2009. (a) No data on sickness benefits. (b) Urbanization dummy not included.

Table A.5: Results of Oaxaca-Blinder Decomposition by household type and country of residence

	Total benefits								
	Participation equation				Level equation (in logs)				
		Difference		Residual		Difference			Residual
	total	explained	unexplained	dependence	unconditional	adjusted	explained	unexplained	dependence
exclusively migrant household									
AT	0.098***	0.145***	-0.047***	-0.089 ***	-0.682***	-0.203***	-0.499***	0.296***	0.183 **
BE	0.05***	0.069***	-0.018	-0.098 ***	-1.013***	-0.129	-0.228***	0.099	0.125 **
CY	-0.231***	-0.06**	-0.171***	-0.148 ***	-2.357***	0.274	-0.104	0.378	0.206 ***
CZ	-0.054***	-0.051***	-0.003	-0.075 **	0.375	-0.254***	-0.094***	-0.16***	0.105
DE	-0.083***	-0.082***	-0.001	0.003	1.367***	0.435***	0.412***	0.023	0.252 ***
EE	-0.232***	-0.22***	-0.012	0.009	0.612***	0.213***	0.251***	-0.038	0.434 ***
ES	0.034***	0.068***	-0.034***	-0.110 ***	-1.835***	-0.978*	-0.183***	-0.795	0.132
FR	0.163***	0.126***	0.037***	-0.01	0.583***	-0.115*	-0.18***	0.065	0.142 **
GR	0.073***	0.045***	0.028	-0.02	-2.424***	-0.307	-0.136**	-0.171	-0.063
IE	-0.034	0.01	-0.044**	-0.028 **	-0.911***	-0.364***	-0.081***	-0.283**	-0.015
IT(a)	0.026	0.079***	-0.053***	-0.034 **	-2.062***	-1.874***	-0.429***	-1.446***	0.001
LT	-0.111***	-0.143***	0.032	-0.007	0.13	0.056	0.252***	-0.196***	0.09
LU	0.246***	0.268***	-0.023**	-0.026 ***	-0.855***	-1.275***	-0.437***	-0.838***	0.042
LV	-0.179***	-0.184***	0.005	-0.006	0.423***	0.197***	0.26***	-0.063	0.171 ***
NL(b)	0.121***	0.044*	0.077***	0.048 ***	0.468*	0.051	0.008	0.043	-0.022
PT	0.076*	0.124***	-0.048	-0.183 ***	-2.021***	-0.811	-0.506***	-0.305	0.169
SE	0.168***	0.131***	0.037**	0.023	0.501***	-0.196*	-0.227***	0.031	0.015
SI(b)	0.056***	0.032**	0.024	-0.007	-0.01	-0.334***	-0.086***	-0.248**	0.031
UK	0.071***	0.155***	-0.084***	-0.088 ***	-1.179***	-0.059	-0.141***	0.082	-0.064
mixed household									
AT	0.067***	0.039***	0.028*	0.018	0.653***	-0.08	-0.214***	0.134	0.214 **
BE	0.089***	0.068***	0.021	0.018	0.674***	-0.253***	-0.324***	0.07	0.215 ***
CY	0.024	-0.058***	0.082***	0.041 ***	-0.035	-0.848***	-0.466***	-0.382***	0.018
CZ	0.074***	0.01	0.064***	0.042 ***	0.824***	-0.108	0.033	-0.141	0.034
DE(c)	0.142***	0.106***	0.036***	0.039 ***	1.81***	0.627***	0.247***	0.38***	-0.006
EE(d)	0.011	0.029***	-0.018	-0.002	0.326***	0.08	-0.21***	0.29*	-0.033
ES	-0.091***	-0.097***	0.006	0.006	-0.862***	-0.643	0.095**	-0.738*	0.056
FR	0.001	-0.011	0.012	0.007	0.075	-0.137	-0.057*	-0.08	0.159 **
GR	-0.089***	-0.115***	0.025	0.029	-0.998***	0.365	0.07	0.295	-0.224 *
IE(d)	0.005	-0.022**	0.027**	0.008 *	-0.13	-0.323***	-0.17***	-0.154**	-0.178 ***
IT(a)	-0.027*	-0.039***	0.012	0.007	-0.617***	-0.348	-0.258***	-0.09	-0.172
LT(e)	0.021	-0.026**	0.048***	0.023 ***	0.303**	0.358**	0.05*	0.308*	-0.077
LU(d)	0.06***	0.03***	0.03**	0.017 ***	0.332*	-0.284***	-0.318***	0.034	-0.112 ***
LV	0.024*	-0.014	0.038***	0.020 ***	0.289**	0.234*	-0.027	0.261**	-0.03
NL(b)	-0.004	0.006	-0.01	-0.016	-0.339*	-0.527***	-0.406***	-0.121	0.081
PT	-0.064**	-0.019	-0.045	-0.047 *	-0.845***	-0.885*	-0.376***	-0.509	0.405 *
SE	0.03	0.035**	-0.005	-0.006	0.092	-0.325**	-0.242***	-0.083	0.124 *
SI(b)	0.015	0.01	0.005	0.003	0.156	0.056	-0.005	0.061	-0.052
UK	-0.064***	-0.058***	-0.005	-0.003	-0.863***	-0.535***	-0.322***	-0.213**	-0.016

Source: EU-SILC, 2009. (a) No data on sickness benefits. (b) Urbanization dummy not included. (c) Dummy for household size of four or more persons substituted by dummy for three or more persons in the participation equation. (d) Children dummy not included in the participation equation. (e) Secondary education not included in the participation equation. Columns headed residual dependence report the coefficients of a dummy variable for migrant status after controlling for characteristics that are also included in the Oaxaca-Blinder decomposition.

Table A.6: Results of detailed Oaxaca-Blinder decompositions for contributory benefits

	Contributory benefits										
	explained difference					unexplained difference					
	personal	**income**	**house**	**household**	**network**	**personal**	**income**	**house**	**household**	**network**	**constant**
Participation equation											
AT	-0.0582***	0.0064*	-0.0065**	-0.0048***	0.0044***	-0.5124	-0.0934	-0.0323	-0.0274	0.0017	0.7003
BE	-0.0368***	0.003	-0.001	-0.0023	0.0018**	-0.0995	0.9233	-0.0035	0.0001	0.0084	-0.871
CY	-0.1699***	-0.0004	0.0024	0.0018	-0.0014	0.9679***	0.175	-0.0008	0.0264**	0.0034	-1.0801
CZ	0.0494***	0.0021	-0.0052***	-0.0009	0.0036***	-0.008	-0.403	-0.0008	-0.0008	0.0007	0.4136
DE	0.1552***	0.0117***	-0.0006	0.0023***	0.0035***	0.0236	0.1665	0.0007	0.0133	0.0015	-0.164
EE	0.0537***	0.0023	-0.0005	0.0057***	0.0033**	-0.059	0.7563	-0.0251	-0.0122	-0.0111	-0.5814
ES	-0.0864***	-0.0106	-0.0132***	-0.0060***	0.0031***	0.2546	-0.44	-0.0026	-0.0006	0.0129	0.14
FR	-0.0079	0.0002	-0.0026	0.0004	0.0012	-2.1452	-55.8063	-0.0886	0.1002	0.2413	57.7391
GR	-0.1832***	0.0117	-0.0567***	-0.0061	-0.0014	0.0366	2.8618	-0.0001	0.0009	0.0079	-2.923
IE	-0.1227***	-0.0004	0.0062	-0.0260***	-0.0029**	-0.2886	2.0452	-0.018	0.0068	-0.0008	-1.7532
IT(a)	-0.1310***	0.001	-0.0089***	-0.0050***	0.0012***	0.1555*	0.1179	0.0006	0.001	0.0016	-0.2934
LT	0.0054	0.0102	0.0048	-0.005	-0.0017	-0.5792	3.6218	-0.0276	0.0061	-0.0252	-2.9679
LU	-0.2060***	0.0084*	-0.0274***	-0.0075	0.0019	0.7529**	-4.3438	-0.0007	-0.0075	-0.0092	3.6394
LV	0.0535***	0.0045*	-0.0086***	-0.0068***	0.0030**	-0.382	2.6968	0.0482	0.0662	-0.0147	-2.3666
NL(b)	-0.0705***	-0.0004	0.0013	0.0005	0.0012	0.0797	1.6345	0.0026	-0.0036	-0.0009	-1.6842
PT	-0.1452***	-0.0044	0.0025	-0.0017	-0.0013	-0.0967	-0.0075	0.0149	0.0023	0.005	0.0379
SE	-0.0077	-0.007	0.0001	0.0029	0.0012	-4.3975	122.3893	0.0062	-0.5707	0.061	-117.5257
SI(b)	0.0077	-0.0032	-0.0006	0.0029	-0.0016	-0.0863	-0.9892	-0.0209	-0.0009	0.0035	1.0999
UK	-0.1278***	-0.0143***	0.0059***	-0.0034*	-0.0002	-0.1187	0.5038	-0.0034	-0.0022	0.0067	-0.4296
Level equation (in logs)											
AT	0.0403**	-0.1102***	-0.0036	-0.0362***		1.0081**	-0.4231	-0.0044	0.0890**		-0.9521
BE	0.0693***	-0.0385***	-0.0184***	-0.0518***		0.7915*	-18.6946**	-0.0136	-0.0376		18.169
CY	0.1420***	-0.0274	-0.0017	0.0262		-2.0844***	-2.1534	0.0135	-0.1513		4.5478
CZ	-0.0176**	-0.0018	-0.0037	0.0243***		1.5953***	-7.5577	-0.0147	-0.1401*		6.1479
DE	0.0002	0.0613***	0.0041*	0.0047**		1.2436***	2.3493	-0.0026	-0.1294**		-3.5126
EE	0.0135	0.0062	-0.0636***	0.0080*		0.0961	3.4907	0.0157	0.0069		-3.36
ES	0.1571***	-0.0600***	-0.0254***	0.0176		0.3237	-11.6658	0.0059	0.0313**		11.1316
FR	0.0411***	-0.0870***	0.0145**	-0.0382***		-0.7413*	8.2414	0.0105	-0.0204		-7.3699
GR	0.2392***	-0.0682**	0.0440***	-0.0025		0.5824	-9.4141	-0.0027	-0.0041		9.1218
IE	0.2499***	0.0548***	-0.0391***	0.0813***		-1.9687***	14.1062	-0.1034***	-0.0302		-12.2053
IT(a)	0.0767***	-0.0747***	-0.0274***	-0.0841***		0.6314	-6.1436	0.0389*	-0.0048		4.8326
LT	0.0067	0.0021	0.0284***	0.0044		0.2779	7.7376	-0.0272	-0.0098		-7.9913
LU	0.0600*	-0.1399***	-0.0161	-0.0096		-0.0307	-36.4842***	0.0256**	-0.0117		36.5424
LV	0.0186**	-0.0007	0.0164	0.0744***		-0.8027**	-6.9994*	-0.0624	-0.0885**		8.0278
NL(b)	-0.0785**	0.0196	0	0.0186		-2.1101	-22.8111	0.0024	-0.18		25.1148
PT	0.1182***	0.1322***	0.0019	0.0129		1.6695*	-3.0902	0.0632	0.0602		1.0358
SE	0.1030***	-0.0004	0.0083	-0.1709**		-0.4491	15.6367*	0.0282	-0.1505***		-14.1395
SI(b)	-0.0013	0.0024	-0.0013	0.0043		1.1085	4.3866	-0.1318***	0.0188		-5.4794
UK	0.0294**	-0.0223	0.0004	-0.0171**		0.2338	-5.473	0.0656	0.126		4.7309

Source: EU-SILC, 2009. (a) No data on sickness benefits available. (b) Urbanization dummy not included. Table reports detailed Oaxaca-Blinder decomposition results. Constant calculated as total unexplained difference minus the sum of individual variables' contributions. No significance level reported for this variable.

Table A.7: Results of detailed Oaxaca-Blinder decompositions for non-contributory benefits

	Non contributory benefits										
	explained difference					unexplained difference					
	personal	income	house	household	network	personal	income	house	household	network	constant
Participation equation											
AT	0.0120***	0.0195***	0.0181***	0.0902***	0.0028*	-0.0945	-0.2431	-0.0044	0.0137***	0.006	0.2759
BE	0.0315***	0.0062	0.0116***	0.0926***	0.0036**	0.0122	-0.1994	-0.0002	0.0049*	0.0003	0.1632
CY	-0.0293***	-0.0037	-0.0019	0.0963***	-0.0071***	-0.0454	0.6534	0.0121***	0.0076	-0.0146	-0.6906
CZ	-0.0168***	0.0171*	0.0033	-0.0220***	0.0059*	-0.0145	-2.2458	-0.0015	-0.0052	0.0025	2.2708
DE	-0.0445***	0.0051***	0.0004	-0.0377***	0.0028***	0.0281	-0.2646	0	0.0109	0.0007	0.2081
EE	-0.0170***	0.0069***	0.0156**	-0.0607***	-0.0015	-0.1495	0.0685	-0.0172	0.0162	-0.0036	0.021
ES	0.0160***	-0.0014	0.0103***	0.0234***	0.0009*	0.188	0.0934	0.0025	0.0028	-0.0024	-0.3091
FR	-0.0003	0.0190***	0.0189***	0.0487***	0.0031***	0.045	-4.9214	0.0009	0.0027	0.0047	4.8723
GR	-0.0435***	0.0074	0.0066	0.0720***	-0.0024	-0.4454	-0.3518	-0.0036	0.0013	-0.0169	0.8461
IE	-0.0117	-0.0009	0.0022	0.0189	-0.0003	0.0247	-0.0974	0.0016	0.0003	-0.0014	0.0648
IT(a)	-0.0019	0.0166	0.0083***	0.0718***	0.0027***	0.3206**	-0.1431	0.0025	0.0029	0.0071	-0.2187
LT	-0.0021	-0.0064*	-0.0093***	-0.0326***	0.0008	0.1017	0.6042	0.014	-0.0053	-0.0015	-0.7286
LU	0.0284***	0.0259***	0.0169**	0.1749***	0.0079***	0.0216	-0.2466	-0.0002	0.0006	0.0027	0.1942
LV	-0.0041*	0.0054**	-0.0027	-0.0782***	0.0039*	0.058	0.8303	0.0064	0.0149	-0.0049	-0.9352
NL(b)	-0.0013	0.0004	0.0101***	0.0568***	0.0012*	0.0589	2.3119	-0.0135	-0.0241	0.0289	-2.3472
PT	0.0575***	-0.0057**	0.0016	0.1025***	-0.0065***	0.2268	-0.5241	0.0005	0.0019	0.0012	0.2335
SE	-0.0002	-0.0193	0.0078**	0.1186***	0.0134***	0.0732	-0.7895*	0.0007	0.0018	-0.0044	0.7345
SI(b)	0.0015	0.0206***	0.0017**	-0.0009	0.0007	-0.0502	4.4521	-0.0064	-0.0049	0.0307	-4.4296
UK	-0.0060*	-0.0166***	0.0337***	0.1118***	-0.0004	0.1033*	-0.2771	0.0034	0.0227***	-0.0006	0.0885
Level equation (in logs)											
AT	0.0194	-0.0102	0.0639***	0.1641***		-0.0724	2.9423	0.0134	0.0829		-3.0098
BE	-0.0470***	0.1071***	0.0250**	0.0857***		-0.5433	3.6907	0.0388**	-0.1901*		-3.0102
CY	-0.1002***	-0.0095	-0.0106	0.3667***		1.0394	8.4954	0.0313	0.113		-10.1105
CZ	-0.0622**	0.0436	0.0081	-0.0642		1.1156	-4.0891	0.0127	0.0389		2.9551
DE	-0.011	0.0068*	0.0105***	0.016		-0.4809	7.9004*	-0.0023	0.0041		-7.4398
EE	-0.0540***	0.0044	-0.0164	-0.0467		0.2985	-4.0557	0.1177	-0.2314*		3.8891
ES	0.0162	-0.1059***	0.1257*	0.0454		3.8691**	1.5335	0.004	-0.5482*		-1.7991
FR	-0.0478***	0.1136***	0.0508***	0.0842**		0.3507	-7.3883	-0.0145	-0.0503*		7.3362
GR	-0.089	-0.0186*	-0.0334**	0.0115		0.8272	3.9736	-0.0084	0.065		-4.9145
IE	0.0164	-0.0402***	0.0744***	0.5408***		1.3635***	-5.0036	0.0127	-0.0917**		3.8346
IT(a)	-0.0094	0.0266***	0.0425***	0.3565***		-0.1336	-20.2680**	-0.0341	-0.2505**		21.6634
LT	-0.0666***	0	-0.0028	-0.1371		1.396	-12.2374	-0.0432	0.137		9.9571
LU	0.0094	0.0700***	0.0668**	0.0953***		0.7186	14.9152*	0.0058	0.0821		-15.8959
LV	-0.0439***	-0.0113	-0.0408***	-0.2427***		1.4750***	0.502	0.0235	-0.0371		-2.0181
NL(b)	0.0028	0.0078	0.0272***	-0.0235		-0.4443	-4.9003	0.001	-0.0013		5.3604
PT	0.015	-0.0084	0.0330***	0.0721		0.7822	8.0316	-0.0091	-0.2958		-8.1901
SE	0.0173*	0.0374**	0.0135	0.0184		0.7066*	4.9476	-0.0520*	-0.0901		-5.4199
SI(b)	-0.0139*	0.0887***	0.0055*	-0.0522**		0.5075*	17.6327	-0.0169	-0.0335		-18.1144
UK	-0.0297**	-0.0182	0.0622***	0.0725***		-0.2364	0.2461	-0.1117**	-0.0297		0.0367

Source: EU-SILC, 2009. (a) No data on sickness benefits available. (b) Urbanization dummy not included. Table reports detailed Oaxaca-Blinder decomposition results. Constant calculated as total unexplained difference minus the sum of individual variables' contributions. No significance level reported for this variable.

Table A.8: Results of detailed Oaxaca-Blinder decompositions for exclusively migrant households

	Total benefits										
	explained difference					unexplained difference					
	personal	income	house	household	network	personal	income	house	household	network	constant
Participation equation											
AT	0.010***	0.032***	0.026***	0.074***	0.004*	-0.115*	-0.042	-0.003	0.016***	0.010*	0.087
BE	0.016***	0.008	0.016***	0.024**	0.005**	-0.006	-0.177	-0.007	0.018	-0.002	0.156
CY	-0.020***	-0.006	0.005	-0.033	-0.006**	-0.155	3.359	-0.007	0.031*	-0.014	-3.385
CZ	-0.039***	0.084**	0.012*	-0.127***	0.019**	0.005	0.16	0	-0.001	-0.001	-0.166
DE	-0.050***	0.013***	0.003**	-0.053***	0.005***	-0.004	0.019	0	0.002	0	-0.018
EE	-0.062***	0.021***	0.018**	-0.195***	-0.003	-0.191	0.09	-0.01	0.048	0.002	0.049
ES	0.021***	-0.003	0.016***	0.031***	0.003**	0.137	0.065	-0.007*	0.002	0	-0.231
FR	-0.004	0.050***	0.046***	0.027***	0.007***	0.189	-9.303***	0.003	0.017	0.019	9.112
GR	-0.041***	0.005	0.011	0.069***	0.001	1.038	-5.527	0.054	0.014	0.003	4.446
IE	-0.012	0	0.004	0.017	0	0.12	-0.533	-0.008	-0.001	-0.001	0.379
IT(a)	-0.031**	0.003	0.022**	0.072***	0.013***	0.316	-0.518	-0.016	0.01	-0.001	0.156
LT	0.008	-0.002	-0.011**	-0.141***	0.002	0.101	-2.285	-0.029	-0.111	-0.046	2.402
LU	0.030***	0.032***	0.021**	0.175***	0.010***	0.012	-0.118	-0.002	0	0.001	0.084
LV	-0.01	0.016***	-0.001	-0.197***	0.008**	0.001	-0.446	-0.008	-0.007	-0.004	0.469
NL(b)	0.011***	0.025***	0.025***	-0.019**	0.002**	-0.296	22.547	-0.003	0.023	-0.043	-22.151
PT	0.050***	-0.002	-0.003	0.081***	-0.002	0.089	-0.563	-0.002	-0.007	0.023	0.412
SE	0.007*	-0.034	0.022***	0.112***	0.024***	0.318	0.312	0.017	0.064	-0.056	-0.618
SI(b)	0.008**	0.040***	0.006***	-0.023**	0.001	1.416	-209.629	-0.234	-0.568	-0.159	209.198
UK	-0.004	-0.011	0.073***	0.093***	0.003***	0.158**	-0.311	-0.01	0.031***	0.001	0.047
Level equation (in logs)											
AT	-0.0193	-0.2042***	-0.0604***	-0.2148***		0.41	-11.1341**	0.0603*	0.0135		10.9462
BE	-0.0397***	-0.0499***	-0.0260*	-0.1129***		-0.4062	0.026	0.009	-0.0976***		0.568
CY	-0.0598*	-0.0866***	-0.0052	0.048		0.5575	16.0526	0.0067	0.0165		-16.2552
CZ	-0.1494***	-0.0878***	-0.0077	0.1507***		1.5883**	3.6996	0.0023	-0.2904**		-5.16
DE	0.2049***	-0.0378***	-0.0025	0.2475***		1.2110***	-0.726	-0.0113	-0.2241***		-0.227
EE	0.1888***	-0.0005	-0.0909***	0.1536***		0.4079	-12.5674	0.0333	-0.0005		12.0887
ES	0.1469***	-0.1521***	-0.0394***	-0.1380***		0.4838	-3.068	0.0128	0.0202		1.7562
FR	0.0366***	-0.1502***	-0.0200**	-0.0462**		-1.3992***	2.2033	-0.0132	-0.1068**		-0.6191
GR	0.3361***	-0.1489***	0.0392*	-0.3628***		1.6801	-24.7254**	0.014	-0.0023		22.8631
IE	-0.1230***	0.0304***	0.0819***	-0.0707***		0.9838*	6.9335	-0.0323	0.0929**		-8.2607
IT(a)	0.1821***	-0.1935***	-0.0144	-0.4031***		-0.5706	1.8207	0.0137	0.0191		-2.7284
LT	0.0272	-0.0076	0.0488***	0.1836***		0.8756	-9.2406	0.0934	-0.1842		8.2597
LU	0.2553***	-0.2586***	0.0732*	-0.5068***		0.018	-22.6746**	-0.0025	0.1599***		21.6609
LV	0.2038***	-0.0620***	-0.012	0.1306***		-0.4425	1.4162	0.0216	0.2600***		-1.3184
NL(b)	-0.0331	-0.0243***	-0.0093	0.0743		0.269	-39.5893*	0.0123	-0.3180***		39.6694
PT	0.1583***	0.0039	0.0412**	-0.7093***		1.7676	28.5735***	0.0155	0.072		-30.7338
SE	-0.0525***	-0.0516***	-0.0250*	-0.0980***		0.3836	-1.845	-0.0007	-0.0475		1.5407
SI(b)	-0.0814***	-0.0103	-0.0090*	0.0145		-0.6948*	33.1629**	-0.031	0.0263		-32.7117
UK	-0.0332**	-0.0471***	0.1074***	-0.1679***		0.1316	0.2175	0.0127	0.0195		-0.2992

Source: EU-SILC, 2009. (a) No data on sickness benefits. (b) Urbanization dummy not included. Table reports detailed Oaxaca-Blinder decomposition results. Constant calculated as total unexplained difference minus the sum of individual variables' contributions. No significance level reported for this variable.

Table A.9: Results of detailed Blinder-Oaxaca Decompositions for mixed households

	Total benefits										
	explained difference					unexplained difference					
	personal	income	house	household	network	personal	income	house	household	network	constant
Participation equation											
AT	-0.0591***	-0.0033	0.0009	0.1005***	-0.0001	0.2951	2.6551	-0.0123	-0.0351	0.0174	-2.8919
BE	-0.0468***	0.0043	0.0005	0.1105***	-0.0003	1.4555	5.1474	0.0714	-0.0029	-0.0399	-6.6108
CY	-0.1551***	-0.0028	-0.0003	0.1044***	-0.0040*	0.3913	-11.9487**	-0.0014	0.0078	-0.0169	11.6497
CZ	0.0149	0.0023	0.0008	-0.0063	-0.002	-0.0178	-8.5976	0.0047	0.0078	-0.0014	8.6688
DE(a)	0.1270***	0.0014	0.0034***	-0.0270***	0.0016*	0.254	10.4665	0	0.1254	0.0029	-10.8131
EE(b)	-0.0504***	-0.0028	0.0101*	0.0725***	-0.0003	0.0798	0.0294	-0.0143	-0.0012	0.0015	-0.1132
ES	-0.1021***	0.0044	-0.0051***	0.0091***	-0.0028*	-0.7408	-2.5957	0.0117	-0.0115	-0.0127	3.3549
FR	-0.0166	-0.0017	-0.0009	0.0084*	-0.0002	-0.022	-3.6573	0.0041	0.012	0.0134	3.662
GR	-0.1810***	0.0339***	-0.0036	0.0414***	-0.0055**	-0.2852	-3.2409	-0.0007	-0.0015	-0.0128	3.5663
IE(b)	-0.0914***	-0.0188***	0	0.0966***	-0.0080***	0.0664	0.4714	0.0056	0.0006	-0.0012	-0.516
IT(c)	-0.0659***	0.0064***	-0.0008**	0.0216***	-0.0005*	-0.7167	1.0733	0.0026	0.0044	-0.031	-0.3205
LT(d)	-0.0317***	0.0021	-0.0029**	0.0063**	-0.0002	0.5019	2.8448	-0.0225	-0.0133	0.0044	-3.2677
LU(b)	0.2679	-0.0076	0.0036	-0.2355	0.002	3.0455	86.9046	-0.2982	-0.0229	0.2693	-89.8683
LV	-0.0234**	-0.0004	-0.003	0.0133***	0	-0.1339	-6.1743	0.0388	-0.1033	0.0306	6.3799
NL(e)	0.071	0.0101	0.0031	-0.0791	0.0005	-0.0107	-1.8293	0.0059	0.0002	0.0106	1.8132
PT	-0.0497**	-0.0027	0.0013	0.0349**	-0.0024	-0.0516	-0.5278	0.0266	-0.0096	-0.0175	0.5347
SE	-0.0480***	0.0004	-0.0011	0.0805***	0.0031	-0.0482	2.0316	-0.0162	0.0033	-0.0111	-1.9644
SI(e)	0.2089	-0.4021	0.0858	0.1638	-0.0469	-0.0388	-1.8186	-0.0034	0.0035	-0.0064	1.8691
UK	-0.0922***	-0.0195***	-0.0025**	0.0586***	-0.0027***	0.0069	0.2403	0.0028	0.0012	0	-0.2567
Level equation (in logs)											
AT	-0.0221	0.0225	-0.0007	-0.2133***		0.3402	9.6912	-0.0222	-0.0531*		-9.8221
BE	-0.0542***	-0.0024	-0.0021	-0.2649***		-0.6217	-1.1683	0.0049	0.0231		1.8321
CY	-0.2071***	0.0301**	0.0008	-0.2897***		-0.6156	-28.1639*	-0.1376***	0.2163***		28.3188
CZ	0.0544***	0.0132	-0.0014	-0.0335		1.6434***	-1.435	0.0443	-0.1037**		-0.2899
DE(a)	0.1177***	0.0385***	0.0015	0.0895***		-0.2764	-22.0137***	0.0064	0.2422***		22.4211
EE(b)	-0.0318**	0.0236***	-0.0647***	-0.1367***		-0.4256	1.2528	0.0589	0.0095		-0.6057
ES	0.1458***	0.0074	-0.0052	-0.0531***		-1.6682***	5.2631	0.0145	0.0347		-4.3818
FR	0.0146	0.0315**	0.0134***	-0.1163***		-2.2447***	-5.0212	-0.0133	0.0353		7.1639
GR	0.3227***	-0.0023	0.007	-0.2579***		-0.4027	-16.9921	-0.011	-0.0179		17.7192
IE(b)	-0.017	0.0151	0.0001	-0.1678***		-1.4730**	2.2112	0.0648	0.1027***		-1.0596
IT(c)	0.1597***	-0.0164	-0.0071**	-0.3942***		0.4424	-11.7720*	0.0739**	0.0021		11.1639
LT(d)	-0.008	0.0187***	0.0332***	0.0064		0.4351	-9.0026	0.0023	0.0082		8.8651
LU(b)	0.0612*	0.0079	0.0015	-0.3891***		-1.1481**	-40.4979**	0.0929**	0.0098		41.5773
LV	-0.1008***	0.0582***	-0.0038	0.0196		-0.3925	-12.2783**	-0.0083	0.0426		12.8973
NL(e)	-0.1377***	0.0172***	0.0025	-0.2879***		-1.2255**	4.8872	-0.0203	0.0563		-3.8185
PT	0.1606***	0.1038***	-0.0202**	-0.6197***		-0.2766	11.4485	-0.0246	0.1578*		-11.8141
SE	-0.0259	0.0082	-0.0017	-0.2227***		-0.2841	14.9379***	-0.1196**	0.0463*		-14.6631
SI(e)	0.0163	-0.001	0.0018	-0.0218***		0.7740***	-13.654	-0.0771**	0.0597**		12.9581
UK	-0.0328*	-0.0159	-0.0346***	-0.2388***		-1.0226	-12.5275*	0.0105	0.0009		13.3261

Source: EU-SILC, 2009. (a) Dummy for household size of four or more persons substituted by dummy for three or more persons in the participation equation. (b) Children dummy not included in the participation equation. (c) No data on sickness benefits. (d) Secondary education not included in the participation equation. (e) Urbanization dummy not included. Table reports detailed Oaxaca-Blinder decomposition results. Constant calculated as total unexplained difference minus the sum of individual variables' contributions. No significance level reported for this variable.

Table A.10: Results of residual dependence analyses for net contributions by household type and country of residence

	Net contributions		
	migrant household	**exclusively migrant**	**mixed household**
AT	-1110*	1021	-4484***
BE	-1635***	-974*	-2431***
CY	-191	1048	-939
CZ	-687***	476**	-1432***
DE	-4354***	-1732***	-6234***
EE	-411***	90	-840***
ES	297	652**	-216
FR	-196	-93	-465
GR	337	723*	-299
IE	1411*	1795**	972
IT(a)	945***	1706***	138
LT	-257*	312*	-615***
LU	3113***	5725***	-2811**
LV	-162**	143*	-473***
NL(b)	298	-2271***	1822***
PT	1460***	1361**	1492**
SE	-247	-1087**	624
SI(b)	-266*	241	-520***
UK	1355***	1815***	882

Source: EU-SILC, 2009. (a) No data on sickness benefits available. (b) Urbanization dummy not included. Table reports the coefficients of a dummy variable for migrant status after controlling for characteristics that are also included in the Oaxaca-Blinder decomposition results.

Table A.11: Results of Oaxaca-Blinder decompositions and residual dependence analysis for net contributions by household type and country of residence

	Net contributions			
		Difference		**Residual**
	total	**explained**	**unexplained**	**dependence**
exclusively migrant household				
AT	-618	-1273**	656	1021
BE	-1316*	-558	-758	-974*
CY	2507***	1517***	991	1048
CZ	-1216***	-1684***	468**	476**
DE	-8883***	-7260***	-1624***	-1732***
EE	-1559***	-1637***	78	90
ES	2492***	1874***	618**	652**
FR	-2605***	-2365***	-239	-93
GR	2764***	2321***	443	723*
IE	2903***	1162*	1741**	1795**
IT(a)	4256***	2626***	1630***	1706***
LT	-690***	-997***	307*	312*
LU	13245***	11023***	2222*	5725***
LV	-1402***	-1527***	125	143*
NL(b)	-8790***	-6506***	-2284***	-2271***
PT	2864***	1513***	1351**	1361**
SE	-4746***	-3480***	-1266***	-1087**
SI(b)	-2214***	-2476***	262	241
UK	2995***	1166**	1829***	1815***
mixed household				
AT	-838	3570***	-4409***	-4484***
BE	1744*	4104***	-2360***	-2431***
CY	2433***	3460***	-1027	-939
CZ	-1420***	-2	-1418***	-1432***
DE	-10362***	-4132***	-6230***	-6234***
EE	-519***	267**	-786***	-840***
ES	2212***	2441***	-229	-216
FR	2462***	2782***	-320	-465
GR	2742***	3010***	-268	-299
IE	8940***	7609***	1331	972
IT(a)	4400***	4282***	119	138
LT	-15	585***	-599***	-615***
LU	5955***	9004***	-3050**	-2811**
LV	89	525***	-436***	-473***
NL(b)	9596***	7775***	1821***	1822***
PT	4740***	3179***	1561**	1492**
SE	3323***	2726***	596	624
SI(b)	-453	48	-501***	-520***
UK	8346***	7362***	984*	882

Source: EU-SILC, 2009. (a) No data on sickness benefits. (b) Urbanization dummy not included. Columns headed residual dependence report coefficient of a dummy variable for migrant status after controlling for characteristics that are also included in the Oaxaca-Blinder decomposition results.

Table A.12: Results of detailed Oaxaca-Blinder decompositions for levels of net contributions by household types and country of residence

	Net contributions								
	explained difference				unexplained difference				
	personal	**income**	**house**	**household**	**personal**	**income**	**house**	**household**	**constant**
exclusively migrant household									
AT	2708***	-4720***	6	732***	6138***	-3419***	378	960**	-3401
BE	1582***	-3240***	907***	192	3406**	-5225***	459	1135***	-533
CY	1820***	354***	-182	-475***	-337	5645***	179	69	-4565
CZ	-465***	-892***	151***	-478***	-2604***	-2414***	-40	513	5013
DE	-3567***	-3272***	93*	-514***	-2176	-5790***	601***	412	5329
EE	-783***	-752***	-10	-92***	720	-271	74	-572***	127
ES	1704***	-1636***	855***	952***	1291	-1526***	1	-287***	1139
FR	-1052***	-1550***	-143	380***	8299***	2174***	49	1219***	-11980
GR	2296***	-3002***	1279***	1750***	1668	-3519***	-431***	161	2564
IE	2411***	-979*	-1103***	833***	-4506*	1739	-323	160	4671
IT(a)	3109***	-3377***	1199***	1695***	5560***	-592	-97	105	-3346
LT	-703***	-196**	-28	-71**	515	157	-425	-308	368
LU	9232***	-2960***	2003**	2748***	16352***	1666	4	-309	-15491
LV	-495***	-879***	-40	-113***	100	-393***	-75	-554***	1047
NL(b)	-252	-5493***	91	-853***	452	-1894	-127	2283***	-2998
PT	981***	255	-283**	560***	-2097	-20	82	119	3267
SE	904***	-5064***	66	613***	1453	361	-263*	392	-3209
SI(b)	622***	-2992***	81***	-186**	895	-1467***	42	-298*	1090
UK	2122***	-508	-973***	524***	4162**	239	-76	105	-2601
mixed household									
AT	2041***	515	-87	1100***	-3701	-1003	0	-73	368
BE	1410***	-2	-31	2728***	238	-3262**	391	-179	452
CY	2929***	-153*	-29	713***	7836***	4856***	626*	-155	-14190
CZ	-235***	79	14	140**	-4404***	465	-86	205	2402
DE	-3612***	-341	-114***	-65	-8479***	-216	-207*	-59	2731
EE	119**	62	-24	110***	-1092*	128	-146	85	239
ES	1490***	165	147***	640***	2111	1751**	113	-156	-4048
FR	569*	613***	-25	1625***	2590	4880***	-10	-649**	-7131
GR	1306***	-323	76	1950***	-790	-874	-97	239	1254
IE	1525***	4931***	-56	1209***	849	11118***	-832	-78	-9726
IT(a)	2428***	-615**	219***	2249***	-962	2029***	-223	55	-780
LT	372***	142**	-18	89***	-1152	1459***	-38	45	-913
LU	7421***	-590	144	2030***	10867**	3097	-1283	-126	-15605
LV	79**	369***	-51**	128***	-168	-194	71	-96	-49
NL(b)	2936***	3128***	-21	1732***	4019*	10784***	220	-45	-13157
PT	1312***	880***	-16	1002***	2091	4536***	-593	629**	-5102
SE	841***	1005*	-43	922***	1923	4016***	-79	-63	-5201
SI(b)	-57	-149	-15*	269***	-2600***	-392	374*	41	2076
UK	1593***	4330***	249***	1190***	-305	2825***	393	-594**	-1335

Source: EU-SILC, 2009. (a) No data on sickness benefits. (b) Urbanization dummy not included. Table reports detailed Oaxaca-Blinder decomposition results. Constant calculated as total unexplained difference minus the sum of individual variables' contributions. No significance level reported for this variable.

Table A.13: Average log benefits received by different household types including EU and non-EU migrants

Country	Native household	EU migrant household	Difference to native	non-EU migrant household	Difference to native	Mixed EU- and non-EU migrant	Difference to native
AT	7.359	6.244	-1.115	7.045	-0.314	6.831	-0.527
BE	7.061	6.224	-0.837	6.231	-0.829	6.269	-0.792
CY	7.129	4.951	-2.178	4.584	-2.546	5.273	-1.856
CZ	6.137	7.171	1.034	4.554	-1.583	6.551	0.414
DE[(a)]	6.672			8.104	1.432		
EE[(a)]	6.588			7.252	0.664		
ES	5.061	3.658	-1.403	3.204	-1.857	2.043	-3.017
FR	7.470	7.457	-0.013	8.507	1.037	6.385	-1.085
GR	5.695	2.376	-3.319	3.484	-2.211	2.875	-2.820
IE	8.269	7.329	-0.939	7.437	-0.832	8.138	-0.131
IT[(b)]	6.850	4.526	-2.324	4.947	-1.903	7.581	0.731
LT	6.584	7.945	1.360	6.929	0.344	8.304	1.719
LU	7.812	6.909	-0.904	7.515	-0.297	7.529	-0.284
LV[(a)]	6.187			6.755	0.567		
NL	5.895	5.760	-0.134	6.427	0.532	6.920	1.026
PT	6.138	5.448	-0.690	3.973	-2.166	4.948	-1.190
SE	5.971	6.335	0.365	6.636	0.665	5.101	-0.870
SI[(a)]	6.416			6.330	-0.086		
UK	7.137	6.473	-0.664	6.004	-1.132	2.985	-4.152

Country	Native household	Mixed native and EU	Difference to native	Mixed native and non-EU	Difference to native	Mixed native, EU and non-EU	Difference to native
AT	7.359	8.268	0.910	7.529	0.171	9.709	2.351
BE	7.061	7.642	0.581	7.578	0.517	8.718	1.657
CY	7.129	6.630	-0.499	7.389	0.260	7.901	0.771
CZ	6.137	6.853	0.716	6.699	0.562		
DE[(a)]	6.672			8.454	1.782		
EE[(a)]	6.588			6.718	0.130		
ES	5.061	3.855	-1.206	4.262	-0.799	3.484	-1.577
FR	7.470	7.373	-0.097	7.424	-0.047	8.724	1.253
GR	5.695	4.127	-1.568	5.151	-0.544		
IE	8.269	8.034	-0.235	8.469	0.200	7.993	-0.276
IT[(b)]	6.850	6.319	-0.531	6.160	-0.690	6.223	-0.627
LT	6.584	7.067	0.482	6.630	0.045	7.806	1.222
LU	7.812	7.892	0.079	8.230	0.417	9.092	1.279
LV[(a)]	6.187			6.118	-0.069		
NL	5.895	5.690	-0.205	5.513	-0.382	6.879	0.985
PT	6.138	5.062	-1.076	5.339	-0.800	9.171	3.033
SE	5.971	6.414	0.443	5.640	-0.330	5.946	-0.025
SI[(a)]	6.416			6.693	0.277		
UK	7.137	6.466	-0.671	5.963	-1.173	6.015	-1.121

Source: EU-SILC, 2009. Table shows average log benefits received by different household types and country of residence. (a) No information is provided on EU and non-EU migrants. Non-EU migrants refer to both groups in this case. (b) No data on sickness benefits.

Annex: Does migration threaten the sustainability of European welfare states?

June 20, 2013

This Annex to the Paper "Does migration threaten the sustainability of European welfare states?" reports the regression ouput generated by the various steps of analysis conducted in the paper. In detail the regression output for the following regressions can be found on the following pages

Contents

1 Residual dependence

1.1 Total benefits

1.1.1 Participation

Tabelle: 1: Residual dependence estimation for total benefits and migrant households (participation equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
migrant dummy (d)	-0.0347***	-0.0346***	-0.0040	0.0157	0.0258***	0.0056	-0.0563***	0.0008	-0.0014	-0.0035
	(0.0115)	(0.0129)	(0.0132)	(0.0105)	(0.0074)	(0.0049)	(0.0173)	(0.0060)	(0.0209)	(0.0053)
social contacts (d)	-0.0148	-0.0177	0.0204	-0.0030	-0.0234***	-0.0065	-0.0615***	-0.0186***	-0.0540**	-0.0057
	(0.0099)	(0.0115)	(0.0219)	(0.0096)	(0.0060)	(0.0054)	(0.0182)	(0.0057)	(0.0272)	(0.0040)
leisure activities (d)	-0.0114	-0.0013	-0.0348***	-0.0438***	-0.0132**	-0.0166***	-0.0659***	-0.0118***	-0.0558***	-0.0181***
	(0.0076)	(0.0103)	(0.0123)	(0.0062)	(0.0061)	(0.0046)	(0.0127)	(0.0043)	(0.0156)	(0.0043)
urban area (d)	0.0003	0.0020	-0.0114	-0.0208***	-0.0026	-0.0023	-0.0201*	-0.0108**	-0.0493***	-0.0046
	(0.0069)	(0.0080)	(0.0110)	(0.0061)	(0.0052)	(0.0047)	(0.0103)	(0.0042)	(0.0139)	(0.0039)
secondary education (d)	-0.0264**	-0.0221*	0.0126	-0.0498***	-0.0213**	-0.0231***	-0.0718***	-0.0123**	-0.0587***	-0.0005
	(0.0106)	(0.0114)	(0.0137)	(0.0091)	(0.0105)	(0.0074)	(0.0139)	(0.0056)	(0.0180)	(0.0053)
tertiary education (d)	-0.0413***	-0.0310***	0.0016	-0.0770***	-0.0183*	-0.0454***	-0.0792***	-0.0251***	-0.0482**	-0.0118**
	(0.0137)	(0.0120)	(0.0161)	(0.0184)	(0.0107)	(0.0120)	(0.0132)	(0.0073)	(0.0205)	(0.0054)
houseowner (d)	0.0069	0.0354***	0.0137	0.0313***	0.0218***	0.0019	0.0590***	-0.0201***	0.1642***	-0.0092**
	(0.0073)	(0.0109)	(0.0128)	(0.0074)	(0.0060)	(0.0060)	(0.0142)	(0.0046)	(0.0175)	(0.0041)
single (d)	-0.0074	-0.0027	0.0308***	0.0287***	-0.0055	0.0086*	0.1941***	0.0100**	0.2045***	0.0128***
	(0.0075)	(0.0091)	(0.0113)	(0.0063)	(0.0059)	(0.0049)	(0.0120)	(0.0047)	(0.0167)	(0.0048)
child(ren) in household (d)	0.1345***	0.1636***	0.1228***	0.0668***	0.1489***	0.0776***	-0.0131	0.0712***	-0.0263	0.0957***
	(0.0084)	(0.0099)	(0.0116)	(0.0059)	(0.0067)	(0.0062)	(0.0138)	(0.0056)	(0.0198)	(0.0079)
three-person household (d)	0.0762***	0.1023***	0.0884***	0.0646***	0.0994***	0.0387***	0.1291***	0.0171***	0.1767***	0.0242***
	(0.0062)	(0.0075)	(0.0079)	(0.0051)	(0.0057)	(0.0046)	(0.0133)	(0.0049)	(0.0153)	(0.0048)
at least four-person household (d)	0.1025***	0.1398***	0.1872***	0.0607***	0.1359***	0.0621***	0.0937***	0.0780***	0.2383***	0.0435***
	(0.0076)	(0.0097)	(0.0135)	(0.0060)	(0.0062)	(0.0067)	(0.0147)	(0.0053)	(0.0161)	(0.0076)
age	-0.0201***	-0.0127***	-0.0165***	-0.0363***	-0.0192***	-0.0076***	-0.0532***	-0.0238***	-0.0409***	-0.0047***
	(0.0016)	(0.0017)	(0.0026)	(0.0013)	(0.0014)	(0.0010)	(0.0026)	(0.0010)	(0.0030)	(0.0009)
age^2	0.0003***	0.0002***	0.0002***	0.0005***	0.0003***	0.0001***	0.0007***	0.0003***	0.0006***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	0.2414***	0.6173***	0.1324***	0.2348*	0.4347***	0.0668***	0.8397***	0.1713***	1.3740***	0.2192***
	(0.0494)	(0.1164)	(0.0231)	(0.1287)	(0.0607)	(0.0133)	(0.1163)	(0.0254)	(0.2410)	(0.0583)
gross household $income^2$	-0.0149***	-0.0372***	-0.0092***	-0.0186***	-0.0277***	-0.0047***	-0.0484***	-0.0119***	-0.0736***	-0.0120***
	(0.0026)	(0.0060)	(0.0015)	(0.0071)	(0.0032)	(0.0009)	(0.0062)	(0.0013)	(0.0126)	(0.0030)
Observations	5799	5454	3087	9867	12765	4872	11752	10503	6823	4993

	IT	LT	LU	LV	NL	PT	SE	SI	UK
migrant dummy (d)	-0.0135	0.0144**	-0.0098	0.0081	0.0141	-0.0872***	0.0113	-0.0001	-0.0379***
	(0.0094)	(0.0067)	(0.0081)	(0.0059)	(0.0130)	(0.0252)	(0.0169)	(0.0073)	(0.0094)
social contacts (d)	-0.0109	-0.0087	-0.0266**	-0.0157**	-0.0001	-0.0305**	-0.0268	-0.0014	-0.0094**
	(0.0073)	(0.0064)	(0.0117)	(0.0067)	(0.0127)	(0.0154)	(0.0191)	(0.0090)	(0.0042)
leisure activities (d)	-0.0282***	-0.0125*	0.0028	-0.0040	-0.0399***	-0.0354**	-0.0794***	-0.0133**	-0.0086**
	(0.0063)	(0.0071)	(0.0109)	(0.0066)	(0.0090)	(0.0151)	(0.0141)	(0.0060)	(0.0042)
urban area (d)	-0.0175***	-0.0195***	0.0063	-0.0129**		0.0354***	-0.0063		0.0018
	(0.0056)	(0.0058)	(0.0075)	(0.0056)		(0.0126)	(0.0150)		(0.0045)
secondary education (d)	-0.0659***	-0.0270**	-0.0180*	-0.0011	-0.0214**	0.0000	-0.0210	0.0190***	-0.0163**
	(0.0070)	(0.0125)	(0.0110)	(0.0080)	(0.0101)	(0.0194)	(0.0177)	(0.0073)	(0.0064)
tertiary education (d)	-0.1085***	-0.0408***	-0.0295**	-0.0010	-0.0078	0.0019	-0.0279	0.0344***	-0.0117*
	(0.0102)	(0.0099)	(0.0123)	(0.0091)	(0.0105)	(0.0220)	(0.0194)	(0.0077)	(0.0066)
houseowner (d)	0.0431***	0.0212	0.0568***	0.0043	-0.0563***	0.0257*	-0.0303**	-0.0103	-0.0132***
	(0.0069)	(0.0135)	(0.0121)	(0.0079)	(0.0082)	(0.0152)	(0.0141)	(0.0072)	(0.0044)
single (d)	0.0613***	0.0217***	0.0087	0.0056	0.0842***	0.0537***	-0.0130	-0.0187***	0.0070
	(0.0063)	(0.0058)	(0.0083)	(0.0062)	(0.0091)	(0.0141)	(0.0145)	(0.0071)	(0.0043)
child(ren) in household (d)	0.0127*	0.0653***	0.2002***	0.1007***	0.3755***	0.1785***	0.3654***	0.1402***	0.1064***
	(0.0077)	(0.0059)	(0.0156)	(0.0062)	(0.0098)	(0.0128)	(0.0113)	(0.0067)	(0.0070)
three-person household (d)	0.1373***	0.0363***	0.0845***	0.0550***	0.0664***	0.1027***	0.0567***	0.0266***	0.0384***
	(0.0053)	(0.0046)	(0.0104)	(0.0049)	(0.0090)	(0.0135)	(0.0168)	(0.0067)	(0.0036)
at least four-person household (d)	0.1397***	0.0429***	0.1307***	0.0823***	0.1657***	0.1604***	0.1742***	0.0759***	0.0462***
	(0.0059)	(0.0056)	(0.0145)	(0.0064)	(0.0098)	(0.0142)	(0.0149)	(0.0074)	(0.0043)
age	-0.0375***	-0.0182***	-0.0146***	-0.0146***	-0.0352***	-0.0362***	-0.0321***	-0.0235***	-0.0158***
	(0.0014)	(0.0014)	(0.0025)	(0.0013)	(0.0018)	(0.0028)	(0.0024)	(0.0011)	(0.0010)
age^2	0.0005***	0.0002***	0.0002***	0.0002***	0.0005***	0.0005***	0.0005***	0.0003***	0.0002***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	0.6492***	0.1895***	0.0359	0.1558***	0.3140**	0.7203***	0.8398***	1.3382***	0.1200***
	(0.0548)	(0.0453)	(0.1690)	(0.0339)	(0.1254)	(0.1668)	(0.1449)	(0.1389)	(0.0230)
gross household $income^2$	-0.0348***	-0.0110***	-0.0057	-0.0102***	-0.0197***	-0.0407***	-0.0460***	-0.0756***	-0.0082***
	(0.0028)	(0.0027)	(0.0078)	(0.0020)	(0.0061)	(0.0090)	(0.0074)	(0.0074)	(0.0013)
Observations	19983	5106	4204	5716	9472	4424	5582	9001	8128

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 2: Residual dependence estimation for total benefits and exclusively migrant households (participation equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
migrant dummy (d)	-0.0892***	-0.0979***	-0.1478***	-0.0749**	0.0032	0.0092	-0.1097***	-0.0100	-0.0197	-0.0278**
	(0.0190)	(0.0236)	(0.0356)	(0.0312)	(0.0141)	(0.0057)	(0.0233)	(0.0100)	(0.0271)	(0.0126)
social contacts (d)	-0.0119	-0.0215*	0.0301	-0.0036	-0.0262***	-0.0065	-0.0659***	-0.0186***	-0.0507*	-0.0070*
	(0.0102)	(0.0125)	(0.0248)	(0.0097)	(0.0066)	(0.0051)	(0.0186)	(0.0057)	(0.0279)	(0.0043)
leisure activities (d)	-0.0109	-0.0069	-0.0296**	-0.0438***	-0.0138**	-0.0154***	-0.0644***	-0.0117***	-0.0593***	-0.0184***
	(0.0078)	(0.0112)	(0.0130)	(0.0063)	(0.0067)	(0.0045)	(0.0130)	(0.0043)	(0.0160)	(0.0045)
urban area (d)	0.0033	0.0076	-0.0121	-0.0203***	-0.0033	0.0005	-0.0189*	-0.0105**	-0.0507***	-0.0035
	(0.0070)	(0.0090)	(0.0113)	(0.0062)	(0.0057)	(0.0046)	(0.0105)	(0.0043)	(0.0142)	(0.0042)
secondary education (d)	-0.0354***	-0.0201	0.0162	-0.0522***	-0.0210*	-0.0221***	-0.0664***	-0.0138**	-0.0564***	0.0022
	(0.0108)	(0.0124)	(0.0140)	(0.0093)	(0.0114)	(0.0072)	(0.0143)	(0.0057)	(0.0185)	(0.0055)
tertiary education (d)	-0.0464***	-0.0337**	0.0139	-0.0795***	-0.0180	-0.0393***	-0.0810***	-0.0249***	-0.0476**	-0.0104*
	(0.0145)	(0.0131)	(0.0159)	(0.0190)	(0.0117)	(0.0117)	(0.0135)	(0.0075)	(0.0211)	(0.0056)
houseowner (d)	-0.0022	0.0397***	0.0075	0.0294***	0.0222***	0.0034	0.0503***	-0.0205***	0.1589***	-0.0143***
	(0.0073)	(0.0120)	(0.0129)	(0.0075)	(0.0066)	(0.0059)	(0.0148)	(0.0047)	(0.0182)	(0.0045)
single (d)	-0.0075	-0.0000	0.0372***	0.0301***	-0.0090	0.0075	0.1899***	0.0083*	0.2090***	0.0155***
	(0.0076)	(0.0102)	(0.0118)	(0.0065)	(0.0065)	(0.0049)	(0.0123)	(0.0048)	(0.0171)	(0.0053)
child(ren) in household (d)	0.1314***	0.1723***	0.1265***	0.0672***	0.1644***	0.0670***	-0.0097	0.0705***	-0.0231	0.0935***
	(0.0084)	(0.0105)	(0.0117)	(0.0060)	(0.0072)	(0.0063)	(0.0142)	(0.0058)	(0.0204)	(0.0082)
three-person household (d)	0.0759***	0.1052***	0.0831***	0.0647***	0.1066***	0.0354***	0.1329***	0.0157***	0.1801***	0.0243***
	(0.0065)	(0.0080)	(0.0082)	(0.0052)	(0.0063)	(0.0046)	(0.0135)	(0.0050)	(0.0154)	(0.0047)
at least four-person household (d)	0.1016***	0.1422***	0.1764***	0.0617***	0.1455***	0.0612***	0.0925***	0.0724***	0.2406***	0.0416***
	(0.0080)	(0.0101)	(0.0140)	(0.0061)	(0.0067)	(0.0069)	(0.0150)	(0.0053)	(0.0162)	(0.0072)
age	-0.0194***	-0.0122***	-0.0174***	-0.0367***	-0.0207***	-0.0077***	-0.0540***	-0.0229***	-0.0405***	-0.0052***
	(0.0016)	(0.0019)	(0.0027)	(0.0013)	(0.0015)	(0.0011)	(0.0027)	(0.0010)	(0.0031)	(0.0010)
age^2	0.0003***	0.0002***	0.0003***	0.0005***	0.0003***	0.0001***	0.0007***	0.0003***	0.0006***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	0.2410***	0.7421***	0.1415***	0.2232*	0.4715***	0.0586***	0.8229***	0.1688***	1.3955***	0.2304***
	(0.0482)	(0.1420)	(0.0507)	(0.1321)	(0.0663)	(0.0120)	(0.1210)	(0.0248)	(0.2506)	(0.0628)
gross household $income^2$	-0.0151***	-0.0441***	-0.0091***	-0.0178**	-0.0301***	-0.0041***	-0.0475***	-0.0117***	-0.0746***	-0.0127***
	(0.0026)	(0.0072)	(0.0028)	(0.0073)	(0.0035)	(0.0008)	(0.0065)	(0.0013)	(0.0131)	(0.0032)
Observations	5408	4984	2631	9493	11760	4305	11231	9751	6553	4587

	IT	LT	LU	LV	NL	PT	SE	SI	UK
migrant dummy (d)	-0.0339**	-0.0069	-0.0262***	-0.0056	0.0481***	-0.1827***	0.0226	-0.0071	-0.0879***
	(0.0139)	(0.0142)	(0.0099)	(0.0086)	(0.0141)	(0.0477)	(0.0218)	(0.0123)	(0.0189)
social contacts (d)	-0.0127*	-0.0101	-0.0343***	-0.0138**	-0.0024	-0.0258	-0.0247	-0.0057	-0.0092**
	(0.0074)	(0.0063)	(0.0111)	(0.0067)	(0.0126)	(0.0157)	(0.0203)	(0.0092)	(0.0040)
leisure activities (d)	-0.0267***	-0.0127*	0.0097	-0.0053	-0.0413***	-0.0368**	-0.0923***	-0.0095	-0.0087**
	(0.0064)	(0.0072)	(0.0119)	(0.0066)	(0.0089)	(0.0155)	(0.0145)	(0.0063)	(0.0040)
urban area (d)	-0.0168***	-0.0210***	0.0109	-0.0140**		0.0343***	-0.0019		0.0038
	(0.0057)	(0.0058)	(0.0081)	(0.0057)		(0.0128)	(0.0156)		(0.0044)
secondary education (d)	-0.0657***	-0.0220*	-0.0211*	-0.0020	-0.0202**	0.0048	-0.0215	0.0183**	-0.0132**
	(0.0072)	(0.0120)	(0.0122)	(0.0078)	(0.0101)	(0.0198)	(0.0188)	(0.0076)	(0.0059)
tertiary education (d)	-0.1100***	-0.0348***	-0.0303**	0.0006	-0.0056	0.0033	-0.0318	0.0327***	-0.0094
	(0.0104)	(0.0097)	(0.0133)	(0.0088)	(0.0105)	(0.0226)	(0.0207)	(0.0081)	(0.0062)
houseowner (d)	0.0411***	0.0200	0.0543***	0.0038	-0.0579***	0.0168	-0.0344**	-0.0124*	-0.0168***
	(0.0070)	(0.0135)	(0.0126)	(0.0075)	(0.0081)	(0.0152)	(0.0146)	(0.0074)	(0.0040)
single (d)	0.0634***	0.0198***	0.0025	-0.0014	0.0806***	0.0602***	-0.0155	-0.0180**	0.0062
	(0.0064)	(0.0058)	(0.0089)	(0.0062)	(0.0091)	(0.0141)	(0.0152)	(0.0074)	(0.0041)
child(ren) in household (d)	0.0141*	0.0623***	0.2129***	0.0928***	0.3635***	0.1756***	0.3611***	0.1378***	0.0966***
	(0.0078)	(0.0061)	(0.0176)	(0.0065)	(0.0100)	(0.0127)	(0.0118)	(0.0066)	(0.0069)
three-person household (d)	0.1356***	0.0361***	0.0751***	0.0514***	0.0643***	0.1003***	0.0568***	0.0291***	0.0348***
	(0.0053)	(0.0046)	(0.0108)	(0.0048)	(0.0090)	(0.0135)	(0.0177)	(0.0068)	(0.0034)
at least four-person household (d)	0.1367***	0.0421***	0.1251***	0.0731***	0.1649***	0.1593***	0.1744***	0.0811***	0.0411***
	(0.0059)	(0.0056)	(0.0159)	(0.0066)	(0.0100)	(0.0140)	(0.0155)	(0.0078)	(0.0041)
age	-0.0373***	-0.0179***	-0.0128***	-0.0139***	-0.0345***	-0.0353***	-0.0330***	-0.0239***	-0.0146***
	(0.0014)	(0.0014)	(0.0027)	(0.0013)	(0.0019)	(0.0028)	(0.0025)	(0.0011)	(0.0010)
age^2	0.0005***	0.0002***	0.0002***	0.0002***	0.0005***	0.0005***	0.0005***	0.0003***	0.0002***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	0.6409***	0.1680***	-0.0320	0.1367***	0.3438**	0.6813***	0.9759***	1.2618***	0.1083***
	(0.0563)	(0.0434)	(0.1780)	(0.0298)	(0.1387)	(0.1717)	(0.1418)	(0.1417)	(0.0215)
gross household $income^2$	-0.0343***	-0.0097***	-0.0028	-0.0090***	-0.0209***	-0.0385***	-0.0528***	-0.0717***	-0.0075***
	(0.0029)	(0.0026)	(0.0082)	(0.0018)	(0.0067)	(0.0093)	(0.0073)	(0.0075)	(0.0012)
Observations	19089	4713	3642	4962	9007	4171	5189	7960	7663

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 3: Residual dependence estimation for total benefits and mixed households (participation equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
migrant dummy (d)	0.0179	0.0183	0.0408***	0.0419***	0.0393***	-0.0019	0.0061	0.0070	0.0293	0.0079*
	(0.0112)	(0.0122)	(0.0092)	(0.0100)	(0.0086)	(0.0071)	(0.0233)	(0.0072)	(0.0290)	(0.0044)
social contacts (d)	-0.0188**	-0.0193*	0.0104	-0.0047	-0.0230***	-0.0066	-0.0562***	-0.0199***	-0.0465*	-0.0047
	(0.0092)	(0.0104)	(0.0188)	(0.0099)	(0.0064)	(0.0057)	(0.0192)	(0.0060)	(0.0280)	(0.0035)
leisure activities (d)	-0.0095	-0.0040	-0.0244**	-0.0463***	-0.0157**	-0.0150***	-0.0711***	-0.0128***	-0.0630***	-0.0158***
	(0.0074)	(0.0093)	(0.0108)	(0.0064)	(0.0065)	(0.0048)	(0.0131)	(0.0045)	(0.0159)	(0.0044)
urban area (d)	0.0031	0.0056	-0.0094	-0.0195***	-0.0028	0.0024	-0.0187*	-0.0116***	-0.0482***	-0.0028
	(0.0066)	(0.0071)	(0.0095)	(0.0063)	(0.0055)	(0.0049)	(0.0106)	(0.0045)	(0.0142)	(0.0034)
secondary education (d)	-0.0192*	-0.0152	0.0110	-0.0495***	-0.0257**	-0.0290***	-0.0801***	-0.0133**	-0.0626***	-0.0000
	(0.0105)	(0.0103)	(0.0116)	(0.0096)	(0.0112)	(0.0080)	(0.0146)	(0.0060)	(0.0189)	(0.0045)
tertiary education (d)	-0.0294**	-0.0162	0.0015	-0.0746***	-0.0204*	-0.0590***	-0.0864***	-0.0256***	-0.0460**	-0.0102**
	(0.0134)	(0.0105)	(0.0141)	(0.0188)	(0.0115)	(0.0143)	(0.0136)	(0.0077)	(0.0212)	(0.0048)
houseowner (d)	0.0006	0.0117	-0.0116	0.0311***	0.0216***	0.0019	0.0481***	-0.0189***	0.1580***	-0.0129***
	(0.0069)	(0.0092)	(0.0102)	(0.0077)	(0.0064)	(0.0065)	(0.0151)	(0.0048)	(0.0187)	(0.0040)
single (d)	-0.0065	-0.0071	0.0306***	0.0286***	-0.0050	0.0060	0.2065***	0.0104**	0.2098***	0.0093**
	(0.0073)	(0.0083)	(0.0093)	(0.0066)	(0.0063)	(0.0052)	(0.0123)	(0.0050)	(0.0169)	(0.0041)
child(ren) in household (d)	0.1193***	0.1446***	0.1219***	0.0692***	0.1581***	0.0864***	-0.0234	0.0731***	-0.0355*	0.0817***
	(0.0083)	(0.0098)	(0.0109)	(0.0061)	(0.0070)	(0.0070)	(0.0143)	(0.0058)	(0.0204)	(0.0077)
three-person household (d)	0.0689***	0.0874***	0.0684***	0.0657***	0.1052***	0.0422***	0.1271***	0.0172***	0.1662***	0.0193***
	(0.0058)	(0.0077)	(0.0071)	(0.0054)	(0.0061)	(0.0054)	(0.0134)	(0.0052)	(0.0153)	(0.0048)
at least four-person household (d)	0.0935***	0.1211***	0.1541***	0.0615***	0.1425***	0.0699***	0.0979***	0.0792***	0.2218***	0.0358***
	(0.0077)	(0.0098)	(0.0136)	(0.0063)	(0.0066)	(0.0080)	(0.0150)	(0.0053)	(0.0161)	(0.0073)
age	-0.0172***	-0.0113***	-0.0134***	-0.0373***	-0.0195***	-0.0071***	-0.0534***	-0.0250***	-0.0385***	-0.0043***
	(0.0015)	(0.0016)	(0.0023)	(0.0014)	(0.0014)	(0.0011)	(0.0027)	(0.0011)	(0.0031)	(0.0010)
age^2	0.0002***	0.0002***	0.0002***	0.0005***	0.0003***	0.0001***	0.0007***	0.0003***	0.0006***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	0.2317***	0.5357***	0.0946***	0.2593*	0.4597***	0.0715***	0.8735***	0.1817***	1.3812***	0.1829***
	(0.0448)	(0.1202)	(0.0233)	(0.1342)	(0.0661)	(0.0161)	(0.1240)	(0.0249)	(0.2533)	(0.0557)
gross household $income^2$	-0.0143***	-0.0323***	-0.0068***	-0.0202***	-0.0292***	-0.0051***	-0.0501***	-0.0124***	-0.0737***	-0.0100***
	(0.0024)	(0.0061)	(0.0014)	(0.0074)	(0.0035)	(0.0010)	(0.0066)	(0.0013)	(0.0132)	(0.0029)
Observations	5153	4916	2880	9627	12079	4366	11064	9777	6375	4610

	IT	LT	LU	LV	NL	PT	SE	SI	UK
migrant dummy (d)	0.0072	0.0225***	0.0166***	0.0195***	-0.0161	-0.0468*	-0.0058	0.0034	-0.0030
	(0.0114)	(0.0071)	(0.0063)	(0.0064)	(0.0200)	(0.0281)	(0.0250)	(0.0083)	(0.0069)
social contacts (d)	-0.0116	-0.0077	-0.0105	-0.0143*	0.0075	-0.0310**	-0.0216	-0.0058	-0.0095***
	(0.0073)	(0.0067)	(0.0127)	(0.0074)	(0.0135)	(0.0153)	(0.0205)	(0.0090)	(0.0034)
leisure activities (d)	-0.0248***	-0.0131*	-0.0019	-0.0039	-0.0376***	-0.0342**	-0.0795***	-0.0121**	-0.0059*
	(0.0062)	(0.0074)	(0.0095)	(0.0072)	(0.0093)	(0.0151)	(0.0148)	(0.0060)	(0.0035)
urban area (d)	-0.0145***	-0.0203***	0.0021	-0.0167***		0.0384***	-0.0019		0.0025
	(0.0055)	(0.0061)	(0.0064)	(0.0063)		(0.0126)	(0.0159)		(0.0037)
secondary education (d)	-0.0684***	-0.0283**	-0.0150	-0.0008	-0.0206**	-0.0001	-0.0177	0.0200***	-0.0144***
	(0.0071)	(0.0130)	(0.0092)	(0.0087)	(0.0104)	(0.0195)	(0.0187)	(0.0076)	(0.0052)
tertiary education (d)	-0.1100***	-0.0428***	-0.0139	-0.0007	-0.0076	0.0034	-0.0241	0.0333***	-0.0054
	(0.0103)	(0.0104)	(0.0114)	(0.0101)	(0.0108)	(0.0220)	(0.0204)	(0.0078)	(0.0052)
houseowner (d)	0.0361***	0.0230	0.0328**	0.0004	-0.0558***	0.0198	-0.0225	-0.0143**	-0.0151***
	(0.0068)	(0.0143)	(0.0130)	(0.0084)	(0.0084)	(0.0153)	(0.0150)	(0.0071)	(0.0034)
single (d)	0.0628***	0.0245***	0.0182***	0.0149**	0.0834***	0.0546***	-0.0076	-0.0199***	0.0023
	(0.0062)	(0.0060)	(0.0069)	(0.0069)	(0.0092)	(0.0140)	(0.0152)	(0.0072)	(0.0035)
child(ren) in household (d)	0.0121	0.0689***	0.1117***	0.1185***	0.3803***	0.1734***	0.3618***	0.1391***	0.0937***
	(0.0075)	(0.0062)	(0.0132)	(0.0073)	(0.0099)	(0.0126)	(0.0116)	(0.0068)	(0.0069)
three-person household (d)	0.1295***	0.0364***	0.0499***	0.0574***	0.0693***	0.0990***	0.0626***	0.0241***	0.0290***
	(0.0052)	(0.0049)	(0.0109)	(0.0059)	(0.0092)	(0.0135)	(0.0174)	(0.0068)	(0.0032)
at least four-person household (d)	0.1305***	0.0438***	0.0657***	0.0889***	0.1700***	0.1534***	0.1800***	0.0715***	0.0341***
	(0.0057)	(0.0059)	(0.0135)	(0.0076)	(0.0101)	(0.0141)	(0.0152)	(0.0075)	(0.0038)
age	-0.0370***	-0.0179***	-0.0158***	-0.0137***	-0.0357***	-0.0354***	-0.0332***	-0.0234***	-0.0128***
	(0.0014)	(0.0015)	(0.0029)	(0.0015)	(0.0019)	(0.0028)	(0.0025)	(0.0011)	(0.0011)
age^2	0.0005***	0.0002***	0.0002***	0.0002***	0.0005***	0.0005***	0.0005***	0.0003***	0.0002***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	0.6104***	0.1899***	0.0999	0.1477***	0.2894**	0.8143***	0.8636***	1.2710***	0.0967***
	(0.0540)	(0.0461)	(0.2519)	(0.0323)	(0.1211)	(0.1643)	(0.1666)	(0.1363)	(0.0230)
gross household $income^2$	-0.0327***	-0.0110***	-0.0075	-0.0097***	-0.0184***	-0.0456***	-0.0469***	-0.0720***	-0.0066***
	(0.0028)	(0.0027)	(0.0117)	(0.0019)	(0.0059)	(0.0089)	(0.0085)	(0.0072)	(0.0013)
Observations	19142	4891	2344	4991	9187	4303	5091	8458	7575

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

1.1.2 Level

Tabelle: 4: Residual dependence estimation for total benefits and migrant households (level equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
Log (total benefits)										
migrant dummy	0.1925***	0.1695***	0.1200*	0.0944	0.1489***	0.1933**	0.1038	0.1435***	-0.1419	-0.0848**
	(0.0640)	(0.0395)	(0.0613)	(0.0732)	(0.0279)	(0.0785)	(0.0697)	(0.0477)	(0.0922)	(0.0421)
age	-0.0181**	-0.0135**	-0.0270**	-0.0142*	-0.0498***	-0.0224*	0.0504***	0.0179**	0.0177	-0.0095*
	(0.0092)	(0.0060)	(0.0112)	(0.0078)	(0.0044)	(0.0123)	(0.0099)	(0.0070)	(0.0110)	(0.0058)
age^2	0.0002*	0.0002***	0.0004***	0.0001	0.0006***	0.0003**	-0.0005***	-0.0000	-0.0004***	0.0002***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0000)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
gross household income	2.3743***	2.5489***	-0.3097	3.0031***	3.2388***	2.4136***	-0.7124	-1.3296***	-1.2556	5.0104***
	(0.6293)	(0.5106)	(1.0061)	(0.7935)	(0.3029)	(0.7443)	(0.4732)	(0.4732)	(0.8255)	(0.3521)
gross household income^2	-0.0934***	-0.1243***	0.0301	-0.1530***	-0.1515***	-0.1335***	0.0667**	0.0892***	0.0977**	-0.2499***
	(0.0318)	(0.0262)	(0.0515)	(0.0448)	(0.0156)	(0.0435)	(0.0260)	(0.0237)	(0.0441)	(0.0181)
urban area	0.0122	0.0122	-0.0191	0.0799**	0.0138	-0.1291*	0.0591	0.0581*	0.1542***	0.0914***
	(0.0526)	(0.0295)	(0.0482)	(0.0399)	(0.0201)	(0.0715)	(0.0389)	(0.0345)	(0.0558)	(0.0311)
secondary education	0.0578	0.0073	-0.0755	0.0931*	-0.0740**	0.0201	0.2444***	-0.0489	0.1656**	-0.0089
	(0.0648)	(0.0373)	(0.0617)	(0.0546)	(0.0344)	(0.0855)	(0.0565)	(0.0412)	(0.0707)	(0.0417)
tertiary education	0.0300	0.0103	-0.2636***	0.1974***	-0.0880**	-0.0561	0.3042***	-0.1226**	0.2604***	-0.0448
	(0.0760)	(0.0396)	(0.0745)	(0.0752)	(0.0357)	(0.1008)	(0.0558)	(0.0509)	(0.0802)	(0.0390)
houseowner	0.0833	0.0967***	-0.0416	0.0401	0.0425*	0.2115**	0.0786	0.1444***	-0.0265	-0.1263***
	(0.0525)	(0.0372)	(0.0573)	(0.0445)	(0.0225)	(0.0919)	(0.0543)	(0.0400)	(0.0814)	(0.0393)
single	-0.0026	-0.0221	0.3646***	-0.2100***	-0.0829***	0.0289	-0.1990***	-0.1828***	-0.3132***	0.0336
	(0.0534)	(0.0327)	(0.0610)	(0.0415)	(0.0232)	(0.0681)	(0.0561)	(0.0370)	(0.0703)	(0.0342)
child(ren) in household	-0.8884***	-0.7366***	-0.3606***	-0.5427***	-0.3872***	-0.4557***	-0.4695***	-0.5355***	-0.6482***	-0.2531***
	(0.0923)	(0.0569)	(0.0883)	(0.0651)	(0.0397)	(0.1106)	(0.0575)	(0.0636)	(0.0894)	(0.0611)
three-person household	-0.6898***	-0.7159***	-0.7064***	-0.2191***	-0.9257***	-0.4031***	-0.0201	-0.0281	-0.3010***	-0.0111
	(0.0948)	(0.0623)	(0.1104)	(0.0641)	(0.0425)	(0.1213)	(0.0616)	(0.0588)	(0.0935)	(0.0558)
at least four-person household	-0.4062***	-0.4308***	-0.6845***	-0.2967***	-0.6855***	-0.2696**	0.1818***	-0.3494***	-0.5332***	0.0163
	(0.1051)	(0.0675)	(0.1375)	(0.0691)	(0.0476)	(0.1344)	(0.0630)	(0.0701)	(0.1118)	(0.0607)
Total benefits dummy										
migrant dummy	-0.2404***	-0.2053***	-0.0248	0.1035	0.1923***	0.0841	-0.1429***	0.0070	-0.0040	-0.0563
	(0.0676)	(0.0684)	(0.0813)	(0.0746)	(0.0585)	(0.0776)	(0.0428)	(0.0533)	(0.0569)	(0.0846)
age	-0.1560***	-0.0822***	-0.1042***	-0.2247***	-0.1296***	-0.1091***	-0.1363***	-0.2126***	-0.1142***	-0.0794***
	(0.0128)	(0.0132)	(0.0168)	(0.0110)	(0.0091)	(0.0150)	(0.0064)	(0.0106)	(0.0089)	(0.0138)
age^2	0.0022***	0.0013***	0.0015***	0.0029***	0.0019***	0.0016***	0.0017***	0.0027***	0.0016***	0.0012***
	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
gross household income	1.8761***	4.0060***	0.8374**	1.4550**	2.9297***	0.9553***	2.1510***	1.5335***	3.8378***	3.6974***
	(0.3958)	(0.5703)	(0.3383)	(0.5997)	(0.3311)	(0.2902)	(0.2581)	(0.1842)	(0.4341)	(0.4926)
gross household income^2	-0.1154***	-0.2412***	-0.0579***	-0.1151***	-0.1865***	-0.0675***	-0.1240***	-0.1066***	-0.2056***	-0.2028***
	(0.0202)	(0.0290)	(0.0179)	(0.0331)	(0.0170)	(0.0174)	(0.0140)	(0.0095)	(0.0229)	(0.0248)
social contacts	-0.1226	-0.1211	0.1209	-0.0190	-0.1610***	-0.0973	-0.1601***	-0.1852***	-0.1549**	-0.0993
	(0.0856)	(0.0789)	(0.1141)	(0.0611)	(0.0414)	(0.0853)	(0.0476)	(0.0638)	(0.0785)	(0.0721)
leisure activities	-0.0895	-0.0085	-0.2201***	-0.2728***	-0.0902**	-0.2395***	-0.1701***	-0.1075***	-0.1552***	-0.3677***
	(0.0602)	(0.0642)	(0.0756)	(0.0373)	(0.0417)	(0.0648)	(0.0334)	(0.0395)	(0.0434)	(0.0943)
urban area	0.0025	0.0128	-0.0722	-0.1251***	-0.0175	-0.0321	-0.0515*	-0.0961***	-0.1370***	-0.0749
	(0.0544)	(0.0528)	(0.0686)	(0.0359)	(0.0353)	(0.0667)	(0.0263)	(0.0370)	(0.0382)	(0.0640)
secondary education	-0.2057**	-0.1379**	0.0813	-0.3413***	-0.1423**	-0.3311***	-0.1824***	-0.1081**	-0.1616***	-0.0085
	(0.0809)	(0.0683)	(0.0866)	(0.0715)	(0.0674)	(0.1062)	(0.0348)	(0.0488)	(0.0488)	(0.0892)
tertiary education	-0.2938***	-0.1940***	0.0104	-0.3973***	-0.1222*	-0.5193***	-0.2016***	-0.2077***	-0.1328**	-0.1889**
	(0.0885)	(0.0699)	(0.0998)	(0.0823)	(0.0694)	(0.1134)	(0.0336)	(0.0543)	(0.0547)	(0.0784)
houseowner	0.0536	0.2160***	0.0845	0.1819***	0.1466***	0.0261	0.1498***	-0.1870***	0.4408***	-0.1712**
	(0.0569)	(0.0614)	(0.0763)	(0.0406)	(0.0394)	(0.0916)	(0.0354)	(0.0428)	(0.0450)	(0.0841)
single	-0.0578	-0.0173	0.2057**	0.1782***	-0.0368	0.1207*	0.5049***	0.0896**	0.5921***	0.2118***
	(0.0589)	(0.0586)	(0.0815)	(0.0406)	(0.0392)	(0.0697)	(0.0319)	(0.0417)	(0.0501)	(0.0692)
child(ren) in household	1.6087***	1.5178***	0.9595***	0.4947***	1.7639***	1.6013***	-0.0335	0.8061***	-0.0728	2.3881***
	(0.1082)	(0.1080)	(0.1024)	(0.0484)	(0.0920)	(0.1481)	(0.0350)	(0.0570)	(0.0524)	(0.2498)
three-person household	0.9449***	1.0490***	0.8065***	0.5027***	1.2094***	0.8281***	0.3397***	0.1678***	0.5423***	0.5999***
	(0.0764)	(0.0786)	(0.0903)	(0.0475)	(0.0588)	(0.0793)	(0.0360)	(0.0522)	(0.0522)	(0.0871)
at least four-person household	1.3356***	1.4416***	1.4112***	0.4483***	2.0731***	1.2578***	0.2431***	1.0301***	0.7464***	1.1385***
	(0.1087)	(0.1067)	(0.0978)	(0.0536)	(0.1284)	(0.1019)	(0.0385)	(0.0689)	(0.0568)	(0.1207)
mills										
lambda	-1.6052***	-0.9816***	-0.0636	-1.6407***	-0.9921***	-2.0363***	-1.7302***	-1.5783***	-1.8013***	-0.5854***
	(0.1402)	(0.0945)	(0.2452)	(0.1131)	(0.0526)	(0.2788)	(0.1562)	(0.1110)	(0.1851)	(0.1163)
Observations	5799	5454	3087	9867	12765	4872	11752	10503	6823	4993

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 5: Residual dependence estimation for total benefits and migrant households (level equation)

	IT	LT	LU	LV	NL	PT	SE	SI	UK
Log (total benefits)									
migrant dummy	-0.0645	0.0344	-0.0376	0.0650*	0.0185	0.2487*	0.0647	0.0046	-0.0389
	(0.0723)	(0.1160)	(0.0365)	(0.0374)	(0.0423)	(0.1355)	(0.0562)	(0.0414)	(0.0395)
age	0.0249***	-0.0067	-0.0515***	-0.0257***	0.0456***	0.0157	0.0256***	0.0225***	-0.0535***
	(0.0092)	(0.0174)	(0.0070)	(0.0066)	(0.0046)	(0.0171)	(0.0077)	(0.0062)	(0.0053)
age^2	-0.0003***	0.0001	0.0006***	0.0003***	-0.0002***	-0.0003	-0.0002*	0.0000	0.0005***
	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0000)
gross household income	-1.3932***	0.2482	0.8675	1.1195***	-0.5461	-3.5681***	0.3524	-1.2702	3.3832***
	(0.4335)	(0.7073)	(0.6934)	(0.2354)	(0.4399)	(0.9266)	(0.5299)	(0.8832)	(0.2369)
gross household income^2	0.1042***	-0.0087	-0.0344	-0.0524***	0.0305	0.2182***	-0.0124	0.0703	-0.1725***
	(0.0227)	(0.0423)	(0.0329)	(0.0143)	(0.0214)	(0.0511)	(0.0271)	(0.0475)	(0.0124)
urban area	0.1149***	0.1967**	-0.0265	-0.0251		-0.0318	-0.0381		0.0742**
	(0.0407)	(0.0804)	(0.0319)	(0.0338)		(0.0749)	(0.0534)		(0.0289)
secondary education	0.1232**	-0.0225	0.0482	-0.0724*	0.0969***	0.0505	0.0269	0.0470	0.1106***
	(0.0505)	(0.1176)	(0.0381)	(0.0417)	(0.0300)	(0.1143)	(0.0546)	(0.0394)	(0.0326)
tertiary education	0.2979***	0.0893	0.0624	-0.1034**	0.0516	0.1527	0.0356	0.2002***	0.1370***
	(0.0714)	(0.1108)	(0.0454)	(0.0487)	(0.0323)	(0.1261)	(0.0614)	(0.0569)	(0.0341)
houseowner	0.0414	-0.0102	0.0981**	0.1387***	0.0119	-0.2221***	-0.0045	0.0259	-0.3811***
	(0.0491)	(0.1698)	(0.0393)	(0.0467)	(0.0299)	(0.0833)	(0.0495)	(0.0437)	(0.0301)
single	0.0542	-0.0841	0.0002	0.0391	0.2122***	0.1685**	-0.0846*	-0.0015	-0.0371
	(0.0459)	(0.0868)	(0.0357)	(0.0359)	(0.0271)	(0.0830)	(0.0470)	(0.0395)	(0.0277)
child(ren) in household	-1.0941***	-0.9321***	-0.7066***	-0.7439***	-0.7607***	-1.6620***	-0.1397	0.0494	-0.6321***
	(0.0591)	(0.1519)	(0.0590)	(0.0629)	(0.0640)	(0.1436)	(0.1199)	(0.0564)	(0.0607)
three-person household	-0.4888***	-0.2586**	-0.4331***	-0.2475***	-0.8267***	-0.6769***	-0.8861***	-0.4223***	-0.4689***
	(0.0785)	(0.1236)	(0.0671)	(0.0592)	(0.0514)	(0.1185)	(0.0805)	(0.0501)	(0.0456)
at least four-person household	-0.4754***	0.0909	0.1162*	0.2156***	-0.5049***	-0.6825***	-1.0737***	-0.4656***	-0.4500***
	(0.0840)	(0.1420)	(0.0690)	(0.0696)	(0.0530)	(0.1503)	(0.0891)	(0.0528)	(0.0499)
Total benefits dummy									
migrant dummy	-0.0544	0.1597*	-0.0850	0.0816	0.0769	-0.2952***	0.0439	-0.0004	-0.3652***
	(0.0363)	(0.0822)	(0.0704)	(0.0597)	(0.0714)	(0.0769)	(0.0650)	(0.0487)	(0.0662)
age	-0.1547***	-0.1825***	-0.1246***	-0.1425***	-0.1852***	-0.1357***	-0.1232***	-0.1599***	-0.1945***
	(0.0063)	(0.0171)	(0.0174)	(0.0126)	(0.0093)	(0.0115)	(0.0096)	(0.0091)	(0.0136)
age^2	0.0020***	0.0023***	0.0019***	0.0020***	0.0027***	0.0018***	0.0018***	0.0022***	0.0028***
	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
gross household income	2.6749***	1.9032***	0.3068	1.5187***	1.6503***	2.6973***	3.2202***	9.0948***	1.4742***
	(0.1754)	(0.3118)	(1.2450)	(0.2290)	(0.6031)	(0.4742)	(0.4325)	(0.7599)	(0.2321)
gross household income^2	-0.1433***	-0.1103***	-0.0489	-0.0990***	-0.1036***	-0.1522***	-0.1763***	-0.5141***	-0.1005***
	(0.0092)	(0.0190)	(0.0578)	(0.0141)	(0.0292)	(0.0258)	(0.0223)	(0.0396)	(0.0124)
social contacts	-0.0455	-0.0893	-0.2627**	-0.1601**	-0.0006	-0.1172*	-0.1068	-0.0096	-0.1206**
	(0.0310)	(0.0661)	(0.1195)	(0.0687)	(0.0647)	(0.0610)	(0.0774)	(0.0614)	(0.0571)
leisure activities	-0.1154***	-0.1191*	0.0240	-0.0384	-0.2256***	-0.1304**	-0.3289***	-0.0893**	-0.1064**
	(0.0256)	(0.0632)	(0.0900)	(0.0616)	(0.0527)	(0.0543)	(0.0620)	(0.0402)	(0.0527)
urban area	-0.0715***	-0.1909***	0.0539	-0.1249**		0.1347***	-0.0241		0.0214
	(0.0228)	(0.0553)	(0.0648)	(0.0536)		(0.0490)	(0.0574)		(0.0541)
secondary education	-0.2614***	-0.2432**	-0.1480*	-0.0109	-0.1106**	0.0001	-0.0800	0.1277***	-0.1911***
	(0.0265)	(0.1057)	(0.0823)	(0.0771)	(0.0507)	(0.0713)	(0.0656)	(0.0495)	(0.0695)
tertiary education	-0.3963***	-0.4065***	-0.2356**	-0.0099	-0.0407	0.0070	-0.1055	0.2637***	-0.1383*
	(0.0326)	(0.1035)	(0.0917)	(0.0884)	(0.0540)	(0.0776)	(0.0707)	(0.0664)	(0.0730)
houseowner	0.1706***	0.1855*	0.4329***	0.0410	-0.3211***	0.0942*	-0.1186**	-0.0727	-0.1732***
	(0.0262)	(0.1106)	(0.0777)	(0.0730)	(0.0485)	(0.0550)	(0.0544)	(0.0536)	(0.0580)
single	0.2551***	0.2239***	0.0750	0.0540	0.4482***	0.2053***	-0.0500	-0.1265***	0.0859
	(0.0269)	(0.0635)	(0.0705)	(0.0605)	(0.0493)	(0.0565)	(0.0561)	(0.0489)	(0.0527)
child(ren) in household	0.0531*	0.9767***	1.9627***	1.5450***	2.9687***	0.7865***	2.1411***	1.2908***	2.1770***
	(0.0309)	(0.0841)	(0.1403)	(0.1101)	(0.0932)	(0.0646)	(0.0896)	(0.0553)	(0.0844)
three-person household	0.6935***	0.4559***	1.1941***	0.7712***	0.4266***	0.4269***	0.2358***	0.1951***	0.7180***
	(0.0307)	(0.0700)	(0.0940)	(0.0682)	(0.0658)	(0.0616)	(0.0726)	(0.0514)	(0.0646)
at least four-person household	0.6981***	0.5477***	1.5878***	1.3088***	1.2363***	0.7000***	0.8449***	0.5407***	0.8674***
	(0.0340)	(0.0834)	(0.1302)	(0.0996)	(0.0787)	(0.0717)	(0.0883)	(0.0533)	(0.0787)
mills									
lambda	-2.5374***	-2.5413***	-0.6574***	-1.0151***	-0.6857***	-2.0924***	-1.3402***	-1.4187***	-0.6082***
	(0.1696)	(0.3569)	(0.0916)	(0.1258)	(0.0555)	(0.3265)	(0.1235)	(0.1135)	(0.0680)
Observations	19983	5106	4204	5716	9472	4424	5582	9001	8128

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 6: Residual dependence estimation for total benefits and exclusively migrant households (level equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
Log (total benefits)										
migrant dummy	0.2140**	0.2146***	0.0179	0.0343	-0.0057	-0.0331	0.0563	0.1595**	-0.2242*	-0.1783***
	(0.0832)	(0.0553)	(0.1240)	(0.1185)	(0.0389)	(0.1023)	(0.0968)	(0.0675)	(0.1162)	(0.0598)
age	-0.0192**	-0.0116*	-0.0020	-0.0162**	-0.0521***	-0.0243*	0.0530***	0.0232***	0.0176	-0.0061
	(0.0094)	(0.0062)	(0.0122)	(0.0079)	(0.0043)	(0.0124)	(0.0103)	(0.0074)	(0.0108)	(0.0060)
age^2	0.0002*	0.0002***	0.0001	0.0001	0.0006***	0.0004***	-0.0006***	-0.0001	-0.0003***	0.0001**
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0000)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
gross household income	2.1899***	2.7090***	-0.7405	3.1518***	3.2932***	2.3104***	-0.7143	-1.4538***	-1.0819	5.0057***
	(0.6408)	(0.5693)	(1.0568)	(0.8084)	(0.2885)	(0.7257)	(0.4898)	(0.5011)	(0.8168)	(0.3731)
gross household income^2	-0.0833**	-0.1325***	0.0588	-0.1620***	-0.1554***	-0.1292***	0.0668**	0.0969***	0.0890**	-0.2488***
	(0.0325)	(0.0292)	(0.0541)	(0.0456)	(0.0149)	(0.0425)	(0.0269)	(0.0251)	(0.0437)	(0.0192)
urban area	0.0018	0.0190	0.0169	0.0871**	0.0234	-0.1501**	0.0525	0.0575	0.1677***	0.1115***
	(0.0552)	(0.0308)	(0.0536)	(0.0405)	(0.0197)	(0.0742)	(0.0403)	(0.0371)	(0.0551)	(0.0321)
secondary education	0.0833	-0.0007	-0.0805	0.0805	-0.0779**	0.0184	0.2430***	-0.0447	0.1649**	-0.0150
	(0.0670)	(0.0387)	(0.0697)	(0.0557)	(0.0334)	(0.0856)	(0.0584)	(0.0443)	(0.0701)	(0.0429)
tertiary education	0.0441	0.0131	-0.1600*	0.1828**	-0.1016***	-0.0599	0.3209***	-0.1090**	0.2441***	-0.0266
	(0.0788)	(0.0414)	(0.0859)	(0.0767)	(0.0348)	(0.1008)	(0.0586)	(0.0550)	(0.0801)	(0.0405)
houseowner	0.0924*	0.0992**	-0.0016	0.0445	0.0315	0.1997**	0.0761	0.1449***	-0.0165	-0.1424***
	(0.0548)	(0.0389)	(0.0642)	(0.0453)	(0.0220)	(0.0904)	(0.0570)	(0.0430)	(0.0806)	(0.0414)
single	-0.0182	-0.0377	0.3420***	-0.2234***	-0.0947***	-0.0165	-0.1992***	-0.1981***	-0.3089***	0.0166
	(0.0555)	(0.0341)	(0.0679)	(0.0424)	(0.0224)	(0.0694)	(0.0573)	(0.0396)	(0.0692)	(0.0351)
child(ren) in household	-0.8765***	-0.7368***	-0.4738***	-0.5310***	-0.3467***	-0.4036***	-0.4594***	-0.5487***	-0.6498***	-0.2323***
	(0.0947)	(0.0607)	(0.0970)	(0.0663)	(0.0384)	(0.1095)	(0.0598)	(0.0700)	(0.0891)	(0.0649)
three-person household	-0.7058***	-0.6603***	-0.9965***	-0.2186***	-0.9019***	-0.4047***	-0.0284	0.0077	-0.2819***	-0.0320
	(0.0982)	(0.0636)	(0.1157)	(0.0653)	(0.0415)	(0.1238)	(0.0642)	(0.0642)	(0.0929)	(0.0572)
at least four-person household	-0.4471***	-0.4089***	-1.0975***	-0.3317***	-0.6413***	-0.2942**	0.1754***	-0.3446***	-0.5227***	-0.0325
	(0.1087)	(0.0696)	(0.1373)	(0.0705)	(0.0459)	(0.1394)	(0.0652)	(0.0760)	(0.1109)	(0.0627)
Total benefits dummy										
migrant dummy	-0.5295***	-0.4759***	-0.6857***	-0.3705***	0.0208	0.1643	-0.2773***	-0.0869	-0.0548	-0.3398***
	(0.0844)	(0.0872)	(0.1197)	(0.1332)	(0.0892)	(0.1125)	(0.0568)	(0.0794)	(0.0717)	(0.1118)
age	-0.1546***	-0.0749***	-0.1167***	-0.2270***	-0.1316***	-0.1223***	-0.1389***	-0.2119***	-0.1136***	-0.0842***
	(0.0134)	(0.0134)	(0.0189)	(0.0112)	(0.0093)	(0.0164)	(0.0066)	(0.0110)	(0.0091)	(0.0144)
age^2	0.0022***	0.0013***	0.0018***	0.0029***	0.0019***	0.0017***	0.0018***	0.0027***	0.0016***	0.0013***
	(0.0002)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
gross household income	1.9195***	4.5655***	0.9483	1.3806**	2.9962***	0.9264***	2.1151***	1.5603***	3.9145***	3.6971***
	(0.3875)	(0.6568)	(0.6252)	(0.6091)	(0.3351)	(0.2876)	(0.2662)	(0.1872)	(0.4413)	(0.5065)
gross household income^2	-0.1200***	-0.2711***	-0.0611*	-0.1103***	-0.1910***	-0.0654***	-0.1221***	-0.1084***	-0.2093***	-0.2040***
	(0.0198)	(0.0333)	(0.0322)	(0.0337)	(0.0172)	(0.0174)	(0.0144)	(0.0097)	(0.0232)	(0.0256)
social contacts	-0.0999	-0.1398*	0.1824	-0.0227	-0.1703***	-0.1080	-0.1723***	-0.1922***	-0.1459*	-0.1173
	(0.0887)	(0.0827)	(0.1285)	(0.0622)	(0.0429)	(0.0908)	(0.0489)	(0.0666)	(0.0802)	(0.0746)
leisure activities	-0.0882	-0.0429	-0.1976**	-0.2723***	-0.0886**	-0.2457***	-0.1669***	-0.1097***	-0.1655***	-0.3494***
	(0.0627)	(0.0668)	(0.0838)	(0.0381)	(0.0431)	(0.0704)	(0.0342)	(0.0412)	(0.0446)	(0.0979)
urban area	0.0265	0.0465	-0.0818	-0.1218***	-0.0211	0.0083	-0.0485*	-0.0963**	-0.1413***	-0.0545
	(0.0572)	(0.0553)	(0.0751)	(0.0366)	(0.0366)	(0.0732)	(0.0270)	(0.0386)	(0.0392)	(0.0665)
secondary education	-0.2834***	-0.1196*	0.1118	-0.3596***	-0.1326*	-0.3484***	-0.1691***	-0.1252**	-0.1559***	0.0354
	(0.0847)	(0.0712)	(0.0954)	(0.0734)	(0.0698)	(0.1132)	(0.0358)	(0.0509)	(0.0502)	(0.0919)
tertiary education	-0.3325***	-0.1997***	0.0964	-0.4080***	-0.1134	-0.4978***	-0.2070***	-0.2121***	-0.1316**	-0.1584*
	(0.0928)	(0.0730)	(0.1117)	(0.0844)	(0.0720)	(0.1217)	(0.0346)	(0.0571)	(0.0564)	(0.0816)
houseowner	-0.0177	0.2298***	0.0499	0.1712***	0.1409***	0.0515	0.1282***	-0.1972***	0.4285***	-0.2627***
	(0.0598)	(0.0643)	(0.0860)	(0.0416)	(0.0409)	(0.0951)	(0.0373)	(0.0446)	(0.0470)	(0.0903)
single	-0.0602	-0.0001	0.2660***	0.1861***	-0.0572	0.1163	0.4952***	0.0762*	0.6071***	0.2411***
	(0.0621)	(0.0616)	(0.0920)	(0.0415)	(0.0406)	(0.0758)	(0.0329)	(0.0435)	(0.0515)	(0.0716)
child(ren) in household	1.6639***	1.5757***	1.1173***	0.4970***	1.8316***	1.5312***	-0.0250	0.8366***	-0.0642	2.3885***
	(0.1157)	(0.1161)	(0.1160)	(0.0493)	(0.0970)	(0.1533)	(0.0360)	(0.0601)	(0.0541)	(0.2560)
three-person household	1.0000***	1.0108***	0.8399***	0.5031***	1.2209***	0.8718***	0.3517***	0.1593***	0.5583***	0.5606***
	(0.0805)	(0.0831)	(0.1023)	(0.0485)	(0.0617)	(0.0869)	(0.0369)	(0.0553)	(0.0535)	(0.0912)
at least four-person household	1.4053***	1.4358***	1.4591***	0.4568***	2.0444***	1.4590***	0.2411***	0.9970***	0.7627***	1.0539***
	(0.1144)	(0.1170)	(0.1083)	(0.0549)	(0.1302)	(0.1209)	(0.0394)	(0.0733)	(0.0584)	(0.1264)
mills										
lambda	-1.6038***	-0.9653***	-1.0127***	-1.6326***	-0.9242***	-1.9337***	-1.7574***	-1.6283***	-1.7425***	-0.5837***
	(0.1399)	(0.0958)	(0.2164)	(0.1130)	(0.0500)	(0.2684)	(0.1607)	(0.1176)	(0.1825)	(0.1209)
Observations	5408	4984	2631	9493	11760	4305	11231	9751	6553	4587

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 7: Residual dependence estimation for total benefits and exclusively migrant households (level equation)

	IT	LT	LU	LV	NL	PT	SE	SI	UK
Log (total benefits)									
migrant dummy	-0.1722	-0.0769	-0.1118***	-0.0303	0.0813	0.4040*	0.1242*	-0.0515	-0.0164
	(0.1047)	(0.1828)	(0.0414)	(0.0492)	(0.0660)	(0.2421)	(0.0709)	(0.0652)	(0.0527)
age	0.0224**	-0.0092	-0.0424***	-0.0258***	0.0471***	0.0111	0.0254***	0.0195***	-0.0515***
	(0.0093)	(0.0175)	(0.0074)	(0.0068)	(0.0047)	(0.0170)	(0.0076)	(0.0064)	(0.0054)
age^2	-0.0003***	0.0001	0.0006***	0.0004***	-0.0002***	-0.0002	-0.0001*	0.0000	0.0005***
	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0000)
gross household income	-1.1982***	0.3571	1.1192	1.2044***	-0.6197	-3.6617***	-0.2527	-0.9939	3.4332***
	(0.4412)	(0.6898)	(0.7154)	(0.2330)	(0.4548)	(0.9328)	(0.5920)	(0.8893)	(0.2389)
gross household income^2	0.0943***	-0.0147	-0.0480	-0.0573***	0.0344	0.2242***	0.0186	0.0545	-0.1747***
	(0.0231)	(0.0413)	(0.0339)	(0.0142)	(0.0221)	(0.0515)	(0.0300)	(0.0479)	(0.0126)
urban area	0.1158***	0.1880**	0.0057	-0.0282		-0.0277	-0.0737		0.0705**
	(0.0413)	(0.0813)	(0.0342)	(0.0354)		(0.0760)	(0.0540)		(0.0295)
secondary education	0.1214**	-0.0125	0.0359	-0.0510	0.0950***	0.0622	0.0262	0.0345	0.1148***
	(0.0514)	(0.1182)	(0.0407)	(0.0430)	(0.0306)	(0.1184)	(0.0547)	(0.0410)	(0.0331)
tertiary education	0.3024***	0.0847	0.0887*	-0.1003**	0.0516	0.1283	0.0249	0.2158***	0.1565***
	(0.0730)	(0.1103)	(0.0483)	(0.0505)	(0.0330)	(0.1306)	(0.0619)	(0.0592)	(0.0348)
houseowner	0.0189	0.0155	0.0723*	0.1475***	0.0202	-0.2121**	0.0088	0.0419	-0.3812***
	(0.0504)	(0.1722)	(0.0419)	(0.0478)	(0.0306)	(0.0840)	(0.0497)	(0.0450)	(0.0308)
single	0.0447	-0.1075	-0.0219	0.0110	0.2267***	0.1157	-0.0801*	-0.0230	-0.0410
	(0.0467)	(0.0871)	(0.0381)	(0.0381)	(0.0278)	(0.0849)	(0.0471)	(0.0407)	(0.0281)
child(ren) in household	-1.1145***	-0.9222***	-0.6132***	-0.6874***	-0.7516***	-1.6583***	-0.1007	0.0701	-0.6558***
	(0.0608)	(0.1540)	(0.0655)	(0.0659)	(0.0648)	(0.1453)	(0.1181)	(0.0578)	(0.0623)
three-person household	-0.4958***	-0.2753**	-0.3994***	-0.2572***	-0.8013***	-0.6718***	-0.8135***	-0.4207***	-0.4498***
	(0.0797)	(0.1267)	(0.0682)	(0.0636)	(0.0531)	(0.1196)	(0.0813)	(0.0523)	(0.0469)
at least four-person household	-0.4933***	0.0666	0.1253*	0.2032***	-0.4857***	-0.7212***	-1.0303***	-0.4881***	-0.4471***
	(0.0852)	(0.1460)	(0.0707)	(0.0727)	(0.0545)	(0.1524)	(0.0893)	(0.0554)	(0.0516)
Total benefits dummy									
migrant dummy	-0.1342***	-0.0684	-0.2305***	-0.0580	0.3128***	-0.5710***	0.0888	-0.0476	-0.6984***
	(0.0505)	(0.1420)	(0.0822)	(0.0841)	(0.1120)	(0.1312)	(0.0865)	(0.0780)	(0.0882)
age	-0.1566***	-0.1885***	-0.1124***	-0.1497***	-0.1857***	-0.1354***	-0.1257***	-0.1655***	-0.1975***
	(0.0065)	(0.0179)	(0.0188)	(0.0135)	(0.0096)	(0.0119)	(0.0100)	(0.0098)	(0.0141)
age^2	0.0020***	0.0024***	0.0018***	0.0021***	0.0027***	0.0018***	0.0018***	0.0022***	0.0028***
	(0.0001)	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
gross household income	2.6921***	1.7647***	-0.2816	1.4695***	1.8530***	2.6113***	3.7142***	8.7397***	1.4620***
	(0.1820)	(0.3221)	(1.3515)	(0.2305)	(0.6529)	(0.4861)	(0.4874)	(0.7931)	(0.2370)
gross household income^2	-0.1441***	-0.1020***	-0.0251	-0.0966***	-0.1127***	-0.1475***	-0.2008***	-0.4967***	-0.1007***
	(0.0095)	(0.0197)	(0.0628)	(0.0143)	(0.0316)	(0.0265)	(0.0250)	(0.0414)	(0.0127)
social contacts	-0.0541*	-0.1085	-0.3669***	-0.1554**	-0.0128	-0.1009	-0.0971	-0.0401	-0.1307**
	(0.0320)	(0.0691)	(0.1274)	(0.0753)	(0.0670)	(0.0629)	(0.0808)	(0.0659)	(0.0588)
leisure activities	-0.1112***	-0.1261*	0.0831	-0.0562	-0.2408***	-0.1382**	-0.3851***	-0.0654	-0.1185**
	(0.0263)	(0.0662)	(0.0969)	(0.0682)	(0.0544)	(0.0566)	(0.0650)	(0.0428)	(0.0547)
urban area	-0.0698***	-0.2137***	0.0957	-0.1478**		0.1337***	-0.0073		0.0504
	(0.0234)	(0.0577)	(0.0710)	(0.0584)		(0.0511)	(0.0602)		(0.0559)
secondary education	-0.2651***	-0.2098*	-0.1757*	-0.0211	-0.1067**	0.0187	-0.0817	0.1251**	-0.1709**
	(0.0273)	(0.1081)	(0.0899)	(0.0828)	(0.0520)	(0.0754)	(0.0687)	(0.0532)	(0.0711)
tertiary education	-0.4071***	-0.3622***	-0.2478**	0.0066	-0.0301	0.0127	-0.1188	0.2543***	-0.1225
	(0.0336)	(0.1059)	(0.0995)	(0.0961)	(0.0554)	(0.0815)	(0.0739)	(0.0709)	(0.0749)
houseowner	0.1655***	0.1833	0.4320***	0.0398	-0.3408***	0.0636	-0.1339**	-0.0898	-0.2482***
	(0.0273)	(0.1157)	(0.0873)	(0.0771)	(0.0500)	(0.0570)	(0.0566)	(0.0568)	(0.0606)
single	0.2683***	0.2125***	0.0224	-0.0147	0.4374***	0.2364***	-0.0593	-0.1243**	0.0829
	(0.0278)	(0.0663)	(0.0774)	(0.0678)	(0.0507)	(0.0590)	(0.0587)	(0.0519)	(0.0547)
child(ren) in household	0.0599*	0.9762***	2.1477***	1.5981***	2.9895***	0.8047***	2.1308***	1.2868***	2.2138***
	(0.0320)	(0.0871)	(0.1579)	(0.1198)	(0.0990)	(0.0678)	(0.0931)	(0.0587)	(0.0903)
three-person household	0.7045***	0.4846***	1.0933***	0.8464***	0.4258***	0.4296***	0.2347***	0.2194***	0.7301***
	(0.0317)	(0.0738)	(0.1057)	(0.0782)	(0.0688)	(0.0639)	(0.0759)	(0.0547)	(0.0676)
at least four-person household	0.7039***	0.5752***	1.5958***	1.3560***	1.2920***	0.7224***	0.8431***	0.5921***	0.8681***
	(0.0351)	(0.0885)	(0.1515)	(0.1131)	(0.0827)	(0.0746)	(0.0922)	(0.0566)	(0.0848)
mills									
lambda	-2.5225***	-2.4614***	-0.6113***	-0.9588***	-0.6690***	-2.0670***	-1.2940***	-1.3812***	-0.6583***
	(0.1694)	(0.3484)	(0.0928)	(0.1225)	(0.0563)	(0.3228)	(0.1208)	(0.1146)	(0.0682)
Observations	19089	4713	3642	4962	9007	4171	5189	7960	7663

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 8: Residual dependence estimation for total benefits and mixed households (level equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
Log (total benefits)										
migrant dummy	0.1833**	0.1246**	0.2065***	0.1052	0.2515***	0.4338***	0.1324	0.1422**	-0.0626	-0.0147
	(0.0852)	(0.0508)	(0.0684)	(0.0924)	(0.0342)	(0.0890)	(0.0964)	(0.0672)	(0.1351)	(0.0527)
age	-0.0214**	-0.0115*	-0.0254**	-0.0141*	-0.0526***	-0.0297**	0.0484***	0.0222***	0.0126	-0.0165***
	(0.0092)	(0.0064)	(0.0113)	(0.0079)	(0.0044)	(0.0117)	(0.0102)	(0.0076)	(0.0114)	(0.0060)
age^2	0.0002**	0.0002***	0.0004***	0.0001	0.0006***	0.0004***	-0.0005***	-0.0001	-0.0003***	0.0002***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0000)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
gross household income	3.2103***	2.7391***	-0.7833	2.9184***	3.1790***	2.5074***	-0.6516	-1.1053**	-1.0850	5.2674***
	(0.7420)	(0.5691)	(1.1086)	(0.8095)	(0.3169)	(0.6829)	(0.5021)	(0.5185)	(0.8695)	(0.3510)
gross household income^2	-0.1339***	-0.1332***	0.0541	-0.1481***	-0.1490***	-0.1400***	0.0635**	0.0790***	0.0887*	-0.2629***
	(0.0371)	(0.0290)	(0.0565)	(0.0458)	(0.0162)	(0.0399)	(0.0275)	(0.0259)	(0.0464)	(0.0180)
urban area	-0.0037	0.0014	-0.0174	0.0756*	0.0170	-0.1743**	0.0639	0.0566	0.1651***	0.0889***
	(0.0534)	(0.0305)	(0.0492)	(0.0405)	(0.0202)	(0.0688)	(0.0404)	(0.0374)	(0.0584)	(0.0317)
secondary education	0.0537	-0.0010	-0.0545	0.0889	-0.0875**	0.0356	0.2806***	-0.0450	0.1806**	-0.0001
	(0.0666)	(0.0392)	(0.0631)	(0.0562)	(0.0352)	(0.0818)	(0.0598)	(0.0449)	(0.0750)	(0.0421)
tertiary education	0.0334	0.0049	-0.2419***	0.1905**	-0.1093***	-0.0323	0.3226***	-0.1025*	0.2706***	-0.0458
	(0.0777)	(0.0416)	(0.0773)	(0.0766)	(0.0366)	(0.0978)	(0.0586)	(0.0556)	(0.0847)	(0.0397)
houseowner	0.1119**	0.1022***	-0.0592	0.0498	0.0380*	0.2122**	0.0894	0.1535***	-0.0253	-0.1603***
	(0.0522)	(0.0390)	(0.0591)	(0.0454)	(0.0225)	(0.0867)	(0.0573)	(0.0436)	(0.0858)	(0.0418)
single	0.0417	-0.0211	0.3460***	-0.1970***	-0.0641***	0.0776	-0.2271***	-0.1794***	-0.3327***	-0.0011
	(0.0534)	(0.0346)	(0.0625)	(0.0422)	(0.0236)	(0.0642)	(0.0590)	(0.0403)	(0.0734)	(0.0350)
child(ren) in household	-0.8872***	-0.7312***	-0.4125***	-0.5396***	-0.3840***	-0.3826***	-0.4413***	-0.5641***	-0.6662***	-0.2324***
	(0.0898)	(0.0582)	(0.0919)	(0.0658)	(0.0396)	(0.1016)	(0.0609)	(0.0694)	(0.0959)	(0.0602)
three-person household	-0.6587***	-0.7418***	-0.7542***	-0.2202***	-0.9108***	-0.3938***	-0.0099	-0.0410	-0.2512***	0.0259
	(0.0935)	(0.0652)	(0.1066)	(0.0647)	(0.0424)	(0.1177)	(0.0633)	(0.0635)	(0.0960)	(0.0568)
at least four-person household	-0.4030***	-0.4528***	-0.7514***	-0.2967***	-0.6520***	-0.2323*	0.1755***	-0.4234***	-0.4973***	0.0085
	(0.1055)	(0.0700)	(0.1278)	(0.0696)	(0.0476)	(0.1285)	(0.0653)	(0.0762)	(0.1144)	(0.0620)
Total benefits dummy										
migrant dummy	0.1735	0.1555	0.3971***	0.3059***	0.3040***	-0.0265	0.0159	0.0640	0.0861	0.1936
	(0.1081)	(0.1069)	(0.1060)	(0.0907)	(0.0746)	(0.0942)	(0.0602)	(0.0677)	(0.0856)	(0.1199)
age	-0.1484***	-0.0869***	-0.1063***	-0.2249***	-0.1267***	-0.0985***	-0.1380***	-0.2189***	-0.1105***	-0.0895***
	(0.0138)	(0.0145)	(0.0182)	(0.0111)	(0.0093)	(0.0156)	(0.0067)	(0.0112)	(0.0094)	(0.0149)
age^2	0.0022***	0.0014***	0.0016***	0.0029***	0.0019***	0.0015***	0.0017***	0.0028***	0.0016***	0.0013***
	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
gross household income	1.9973***	4.1396***	0.7510**	1.5614**	2.9794***	0.9990***	2.2569***	1.5937***	3.9682***	3.8059***
	(0.4608)	(0.6703)	(0.3403)	(0.6062)	(0.3452)	(0.3191)	(0.2715)	(0.1914)	(0.4481)	(0.5036)
gross household income^2	-0.1236***	-0.2494***	-0.0542***	-0.1214***	-0.1896***	-0.0716***	-0.1294***	-0.1091***	-0.2118***	-0.2079***
	(0.0232)	(0.0339)	(0.0181)	(0.0335)	(0.0176)	(0.0191)	(0.0147)	(0.0099)	(0.0236)	(0.0254)
social contacts	-0.1794*	-0.1604*	0.0787	-0.0285	-0.1524***	-0.0975	-0.1474***	-0.1956***	-0.1372*	-0.1019
	(0.0965)	(0.0881)	(0.1263)	(0.0621)	(0.0423)	(0.0879)	(0.0508)	(0.0661)	(0.0832)	(0.0769)
leisure activities	-0.0836	-0.0311	-0.1931**	-0.2803***	-0.1037**	-0.2119***	-0.1857***	-0.1139***	-0.1800***	-0.4054***
	(0.0652)	(0.0698)	(0.0832)	(0.0377)	(0.0425)	(0.0684)	(0.0349)	(0.0407)	(0.0455)	(0.1021)
urban area	0.0267	0.0429	-0.0752	-0.1140***	-0.0183	0.0337	-0.0483*	-0.1001***	-0.1375***	-0.0561
	(0.0587)	(0.0559)	(0.0750)	(0.0363)	(0.0360)	(0.0705)	(0.0274)	(0.0380)	(0.0401)	(0.0681)
secondary education	-0.1668*	-0.1132	0.0895	-0.3294***	-0.1645**	-0.4085***	-0.2044***	-0.1148**	-0.1766***	-0.0001
	(0.0901)	(0.0737)	(0.0940)	(0.0727)	(0.0697)	(0.1129)	(0.0366)	(0.0508)	(0.0522)	(0.0938)
tertiary education	-0.2355**	-0.1220	0.0122	-0.3786***	-0.1315*	-0.6266***	-0.2216***	-0.2081***	-0.1304**	-0.1992**
	(0.0987)	(0.0761)	(0.1106)	(0.0836)	(0.0718)	(0.1208)	(0.0348)	(0.0568)	(0.0580)	(0.0817)
houseowner	0.0051	0.0873	-0.0947	0.1761***	0.1400***	0.0266	0.1232***	-0.1724***	0.4313***	-0.3311***
	(0.0601)	(0.0666)	(0.0857)	(0.0412)	(0.0402)	(0.0949)	(0.0381)	(0.0442)	(0.0483)	(0.0961)
single	-0.0560	-0.0545	0.2625***	0.1723***	-0.0325	0.0830	0.5431***	0.0913**	0.6272***	0.1902**
	(0.0637)	(0.0642)	(0.0887)	(0.0411)	(0.0404)	(0.0733)	(0.0334)	(0.0432)	(0.0524)	(0.0741)
child(ren) in household	1.6577***	1.6512***	1.2584***	0.4956***	1.7952***	1.6360***	-0.0603*	0.8139***	-0.1006*	2.6018***
	(0.1239)	(0.1299)	(0.1235)	(0.0487)	(0.0956)	(0.1595)	(0.0364)	(0.0587)	(0.0549)	(0.3508)
three-person household	0.9635***	1.1179***	0.8087***	0.4920***	1.2246***	0.8933***	0.3383***	0.1652***	0.5279***	0.6051***
	(0.0804)	(0.0844)	(0.0968)	(0.0479)	(0.0601)	(0.0841)	(0.0370)	(0.0538)	(0.0543)	(0.0912)
at least four-person household	1.4334***	1.5438***	1.4208***	0.4374***	2.0608***	1.3194***	0.2569***	1.0288***	0.7193***	1.2042***
	(0.1198)	(0.1194)	(0.1049)	(0.0540)	(0.1295)	(0.1068)	(0.0398)	(0.0708)	(0.0591)	(0.1333)
mills										
lambda	-1.5137***	-0.9581***	-0.1752	-1.6446***	-0.9659***	-1.8209***	-1.7487***	-1.6465***	-1.8243***	-0.3810***
	(0.1391)	(0.0974)	(0.2394)	(0.1156)	(0.0524)	(0.2577)	(0.1592)	(0.1182)	(0.1912)	(0.1164)
Observations	5153	4916	2880	9627	12079	4366	11064	9777	6375	4610

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 9: Residual dependence estimation for total benefits and mixed households (level equation)

	IT	LT	LU	LV	NL	PT	SE	SI	UK
Log (total benefits)									
migrant dummy	0.0014	0.0902	0.0417	0.1715***	-0.0215	0.1687	0.0153	0.0315	-0.0635
	(0.0945)	(0.1439)	(0.0564)	(0.0503)	(0.0534)	(0.1551)	(0.0786)	(0.0502)	(0.0543)
age	0.0228**	-0.0080	-0.0393***	-0.0273***	0.0458***	0.0138	0.0239***	0.0240***	-0.0548***
	(0.0094)	(0.0181)	(0.0101)	(0.0074)	(0.0047)	(0.0176)	(0.0081)	(0.0065)	(0.0055)
age^2	-0.0003***	0.0001	0.0004***	0.0004***	-0.0002***	-0.0003	-0.0002	-0.0000	0.0006***
	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)
gross household income	-1.2454***	0.2970	0.9655	1.0991***	-0.2663	-3.9600***	0.9162	-1.4739	3.4751***
	(0.4409)	(0.7237)	(1.2910)	(0.2474)	(0.4398)	(1.0149)	(0.5942)	(0.9264)	(0.2545)
gross household income^2	0.0965***	-0.0118	-0.0323	-0.0513***	0.0176	0.2403***	-0.0387	0.0816	-0.1764***
	(0.0231)	(0.0433)	(0.0608)	(0.0150)	(0.0214)	(0.0559)	(0.0301)	(0.0497)	(0.0133)
urban area	0.1105***	0.1919**	-0.0363	-0.0271		-0.0483	-0.0377		0.0731**
	(0.0416)	(0.0834)	(0.0479)	(0.0373)		(0.0779)	(0.0569)		(0.0290)
secondary education	0.1493***	-0.0208	0.0281	-0.0914*	0.1147***	0.0373	0.0544	0.0393	0.1182***
	(0.0520)	(0.1219)	(0.0565)	(0.0468)	(0.0303)	(0.1189)	(0.0571)	(0.0419)	(0.0333)
tertiary education	0.3112***	0.1012	0.0725	-0.1092**	0.0662**	0.1171	0.0819	0.1797***	0.1335***
	(0.0732)	(0.1154)	(0.0708)	(0.0551)	(0.0327)	(0.1307)	(0.0642)	(0.0594)	(0.0351)
houseowner	0.0475	-0.0233	0.0515	0.1373***	0.0227	-0.2225**	0.0382	0.0420	-0.3830***
	(0.0503)	(0.1763)	(0.0706)	(0.0516)	(0.0302)	(0.0864)	(0.0524)	(0.0466)	(0.0311)
single	0.0483	-0.0696	-0.0266	0.0739*	0.2065***	0.1691**	-0.0695	0.0052	-0.0371
	(0.0471)	(0.0907)	(0.0536)	(0.0396)	(0.0273)	(0.0860)	(0.0489)	(0.0415)	(0.0284)
child(ren) in household	-1.1203***	-0.9270***	-0.9954***	-0.7254***	-0.7831***	-1.6708***	-0.0974	0.0393	-0.5887***
	(0.0608)	(0.1585)	(0.0812)	(0.0696)	(0.0646)	(0.1476)	(0.1263)	(0.0590)	(0.0629)
three-person household	-0.4935***	-0.2683**	-0.6899***	-0.2587***	-0.8748***	-0.6682***	-0.9389***	-0.3996***	-0.4558***
	(0.0788)	(0.1272)	(0.0929)	(0.0652)	(0.0520)	(0.1213)	(0.0850)	(0.0523)	(0.0465)
at least four-person household	-0.4898***	0.0774	-0.1735*	0.2253***	-0.5497***	-0.6689***	-1.1747***	-0.4682***	-0.4641***
	(0.0843)	(0.1460)	(0.0987)	(0.0751)	(0.0535)	(0.1526)	(0.0951)	(0.0548)	(0.0511)
Total benefits dummy									
migrant dummy	0.0315	0.2632***	0.2537**	0.2099***	-0.0804	-0.1674*	-0.0219	0.0243	-0.0457
	(0.0493)	(0.0981)	(0.1052)	(0.0757)	(0.0910)	(0.0922)	(0.0907)	(0.0585)	(0.0952)
age	-0.1607***	-0.1741***	-0.2143***	-0.1310***	-0.1854***	-0.1351***	-0.1270***	-0.1634***	-0.2034***
	(0.0066)	(0.0173)	(0.0263)	(0.0133)	(0.0095)	(0.0117)	(0.0101)	(0.0095)	(0.0144)
age^2	0.0021***	0.0022***	0.0030***	0.0018***	0.0027***	0.0018***	0.0019***	0.0022***	0.0029***
	(0.0001)	(0.0002)	(0.0003)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
gross household income	2.6480***	1.8487***	1.3579	1.4107***	1.5046**	3.1100***	3.3038***	8.8933***	1.5408***
	(0.1814)	(0.3158)	(2.3053)	(0.2331)	(0.5941)	(0.5070)	(0.4712)	(0.7891)	(0.2679)
gross household income^2	-0.1418***	-0.1070***	-0.1015	-0.0924***	-0.0959***	-0.1743***	-0.1795***	-0.5035***	-0.1054***
	(0.0095)	(0.0193)	(0.1066)	(0.0144)	(0.0288)	(0.0276)	(0.0242)	(0.0411)	(0.0143)
social contacts	-0.0512	-0.0767	-0.1612	-0.1424*	0.0385	-0.1215**	-0.0852	-0.0412	-0.1619***
	(0.0325)	(0.0674)	(0.1998)	(0.0737)	(0.0664)	(0.0620)	(0.0818)	(0.0656)	(0.0611)
leisure activities	-0.1068***	-0.1214*	-0.0259	-0.0368	-0.2091***	-0.1284**	-0.3305***	-0.0841**	-0.0958*
	(0.0263)	(0.0643)	(0.1309)	(0.0654)	(0.0536)	(0.0553)	(0.0655)	(0.0414)	(0.0562)
urban area	-0.0626***	-0.1924***	0.0282	-0.1566***		0.1498***	-0.0073		0.0385
	(0.0236)	(0.0564)	(0.0875)	(0.0567)		(0.0502)	(0.0615)		(0.0561)
secondary education	-0.2838***	-0.2473**	-0.1969*	-0.0075	-0.1051**	-0.0002	-0.0675	0.1377***	-0.2184***
	(0.0275)	(0.1073)	(0.1086)	(0.0828)	(0.0517)	(0.0732)	(0.0691)	(0.0524)	(0.0729)
tertiary education	-0.4172***	-0.4129***	-0.1752	-0.0064	-0.0390	0.0132	-0.0911	0.2623***	-0.0837
	(0.0336)	(0.1052)	(0.1304)	(0.0954)	(0.0550)	(0.0794)	(0.0741)	(0.0689)	(0.0779)
houseowner	0.1502***	0.1948*	0.3559***	0.0041	-0.3153***	0.0742	-0.0876	-0.1056*	-0.2691***
	(0.0272)	(0.1130)	(0.1234)	(0.0791)	(0.0495)	(0.0567)	(0.0574)	(0.0572)	(0.0635)
single	0.2755***	0.2467***	0.2509**	0.1389**	0.4409***	0.2138***	-0.0292	-0.1380***	0.0359
	(0.0280)	(0.0650)	(0.1003)	(0.0649)	(0.0502)	(0.0579)	(0.0589)	(0.0510)	(0.0562)
child(ren) in household	0.0530*	0.9885***	2.2696***	1.6873***	2.9748***	0.7844***	2.1453***	1.3222***	2.5236***
	(0.0318)	(0.0852)	(0.2594)	(0.1228)	(0.0944)	(0.0658)	(0.0950)	(0.0572)	(0.1103)
three-person household	0.6928***	0.4367***	1.1555***	0.7737***	0.4437***	0.4200***	0.2627***	0.1807***	0.7247***
	(0.0315)	(0.0710)	(0.1188)	(0.0717)	(0.0667)	(0.0627)	(0.0761)	(0.0535)	(0.0689)
at least four-person household	0.6905***	0.5355***	1.4862***	1.3019***	1.2527***	0.6819***	0.8877***	0.5230***	0.8548***
	(0.0349)	(0.0843)	(0.1683)	(0.1025)	(0.0795)	(0.0729)	(0.0947)	(0.0553)	(0.0861)
mills									
lambda	-2.5424***	-2.5747***	-1.0337***	-1.0369***	-0.6957***	-2.1311***	-1.3246***	-1.4382***	-0.5062***
	(0.1697)	(0.3781)	(0.1187)	(0.1398)	(0.0556)	(0.3401)	(0.1283)	(0.1161)	(0.0690)
Observations	19142	4891	2344	4991	9187	4303	5091	8458	7575

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

1.2 Net contributions

Tabelle: 10: Residual dependence estimation for net contributions and migrant households

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
migrant dummy	-1110.14*	-1634.96***	-190.81	-686.71***	-4354.24***	-411.47***	297.29	-195.80	336.50	1410.69*
	(594.89)	(483.28)	(535.55)	(164.87)	(405.72)	(109.65)	(273.38)	(442.03)	(393.97)	(748.09)
age	-505.81***	-289.81***	-186.46***	-94.94***	-511.38***	-68.70***	-190.28***	-462.29***	-212.15***	-204.03***
	(15.43)	(13.25)	(16.74)	(3.11)	(10.03)	(3.08)	(6.70)	(11.05)	(10.19)	(21.54)
hhequincgross	0.52***	0.63***	-0.03	0.55***	0.56***	0.41***	0.31***	0.24***	0.56***	0.61***
	(0.02)	(0.02)	(0.05)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.03)
urban area	-1046.20**	-120.26	151.27	20.53	-409.46	54.69	-355.48**	-354.14	-471.51	-1054.02*
	(499.46)	(348.53)	(422.61)	(80.90)	(258.88)	(96.93)	(171.86)	(310.54)	(287.29)	(565.96)
secondary education	-2607.55***	-206.57	-370.57	-220.44**	1318.09***	604.13***	-6.06	-1157.38***	-2226.83***	-3177.44***
	(567.39)	(410.18)	(609.52)	(106.52)	(460.09)	(109.87)	(229.17)	(355.06)	(349.78)	(728.36)
tertiary education	-1788.21**	441.18	3246.71***	118.21	790.90	872.67***	808.17***	739.85	-3063.29***	-1115.27
	(729.88)	(507.51)	(958.43)	(170.84)	(493.67)	(125.77)	(233.13)	(501.96)	(457.66)	(728.76)
houseowner	-1176.36**	-3130.28***	811.07*	-558.42***	-1696.68***	-300.04***	-1779.07***	182.43	-2538.23***	1984.09***
	(481.77)	(378.27)	(452.47)	(81.96)	(286.91)	(104.71)	(198.30)	(318.38)	(289.22)	(549.16)
single	-627.95	-352.29	-2236.69***	772.88***	413.32	225.43**	-3231.49***	1417.87***	-1670.44***	-221.41
	(521.80)	(390.92)	(536.66)	(88.32)	(293.05)	(93.41)	(199.07)	(336.34)	(308.66)	(608.80)
child(ren) in household	1563.29**	-546.12	1451.26**	-79.74	-3462.61***	-431.31***	2857.24***	-409.81	5492.60***	2761.09***
	(790.82)	(609.34)	(676.11)	(146.91)	(481.13)	(133.43)	(229.01)	(539.78)	(420.28)	(902.04)
three-person household	3193.26***	5384.39***	1085.69	737.53***	6017.13***	216.74	-326.83	5264.37***	41.96	-1921.86**
	(872.17)	(648.85)	(816.20)	(153.03)	(514.67)	(137.21)	(263.84)	(586.60)	(443.39)	(898.11)
at least four-person household	4763.17***	10115.28***	4543.03***	2446.44***	10412.91***	895.95***	1387.29***	7700.49***	3652.34***	1857.85*
	(940.24)	(707.84)	(803.16)	(161.26)	(562.10)	(147.45)	(276.11)	(609.35)	(496.91)	(1046.40)
Observations	5799	5454	3087	9867	12765	4872	11752	10503	6823	4993

	IT	LT	LU	LV	NL	PT	SE	SI	UK
migrant dummy	945.49***	-257.48*	3112.86***	-162.01**	298.08	1459.53***	-247.15	-265.75*	1354.87***
	(313.61)	(135.47)	(912.72)	(79.12)	(507.43)	(496.58)	(331.74)	(148.72)	(397.90)
age	-290.12***	-88.40***	-766.13***	-40.22***	-540.75***	-189.02***	-270.74***	-145.13***	-332.03***
	(7.30)	(3.89)	(28.98)	(2.43)	(11.60)	(11.42)	(7.79)	(4.38)	(10.30)
hhequincgross	0.44***	0.27***	0.55***	0.42***	0.70***	0.34***	0.65***	0.89***	0.58***
	(0.01)	(0.02)	(0.03)	(0.01)	(0.02)	(0.03)	(0.03)	(0.01)	(0.01)
urban area	-1029.27***	-214.35**	-552.99	-142.19*		-752.79**	-121.56		-83.07
	(215.69)	(96.56)	(744.35)	(72.97)		(319.18)	(317.37)		(326.42)
secondary education	-474.48*	333.27***	-439.68	189.92**	-1734.63***	-1174.90**	-170.90	-1596.26***	-1775.09***
	(245.30)	(121.03)	(854.04)	(74.65)	(353.42)	(474.88)	(308.47)	(126.54)	(323.62)
tertiary education	968.29**	729.36***	2049.41*	372.57***	-1948.70***	-2278.17***	93.80	-3280.46***	-2271.40***
	(391.79)	(113.17)	(1146.86)	(99.55)	(529.41)	(749.90)	(398.68)	(247.26)	(361.05)
houseowner	-2513.06***	38.82	-6451.63***	-415.30***	-117.63	376.48	30.53	-521.23***	3311.87***
	(203.68)	(171.69)	(735.09)	(77.57)	(384.33)	(301.94)	(282.03)	(141.44)	(285.55)
single	-1641.41***	50.71	-1066.29	241.30***	-7040.04***	-1790.08***	-1645.93***	21.84	324.40
	(226.49)	(95.51)	(861.51)	(78.87)	(353.82)	(320.91)	(367.01)	(126.65)	(284.97)
child(ren) in household	7369.48***	-178.43	4134.65***	-308.32**	-3489.00***	1927.54***	-4925.57***	-1353.89***	-3296.74***
	(309.05)	(145.57)	(1307.54)	(126.74)	(502.91)	(363.75)	(446.38)	(144.23)	(461.35)
three-person household	-640.44*	304.47**	153.48	465.94***	8643.93***	1507.37***	5982.85***	2415.81***	3596.11***
	(331.80)	(147.11)	(1423.44)	(112.76)	(492.03)	(427.86)	(397.86)	(172.16)	(476.42)
at least four-person household	3980.98***	483.65***	1506.96	723.26***	14496.28***	2800.18***	9976.35***	4861.87***	7912.62***
	(372.15)	(164.44)	(1510.75)	(145.88)	(593.80)	(461.99)	(503.35)	(170.36)	(521.42)
Observations	19983	5106	4204	5716	9472	4424	5582	9001	8128

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 11: Residual dependence estimation for net contributions and exclusively migrant households

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
migrant dummy	1020.92	-974.15*	1048.08	476.41**	-1732.13***	90.39	652.17**	-93.28	722.90*	1795.13**
	(642.71)	(550.61)	(766.20)	(215.48)	(546.89)	(126.99)	(314.59)	(534.84)	(435.05)	(826.48)
age	-499.62***	-289.43***	-234.73***	-93.81***	-504.61***	-68.71***	-192.17***	-466.56***	-213.20***	-213.95***
	(15.74)	(13.00)	(18.98)	(3.15)	(10.24)	(3.18)	(6.86)	(11.23)	(10.29)	(21.68)
hhequincgross	0.53***	0.63***	-0.07	0.54***	0.56***	0.41***	0.31***	0.23***	0.57***	0.57***
	(0.02)	(0.02)	(0.06)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.03)
urban area	-1113.53**	-287.29	-103.00	1.74	-608.67**	-6.04	-350.89**	-484.09	-549.65*	-1537.67***
	(517.11)	(361.55)	(451.89)	(82.07)	(266.11)	(102.20)	(175.53)	(319.58)	(292.88)	(578.02)
secondary education	-2587.71***	-496.40	-531.05	-145.97	1479.94***	559.48***	-29.09	-1143.38***	-2432.91***	-2738.26***
	(576.20)	(416.82)	(662.19)	(107.70)	(466.98)	(111.66)	(235.28)	(365.33)	(362.52)	(729.80)
tertiary education	-1925.30***	197.22	2319.14**	180.23	1151.92**	799.25***	855.55***	692.80	-3229.82***	-1102.07
	(744.62)	(504.49)	(1102.49)	(173.57)	(503.50)	(129.71)	(240.99)	(521.60)	(473.92)	(721.92)
houseowner	-722.03	-3149.50***	415.23	-524.68***	-1443.86***	-250.13**	-1743.54***	298.87	-2466.78***	2069.20***
	(494.82)	(386.30)	(474.64)	(82.65)	(296.99)	(104.72)	(207.18)	(325.78)	(299.01)	(561.06)
single	-611.93	-80.04	-1988.20***	790.45***	490.60	416.47***	-3179.18***	1801.86***	-1516.68***	-370.17
	(546.53)	(410.23)	(561.44)	(89.77)	(301.21)	(99.12)	(205.24)	(347.19)	(314.82)	(611.89)
child(ren) in household	1461.25*	-783.57	663.41	-114.74	-3695.20***	-430.69***	2812.22***	-699.37	5609.43***	1582.53*
	(806.39)	(641.70)	(739.77)	(148.24)	(481.49)	(142.71)	(232.13)	(559.63)	(437.40)	(924.52)
three-person household	3078.51***	5563.99***	1410.10	764.34***	5996.69***	305.71**	-364.84	5094.49***	-93.90	-1181.87
	(902.64)	(691.23)	(939.34)	(156.23)	(531.79)	(148.44)	(270.97)	(622.41)	(454.94)	(934.67)
at least four-person household	4761.91***	10432.01***	4405.21***	2532.97***	10427.71***	996.73***	1439.60***	7987.17***	3686.83***	2372.27**
	(975.60)	(757.20)	(899.81)	(161.73)	(564.95)	(158.14)	(279.54)	(627.58)	(514.57)	(1091.64)
Observations	5408	4984	2631	9493	11760	4305	11231	9751	6553	4587

	IT	LT	LU	LV	NL	PT	SE	SI	UK
migrant dummy	1706.28***	311.61*	5725.15***	143.36*	-2271.29***	1360.80**	-1086.91**	241.29	1814.52***
	(353.18)	(170.73)	(958.42)	(82.08)	(739.65)	(609.56)	(432.72)	(219.28)	(489.42)
age	-288.69***	-90.64***	-785.27***	-41.94***	-544.71***	-196.07***	-272.47***	-139.05***	-333.92***
	(7.45)	(4.03)	(30.26)	(2.55)	(11.78)	(11.63)	(7.91)	(4.70)	(10.60)
hhequincgross	0.44***	0.26***	0.55***	0.43***	0.69***	0.32***	0.64***	0.89***	0.57***
	(0.01)	(0.02)	(0.03)	(0.01)	(0.02)	(0.03)	(0.03)	(0.01)	(0.01)
urban area	-1047.43***	-172.30*	-1715.33**	-182.55**		-666.28**	-8.44		-172.12
	(220.57)	(99.26)	(790.03)	(76.69)		(328.23)	(330.90)		(330.02)
secondary education	-512.39**	310.75**	504.16	108.93	-1660.33***	-1261.50**	-232.31	-1555.14***	-1830.88***
	(252.27)	(123.83)	(899.25)	(76.27)	(358.95)	(508.52)	(320.79)	(136.14)	(329.77)
tertiary education	946.09**	678.11***	1515.01	315.80***	-1849.49***	-2313.99***	147.22	-3141.11***	-2343.27***
	(403.14)	(115.61)	(1231.06)	(104.20)	(538.96)	(788.81)	(417.68)	(266.06)	(369.92)
houseowner	-2409.29***	41.38	-4945.45***	-422.09***	-246.58	522.45*	17.15	-571.77***	3423.40***
	(211.26)	(174.45)	(773.35)	(77.64)	(391.96)	(308.67)	(288.24)	(147.69)	(293.91)
single	-1565.07***	122.38	415.70	358.28***	-7120.14***	-1760.29***	-1720.98***	83.81	372.44
	(232.24)	(99.73)	(911.70)	(85.74)	(363.57)	(327.59)	(387.56)	(135.63)	(291.57)
child(ren) in household	7504.73***	-214.09	1528.52	-391.54***	-3414.91***	1985.88***	-4824.51***	-1335.03***	-3650.39***
	(320.29)	(152.25)	(1382.47)	(139.10)	(516.00)	(379.25)	(463.76)	(152.22)	(481.78)
three-person household	-746.81**	327.02**	2357.41	476.40***	8530.37***	1202.22***	5909.95***	2326.92***	3605.07***
	(343.28)	(156.18)	(1531.56)	(125.29)	(502.58)	(444.43)	(414.90)	(181.52)	(496.74)
at least four-person household	4152.25***	501.02***	3641.43**	905.25***	14318.25***	2574.63***	9889.96***	4784.89***	8083.92***
	(386.45)	(172.00)	(1622.53)	(163.37)	(610.91)	(479.61)	(521.22)	(179.68)	(546.55)
Observations	19089	4713	3642	4962	9007	4171	5189	7960	7663

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 12: Residual dependence estimation for net contributions and mixed households

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
migrant dummy	-4483.61***	-2431.13***	-938.84	-1432.34***	-6234.46***	-839.86***	-215.83	-464.80	-298.65	972.34
	(979.57)	(731.70)	(642.97)	(219.29)	(543.57)	(151.16)	(424.78)	(659.83)	(681.24)	(1093.29)
age	-521.67***	-289.54***	-178.40***	-94.28***	-513.59***	-72.02***	-191.04***	-475.48***	-216.59***	-187.53***
	(16.83)	(14.31)	(18.07)	(3.11)	(10.49)	(3.30)	(6.92)	(11.57)	(10.73)	(22.54)
hhequincgross	0.54***	0.66***	-0.05	0.56***	0.57***	0.41***	0.32***	0.24***	0.58***	0.61***
	(0.02)	(0.02)	(0.05)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.03)
urban area	-1126.01**	-265.92	53.44	-2.45	-544.67**	32.29	-408.31**	-197.41	-527.27*	-1227.07**
	(552.64)	(359.95)	(438.14)	(81.66)	(265.64)	(106.22)	(179.39)	(323.53)	(304.09)	(600.50)
secondary education	-3085.51***	-371.07	-395.13	-218.62**	1731.60***	633.66***	-116.21	-1256.12***	-2717.68***	-3464.42***
	(629.75)	(441.73)	(650.61)	(106.37)	(490.41)	(118.51)	(247.70)	(372.41)	(386.11)	(768.90)
tertiary education	-2499.95***	-60.76	3539.86***	89.55	1136.13**	949.01***	758.84***	438.48	-3759.33***	-1078.14
	(799.27)	(549.49)	(1042.26)	(166.75)	(526.90)	(136.28)	(245.03)	(527.29)	(493.76)	(768.90)
houseowner	-1070.80**	-2880.84***	1085.45**	-574.13***	-1513.67***	-303.34***	-1695.06***	169.31	-2823.14***	2066.32***
	(506.79)	(405.30)	(480.74)	(82.49)	(296.68)	(112.55)	(214.27)	(334.00)	(308.62)	(585.46)
single	-1249.29**	-267.02	-2453.07***	723.98***	133.49	69.81	-3333.47***	1432.27***	-1642.46***	249.08
	(563.23)	(417.02)	(565.84)	(89.02)	(304.62)	(100.33)	(209.36)	(352.01)	(318.49)	(650.85)
child(ren) in household	2677.45***	-97.93	1393.23*	-102.00	-3326.58***	-472.33***	3116.98***	-492.97	6179.78***	3623.19***
	(843.59)	(635.84)	(712.96)	(146.82)	(488.98)	(137.45)	(240.87)	(562.09)	(450.40)	(972.55)
three-person household	3085.69***	5481.84***	1168.30	776.53***	5890.00***	201.63	-413.72	5490.46***	-117.80	-1913.10**
	(921.51)	(683.60)	(862.59)	(153.13)	(520.09)	(142.91)	(274.85)	(610.66)	(465.72)	(958.10)
at least four-person household	4804.83***	10504.66***	4804.56***	2484.00***	10136.74***	860.70***	1366.10***	8490.80***	3738.10***	2516.60**
	(1013.66)	(743.58)	(848.68)	(161.21)	(573.58)	(152.15)	(289.12)	(637.12)	(526.87)	(1126.95)
Observations	5153	4916	2880	9627	12079	4366	11064	9777	6375	4610

	IT	LT	LU	LV	NL	PT	SE	SI	UK
migrant dummy	137.92	-614.91***	-2810.53**	-473.49***	1822.35***	1491.95**	624.38	-519.64***	882.35
	(473.02)	(178.91)	(1372.28)	(118.73)	(661.00)	(645.69)	(475.01)	(182.56)	(594.44)
age	-291.38***	-88.84***	-885.57***	-41.97***	-542.52***	-187.28***	-274.27***	-145.10***	-335.88***
	(7.60)	(4.00)	(38.68)	(2.63)	(11.94)	(11.65)	(8.26)	(4.51)	(10.81)
hhequincgross	0.44***	0.27***	0.53***	0.43***	0.70***	0.34***	0.65***	0.89***	0.58***
	(0.01)	(0.02)	(0.03)	(0.01)	(0.02)	(0.03)	(0.03)	(0.01)	(0.01)
urban area	-1148.90***	-167.67*	-155.91	-96.39		-777.24**	-321.21		-103.26
	(223.59)	(100.00)	(1116.93)	(80.51)		(328.76)	(343.05)		(330.83)
secondary education	-623.02**	350.84***	-1673.10	208.81**	-1934.01***	-1193.36**	-436.58	-1622.57***	-1856.24***
	(257.07)	(124.24)	(1246.15)	(82.36)	(361.29)	(495.70)	(321.68)	(134.16)	(336.11)
tertiary education	823.54**	740.35***	-215.66	388.59***	-2114.47***	-2261.52***	-260.79	-3202.22***	-2554.39***
	(407.32)	(116.61)	(1726.79)	(112.14)	(540.49)	(774.23)	(420.55)	(253.92)	(381.26)
houseowner	-2430.21***	90.07	-6095.78***	-396.21***	-247.86	291.38	-456.01	-466.22***	3412.32***
	(210.81)	(177.22)	(1234.47)	(85.44)	(389.56)	(312.43)	(288.05)	(149.49)	(300.17)
single	-1671.85***	-62.54	-2266.13*	99.35	-6923.25***	-1820.61***	-1772.98***	75.83	403.96
	(234.77)	(98.18)	(1235.66)	(86.49)	(358.33)	(329.07)	(390.71)	(129.86)	(298.29)
child(ren) in household	7738.24***	-221.38	8799.39***	-379.64***	-3518.45***	1965.86***	-5167.89***	-1394.63***	-3380.15***
	(319.29)	(147.26)	(1955.96)	(131.08)	(510.87)	(371.69)	(490.72)	(149.63)	(482.49)
three-person household	-614.24*	360.84**	-781.54	494.88***	8709.42***	1531.90***	6194.01***	2435.35***	3606.26***
	(341.76)	(149.43)	(2025.49)	(117.84)	(499.19)	(437.68)	(429.49)	(180.36)	(500.90)
at least four-person household	4153.19***	517.14***	1547.83	730.10***	14698.60***	2917.36***	10818.16***	5040.31***	8210.02***
	(385.64)	(166.15)	(2302.27)	(150.58)	(602.42)	(469.79)	(548.39)	(177.98)	(539.12)
Observations	19142	4891	2344	4991	9187	4303	5091	8458	7575

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

1.3 Contributory benefits

1.3.1 Participation

Tabelle: 13: Residual dependence estimation for contributory benefits and migrant households (participation equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
migrant dummy (d)	0.0412**	-0.0380*	0.1187***	0.0024	0.0902***	0.0793***	-0.0395**	0.0418***	-0.0216	0.0009
	(0.0184)	(0.0213)	(0.0265)	(0.0164)	(0.0167)	(0.0132)	(0.0179)	(0.0130)	(0.0261)	(0.0193)
social contacts (d)	-0.0504**	-0.0421*	-0.0071	-0.0016	-0.0503***	-0.0324**	-0.0529***	-0.0368**	-0.0577*	-0.0592***
	(0.0214)	(0.0233)	(0.0417)	(0.0131)	(0.0128)	(0.0151)	(0.0194)	(0.0148)	(0.0318)	(0.0163)
leisure activities (d)	-0.0508***	-0.0131	-0.0395	-0.0510***	-0.0495***	-0.0612***	-0.0622***	-0.0384***	-0.0399**	-0.0491***
	(0.0161)	(0.0199)	(0.0251)	(0.0084)	(0.0129)	(0.0123)	(0.0134)	(0.0100)	(0.0182)	(0.0187)
urban area (d)	-0.0545***	-0.0028	-0.0389*	-0.0417***	-0.0387***	-0.0216	-0.0348***	-0.0436***	-0.0621***	-0.0213
	(0.0162)	(0.0160)	(0.0233)	(0.0088)	(0.0113)	(0.0139)	(0.0107)	(0.0100)	(0.0160)	(0.0154)
secondary education (d)	-0.0905***	-0.0944***	-0.0464	-0.0510***	-0.0837***	-0.0454**	-0.0724***	-0.0374***	-0.0622***	-0.0286
	(0.0221)	(0.0207)	(0.0293)	(0.0129)	(0.0216)	(0.0181)	(0.0142)	(0.0124)	(0.0207)	(0.0216)
tertiary education (d)	-0.1897***	-0.1657***	-0.1157***	-0.0706***	-0.1101***	-0.0878***	-0.0866***	-0.1174***	-0.0469**	-0.0567***
	(0.0266)	(0.0211)	(0.0343)	(0.0209)	(0.0223)	(0.0226)	(0.0135)	(0.0157)	(0.0231)	(0.0195)
houseowner (d)	0.0087	0.0690***	-0.0393	0.0606***	0.0200	0.0318*	0.0740***	0.0215*	0.2447***	-0.0188
	(0.0165)	(0.0196)	(0.0266)	(0.0104)	(0.0128)	(0.0188)	(0.0146)	(0.0114)	(0.0191)	(0.0189)
single (d)	0.0536***	0.0088	0.2279***	0.0401***	0.0314**	0.0436***	0.2261***	0.0205*	0.2502***	0.0342*
	(0.0170)	(0.0183)	(0.0276)	(0.0089)	(0.0136)	(0.0133)	(0.0125)	(0.0110)	(0.0197)	(0.0176)
child(ren) in household (d)	-0.1453***	-0.0678***	-0.1848***	-0.0800***	-0.0225	-0.0873***	-0.1198***	-0.0669***	-0.2095***	-0.2662***
	(0.0239)	(0.0242)	(0.0303)	(0.0135)	(0.0183)	(0.0172)	(0.0141)	(0.0163)	(0.0215)	(0.0254)
three-person household (d)	0.1098***	0.0920***	0.1450***	0.0748***	0.0241	0.0659***	0.1361***	0.0815***	0.1849***	0.0966***
	(0.0187)	(0.0226)	(0.0307)	(0.0084)	(0.0179)	(0.0141)	(0.0141)	(0.0131)	(0.0196)	(0.0200)
at least four-person household (d)	0.1135***	0.0012	0.0340	0.0763***	-0.0845***	0.0994***	0.1271***	0.0420**	0.1718***	0.1132***
	(0.0220)	(0.0275)	(0.0326)	(0.0097)	(0.0232)	(0.0152)	(0.0153)	(0.0165)	(0.0221)	(0.0221)
age	-0.0643***	-0.0580***	-0.0642***	-0.0498***	-0.0725***	-0.0364***	-0.0478***	-0.0613***	-0.0460***	-0.0166***
	(0.0031)	(0.0042)	(0.0063)	(0.0017)	(0.0028)	(0.0026)	(0.0027)	(0.0026)	(0.0036)	(0.0031)
age^2	0.0009***	0.0008***	0.0009***	0.0007***	0.0010***	0.0005***	0.0006***	0.0008***	0.0007***	0.0003***
	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	0.9180***	1.8298***	0.2847***	1.1970***	1.3160***	0.5644***	1.3123***	1.3606***	2.4420***	2.6820***
	(0.2104)	(0.3224)	(0.0499)	(0.1756)	(0.1568)	(0.1344)	(0.1355)	(0.1614)	(0.3387)	(0.2613)
gross household income^2	-0.0510***	-0.1037***	-0.0188***	-0.0702***	-0.0799***	-0.0324***	-0.0744***	-0.0694***	-0.1293***	-0.1377***
	(0.0105)	(0.0162)	(0.0032)	(0.0098)	(0.0081)	(0.0078)	(0.0072)	(0.0080)	(0.0176)	(0.0130)
Observations	5799	5454	3087	9867	12765	4872	11752	10503	6823	4993

	IT	LT	LU	LV	NL	PT	SE	SI	UK
migrant dummy (d)	-0.0183	0.0212*	0.0101	0.0447***	0.0615**	-0.0597*	-0.0444**	0.0104	-0.0589***
	(0.0118)	(0.0109)	(0.0216)	(0.0112)	(0.0262)	(0.0329)	(0.0221)	(0.0166)	(0.0191)
social contacts (d)	-0.0126	-0.0263***	-0.0628*	-0.0256*	0.0144	-0.0206	-0.0253	-0.0305	-0.0135
	(0.0091)	(0.0093)	(0.0330)	(0.0133)	(0.0219)	(0.0231)	(0.0255)	(0.0191)	(0.0133)
leisure activities (d)	-0.0279***	-0.0295***	-0.0235	-0.0079	-0.0836***	-0.0051	-0.0900***	-0.0595***	-0.0348***
	(0.0078)	(0.0105)	(0.0253)	(0.0123)	(0.0192)	(0.0212)	(0.0201)	(0.0136)	(0.0125)
urban area (d)	-0.0347***	-0.0175**	-0.0033	-0.0242**		0.0426**	-0.0102		0.0239*
	(0.0071)	(0.0085)	(0.0195)	(0.0107)		(0.0186)	(0.0198)		(0.0138)
secondary education (d)	-0.0912***	-0.0212	-0.0528**	-0.0181	0.0123	-0.0093	0.0656***	0.0459***	-0.0345**
	(0.0084)	(0.0156)	(0.0232)	(0.0151)	(0.0183)	(0.0284)	(0.0225)	(0.0158)	(0.0170)
tertiary education (d)	-0.1345***	-0.0478***	-0.1124***	-0.0233	-0.0203	0.0360	0.0113	0.0894***	-0.0347*
	(0.0118)	(0.0142)	(0.0268)	(0.0179)	(0.0193)	(0.0323)	(0.0242)	(0.0214)	(0.0181)
houseowner (d)	0.0574***	0.0493**	0.1113***	0.0234	-0.0321*	0.0268	-0.0167	-0.0196	-0.0347**
	(0.0085)	(0.0205)	(0.0227)	(0.0154)	(0.0180)	(0.0215)	(0.0193)	(0.0174)	(0.0138)
single (d)	0.1224***	0.0520***	0.0817***	0.0577***	0.1374***	0.2076***	0.0087	-0.0027	0.0333**
	(0.0077)	(0.0090)	(0.0225)	(0.0118)	(0.0166)	(0.0208)	(0.0187)	(0.0162)	(0.0130)
child(ren) in household (d)	-0.2145***	-0.0341***	-0.1801***	-0.0176	0.1316***	-0.1723***	0.4268***	0.1367***	-0.1333***
	(0.0116)	(0.0128)	(0.0281)	(0.0150)	(0.0277)	(0.0251)	(0.0216)	(0.0151)	(0.0208)
three-person household (d)	0.1698***	0.0498***	0.1804***	0.0941***	-0.0447*	0.1110***	-0.0835***	-0.1116***	0.0656***
	(0.0070)	(0.0082)	(0.0286)	(0.0104)	(0.0243)	(0.0227)	(0.0286)	(0.0191)	(0.0142)
at least four-person household (d)	0.1693***	0.0718***	0.1606***	0.1569***	-0.1405***	0.1486***	-0.1876***	-0.2090***	0.0362**
	(0.0079)	(0.0088)	(0.0321)	(0.0104)	(0.0274)	(0.0253)	(0.0317)	(0.0190)	(0.0176)
age	-0.0582***	-0.0335***	-0.0975***	-0.0418***	-0.0598***	-0.0668***	-0.0232***	-0.0291***	-0.0635***
	(0.0018)	(0.0020)	(0.0089)	(0.0022)	(0.0033)	(0.0044)	(0.0028)	(0.0027)	(0.0023)
age^2	0.0007***	0.0004***	0.0013***	0.0006***	0.0009***	0.0009***	0.0005***	0.0006***	0.0009***
	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	0.7098***	0.6415***	1.8946***	0.3792***	1.3377***	1.2504***	1.5974***	3.1877***	0.5194***
	(0.0690)	(0.0863)	(0.5002)	(0.0957)	(0.2971)	(0.2588)	(0.3164)	(0.2909)	(0.0819)
gross household income^2	-0.0375***	-0.0362***	-0.0963***	-0.0230***	-0.0680***	-0.0691***	-0.0840***	-0.1672***	-0.0329***
	(0.0036)	(0.0050)	(0.0236)	(0.0056)	(0.0145)	(0.0140)	(0.0158)	(0.0153)	(0.0044)
Observations	19983	5106	4204	5716	9472	4424	5582	9001	8128

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 14: Residual dependence estimation for contributory benefits and exclusively migrant households (participation equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
migrant dummy (d)	-0.0170	-0.1721***	-0.0837*	-0.0915**	0.0017	0.0568***	-0.1003***	0.0076	-0.0631*	-0.0724**
	(0.0244)	(0.0300)	(0.0475)	(0.0399)	(0.0286)	(0.0198)	(0.0240)	(0.0200)	(0.0357)	(0.0284)
social contacts (d)	-0.0482**	-0.0362	0.0030	0.0003	-0.0554***	-0.0271*	-0.0586***	-0.0352**	-0.0525	-0.0630***
	(0.0220)	(0.0249)	(0.0496)	(0.0134)	(0.0136)	(0.0158)	(0.0199)	(0.0152)	(0.0326)	(0.0166)
leisure activities (d)	-0.0483***	-0.0235	-0.0351	-0.0519***	-0.0504***	-0.0628***	-0.0600***	-0.0361***	-0.0437**	-0.0417**
	(0.0167)	(0.0214)	(0.0277)	(0.0085)	(0.0138)	(0.0130)	(0.0137)	(0.0103)	(0.0187)	(0.0193)
urban area (d)	-0.0466***	0.0138	-0.0427*	-0.0409***	-0.0387***	-0.0193	-0.0331***	-0.0416***	-0.0608***	-0.0053
	(0.0168)	(0.0171)	(0.0252)	(0.0089)	(0.0120)	(0.0150)	(0.0109)	(0.0103)	(0.0164)	(0.0159)
secondary education (d)	-0.1006***	-0.1001***	-0.0472	-0.0552***	-0.0853***	-0.0450**	-0.0674***	-0.0412***	-0.0584***	-0.0079
	(0.0227)	(0.0220)	(0.0320)	(0.0132)	(0.0229)	(0.0189)	(0.0146)	(0.0128)	(0.0213)	(0.0219)
tertiary education (d)	-0.1882***	-0.1768***	-0.0813**	-0.0743***	-0.1120***	-0.0757***	-0.0866***	-0.1159***	-0.0464*	-0.0368*
	(0.0276)	(0.0224)	(0.0382)	(0.0217)	(0.0236)	(0.0235)	(0.0139)	(0.0164)	(0.0238)	(0.0202)
houseowner (d)	-0.0074	0.0634***	-0.0329	0.0586***	0.0152	0.0324*	0.0621***	0.0220*	0.2392***	-0.0323
	(0.0172)	(0.0210)	(0.0300)	(0.0106)	(0.0137)	(0.0192)	(0.0153)	(0.0118)	(0.0199)	(0.0198)
single (d)	0.0448**	0.0055	0.2531***	0.0403***	0.0214	0.0381***	0.2212***	0.0189*	0.2572***	0.0337*
	(0.0177)	(0.0196)	(0.0301)	(0.0091)	(0.0144)	(0.0140)	(0.0129)	(0.0113)	(0.0203)	(0.0181)
child(ren) in household (d)	-0.1430***	-0.0484*	-0.1115***	-0.0768***	-0.0137	-0.0951***	-0.1185***	-0.0540***	-0.2045***	-0.2669***
	(0.0248)	(0.0257)	(0.0353)	(0.0137)	(0.0192)	(0.0184)	(0.0145)	(0.0169)	(0.0223)	(0.0268)
three-person household (d)	0.1157***	0.0826***	0.1491***	0.0755***	0.0267	0.0688***	0.1397***	0.0768***	0.1930***	0.0826***
	(0.0190)	(0.0242)	(0.0330)	(0.0085)	(0.0194)	(0.0146)	(0.0144)	(0.0135)	(0.0198)	(0.0211)
at least four-person household (d)	0.1179***	-0.0307	0.0540	0.0777***	-0.0887***	0.1020***	0.1262***	0.0337*	0.1777***	0.0992***
	(0.0223)	(0.0301)	(0.0366)	(0.0098)	(0.0244)	(0.0156)	(0.0157)	(0.0174)	(0.0225)	(0.0232)
age	-0.0640***	-0.0552***	-0.0732***	-0.0501***	-0.0757***	-0.0375***	-0.0488***	-0.0604***	-0.0455***	-0.0157***
	(0.0032)	(0.0044)	(0.0073)	(0.0018)	(0.0030)	(0.0027)	(0.0028)	(0.0026)	(0.0037)	(0.0032)
age^2	0.0009***	0.0008***	0.0010***	0.0007***	0.0010***	0.0005***	0.0006***	0.0008***	0.0007***	0.0003***
	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	0.9020***	2.0099***	0.2694***	1.0917***	1.3620***	0.5093***	1.3087***	1.3425***	2.5298***	2.6910***
	(0.2098)	(0.3516)	(0.0550)	(0.1751)	(0.1651)	(0.1353)	(0.1390)	(0.1667)	(0.3588)	(0.2725)
gross household $income^2$	-0.0507***	-0.1134***	-0.0166***	-0.0644***	-0.0828***	-0.0293***	-0.0743***	-0.0683***	-0.1337***	-0.1385***
	(0.0105)	(0.0177)	(0.0035)	(0.0097)	(0.0086)	(0.0079)	(0.0074)	(0.0083)	(0.0186)	(0.0136)
Observations	5408	4984	2631	9493	11760	4305	11231	9751	6553	4587

	IT	LT	LU	LV	NL	PT	SE	SI	UK
migrant dummy (d)	-0.0398**	-0.0270	-0.0458*	0.0022	0.0482	-0.2645***	-0.0479	-0.0524*	-0.1411***
	(0.0175)	(0.0254)	(0.0246)	(0.0173)	(0.0411)	(0.0613)	(0.0292)	(0.0276)	(0.0285)
social contacts (d)	-0.0113	-0.0254***	-0.0516	-0.0241*	0.0101	-0.0205	-0.0296	-0.0269	-0.0131
	(0.0092)	(0.0094)	(0.0350)	(0.0137)	(0.0229)	(0.0237)	(0.0267)	(0.0207)	(0.0130)
leisure activities (d)	-0.0281***	-0.0320***	-0.0327	-0.0144	-0.0818***	-0.0071	-0.0945***	-0.0611***	-0.0398***
	(0.0079)	(0.0109)	(0.0273)	(0.0128)	(0.0199)	(0.0219)	(0.0210)	(0.0145)	(0.0123)
urban area (d)	-0.0318***	-0.0197**	0.0090	-0.0313***		0.0437**	-0.0185		0.0273**
	(0.0071)	(0.0086)	(0.0215)	(0.0111)		(0.0191)	(0.0208)		(0.0138)
secondary education (d)	-0.0907***	-0.0162	-0.0550**	-0.0128	0.0143	0.0004	0.0658***	0.0350**	-0.0323*
	(0.0086)	(0.0154)	(0.0254)	(0.0154)	(0.0189)	(0.0297)	(0.0237)	(0.0170)	(0.0167)
tertiary education (d)	-0.1355***	-0.0396***	-0.0974***	-0.0161	-0.0157	0.0339	0.0055	0.0902***	-0.0312*
	(0.0121)	(0.0142)	(0.0294)	(0.0183)	(0.0199)	(0.0334)	(0.0255)	(0.0230)	(0.0179)
houseowner (d)	0.0527***	0.0523**	0.0886***	0.0196	-0.0319*	0.0180	-0.0188	-0.0330*	-0.0430***
	(0.0087)	(0.0213)	(0.0248)	(0.0153)	(0.0187)	(0.0221)	(0.0201)	(0.0183)	(0.0135)
single (d)	0.1233***	0.0487***	0.0473*	0.0461***	0.1483***	0.2085***	0.0162	-0.0036	0.0274**
	(0.0078)	(0.0092)	(0.0247)	(0.0124)	(0.0172)	(0.0214)	(0.0195)	(0.0173)	(0.0128)
child(ren) in household (d)	-0.2123***	-0.0322**	-0.1324***	-0.0089	0.1199***	-0.1720***	0.4239***	0.1295***	-0.1269***
	(0.0121)	(0.0130)	(0.0317)	(0.0151)	(0.0286)	(0.0262)	(0.0222)	(0.0163)	(0.0211)
three-person household (d)	0.1684***	0.0492***	0.1538***	0.0969***	-0.0489*	0.1066***	-0.0720**	-0.1093***	0.0610***
	(0.0069)	(0.0082)	(0.0329)	(0.0104)	(0.0256)	(0.0232)	(0.0300)	(0.0203)	(0.0140)
at least four-person household (d)	0.1667***	0.0712***	0.1270***	0.1446***	-0.1220***	0.1434***	-0.1774***	-0.2001***	0.0350**
	(0.0078)	(0.0088)	(0.0364)	(0.0105)	(0.0288)	(0.0258)	(0.0334)	(0.0203)	(0.0175)
age	-0.0569***	-0.0332***	-0.0915***	-0.0420***	-0.0598***	-0.0664***	-0.0233***	-0.0298***	-0.0603***
	(0.0018)	(0.0020)	(0.0097)	(0.0022)	(0.0035)	(0.0045)	(0.0029)	(0.0027)	(0.0023)
age^2	0.0007***	0.0004***	0.0012***	0.0006***	0.0009***	0.0009***	0.0005***	0.0006***	0.0009***
	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	0.6851***	0.5960***	2.0938***	0.3448***	1.3079***	1.2214***	1.5706***	3.1955***	0.4878***
	(0.0698)	(0.0856)	(0.5492)	(0.0872)	(0.3067)	(0.2669)	(0.3021)	(0.3062)	(0.0805)
gross household $income^2$	-0.0362***	-0.0335***	-0.1071***	-0.0208***	-0.0665***	-0.0672***	-0.0829***	-0.1680***	-0.0311***
	(0.0036)	(0.0050)	(0.0260)	(0.0051)	(0.0149)	(0.0145)	(0.0151)	(0.0161)	(0.0044)
Observations	19089	4713	3642	4962	9007	4171	5189	7960	7663

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 15: Residual dependence estimation for contributory benefits and mixed households (participation equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
migrant dummy (d)	0.1108***	0.0756***	0.1915***	0.0320*	0.1423***	0.0885***	0.0313	0.0679***	0.0423	0.0566**
	(0.0213)	(0.0247)	(0.0268)	(0.0171)	(0.0199)	(0.0166)	(0.0242)	(0.0154)	(0.0357)	(0.0220)
social contacts (d)	-0.0554**	-0.0634***	-0.0158	-0.0025	-0.0533***	-0.0345**	-0.0512**	-0.0443***	-0.0505	-0.0560***
	(0.0229)	(0.0245)	(0.0446)	(0.0135)	(0.0133)	(0.0172)	(0.0204)	(0.0154)	(0.0333)	(0.0166)
leisure activities (d)	-0.0483***	-0.0185	-0.0342	-0.0525***	-0.0508***	-0.0651***	-0.0703***	-0.0441***	-0.0485**	-0.0506***
	(0.0168)	(0.0208)	(0.0263)	(0.0086)	(0.0135)	(0.0140)	(0.0138)	(0.0103)	(0.0189)	(0.0190)
urban area (d)	-0.0563***	0.0070	-0.0301	-0.0392***	-0.0391***	-0.0121	-0.0301***	-0.0434***	-0.0575***	-0.0189
	(0.0173)	(0.0163)	(0.0242)	(0.0089)	(0.0118)	(0.0158)	(0.0111)	(0.0104)	(0.0166)	(0.0158)
secondary education (d)	-0.0881***	-0.0904***	-0.0389	-0.0518***	-0.0992***	-0.0554***	-0.0809***	-0.0437***	-0.0655***	-0.0285
	(0.0244)	(0.0218)	(0.0304)	(0.0134)	(0.0229)	(0.0202)	(0.0149)	(0.0131)	(0.0218)	(0.0219)
tertiary education (d)	-0.1808***	-0.1483***	-0.1105***	-0.0704***	-0.1218***	-0.1073***	-0.0936***	-0.1204***	-0.0401*	-0.0579***
	(0.0296)	(0.0223)	(0.0361)	(0.0215)	(0.0236)	(0.0253)	(0.0139)	(0.0165)	(0.0244)	(0.0199)
houseowner (d)	0.0054	0.0303	-0.0756***	0.0597***	0.0179	0.0360*	0.0657***	0.0255**	0.2505***	-0.0342*
	(0.0171)	(0.0205)	(0.0275)	(0.0107)	(0.0133)	(0.0211)	(0.0156)	(0.0120)	(0.0208)	(0.0196)
single (d)	0.0696***	0.0025	0.2403***	0.0404***	0.0318**	0.0395***	0.2409***	0.0213*	0.2626***	0.0317*
	(0.0179)	(0.0191)	(0.0283)	(0.0092)	(0.0141)	(0.0150)	(0.0129)	(0.0114)	(0.0205)	(0.0183)
child(ren) in household (d)	-0.1716***	-0.0739***	-0.1790***	-0.0812***	-0.0270	-0.1020***	-0.1315***	-0.0629***	-0.2328***	-0.2605***
	(0.0255)	(0.0247)	(0.0320)	(0.0137)	(0.0190)	(0.0190)	(0.0146)	(0.0168)	(0.0227)	(0.0269)
three-person household (d)	0.1007***	0.0889***	0.1279***	0.0749***	0.0220	0.0800***	0.1335***	0.0799***	0.1836***	0.0921***
	(0.0192)	(0.0227)	(0.0317)	(0.0087)	(0.0187)	(0.0163)	(0.0144)	(0.0136)	(0.0199)	(0.0201)
at least four-person household (d)	0.1068***	-0.0084	0.0103	0.0765***	-0.0783***	0.1157***	0.1302***	0.0329*	0.1722***	0.0974***
	(0.0226)	(0.0281)	(0.0338)	(0.0100)	(0.0238)	(0.0178)	(0.0157)	(0.0175)	(0.0225)	(0.0227)
age	-0.0608***	-0.0587***	-0.0646***	-0.0508***	-0.0731***	-0.0384***	-0.0478***	-0.0621***	-0.0451***	-0.0191***
	(0.0032)	(0.0041)	(0.0067)	(0.0018)	(0.0029)	(0.0031)	(0.0028)	(0.0026)	(0.0037)	(0.0032)
age^2	0.0009***	0.0008***	0.0009***	0.0007***	0.0010***	0.0005***	0.0006***	0.0008***	0.0007***	0.0003***
	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	0.8831***	1.3914***	0.2407***	1.2029***	1.3127***	0.6766***	1.3162***	1.4687***	2.6899***	2.6404***
	(0.2673)	(0.3011)	(0.0737)	(0.1800)	(0.1659)	(0.1519)	(0.1437)	(0.1761)	(0.3692)	(0.2629)
gross household $income^2$	-0.0492***	-0.0823***	-0.0171***	-0.0707***	-0.0803***	-0.0391***	-0.0746***	-0.0745***	-0.1419***	-0.1354***
	(0.0133)	(0.0151)	(0.0043)	(0.0100)	(0.0086)	(0.0088)	(0.0077)	(0.0088)	(0.0192)	(0.0131)
Observations	5153	4916	2880	9627	12079	4366	11064	9777	6375	4610

	IT	LT	LU	LV	NL	PT	SE	SI	UK
migrant dummy (d)	0.0039	0.0371***	0.1127***	0.0759***	0.0700**	0.0183	-0.0461	0.0423**	0.0127
	(0.0142)	(0.0113)	(0.0253)	(0.0136)	(0.0332)	(0.0361)	(0.0312)	(0.0193)	(0.0210)
social contacts (d)	-0.0148	-0.0245**	-0.0608	-0.0242	0.0182	-0.0190	-0.0106	-0.0311	-0.0190
	(0.0090)	(0.0098)	(0.0463)	(0.0157)	(0.0226)	(0.0232)	(0.0268)	(0.0201)	(0.0129)
leisure activities (d)	-0.0245***	-0.0315***	-0.0030	-0.0099	-0.0846***	-0.0088	-0.1000***	-0.0565***	-0.0289**
	(0.0077)	(0.0110)	(0.0345)	(0.0143)	(0.0196)	(0.0213)	(0.0212)	(0.0140)	(0.0122)
urban area (d)	-0.0332***	-0.0199**	-0.0127	-0.0328***		0.0437**	-0.0046		0.0249*
	(0.0070)	(0.0089)	(0.0249)	(0.0125)		(0.0187)	(0.0211)		(0.0132)
secondary education (d)	-0.0934***	-0.0219	-0.0999***	-0.0168	0.0078	-0.0080	0.0723***	0.0416**	-0.0327**
	(0.0085)	(0.0162)	(0.0300)	(0.0175)	(0.0186)	(0.0287)	(0.0239)	(0.0166)	(0.0166)
tertiary education (d)	-0.1347***	-0.0494***	-0.1377***	-0.0180	-0.0205	0.0371	0.0225	0.0842***	-0.0225
	(0.0120)	(0.0147)	(0.0374)	(0.0207)	(0.0196)	(0.0326)	(0.0257)	(0.0221)	(0.0178)
houseowner (d)	0.0525***	0.0497**	0.1328***	0.0157	-0.0332*	0.0199	-0.0236	-0.0332*	-0.0453***
	(0.0086)	(0.0213)	(0.0369)	(0.0176)	(0.0183)	(0.0218)	(0.0206)	(0.0179)	(0.0133)
single (d)	0.1232***	0.0591***	0.1528***	0.0790***	0.1367***	0.2114***	0.0029	-0.0070	0.0324**
	(0.0077)	(0.0093)	(0.0271)	(0.0138)	(0.0169)	(0.0208)	(0.0196)	(0.0168)	(0.0128)
child(ren) in household (d)	-0.2109***	-0.0315**	-0.1908***	-0.0100	0.1307***	-0.1712***	0.4447***	0.1424***	-0.1261***
	(0.0120)	(0.0130)	(0.0389)	(0.0169)	(0.0282)	(0.0254)	(0.0221)	(0.0154)	(0.0208)
three-person household (d)	0.1612***	0.0480***	0.1110***	0.1035***	-0.0438*	0.1050***	-0.0995***	-0.1141***	0.0613***
	(0.0068)	(0.0087)	(0.0298)	(0.0127)	(0.0247)	(0.0228)	(0.0307)	(0.0198)	(0.0137)
at least four-person household (d)	0.1588***	0.0712***	0.1042***	0.1812***	-0.1444***	0.1407***	-0.2047***	-0.2182***	0.0335**
	(0.0077)	(0.0093)	(0.0356)	(0.0128)	(0.0277)	(0.0253)	(0.0342)	(0.0197)	(0.0170)
age	-0.0575***	-0.0331***	-0.1159***	-0.0442***	-0.0609***	-0.0657***	-0.0254***	-0.0298***	-0.0593***
	(0.0018)	(0.0021)	(0.0062)	(0.0026)	(0.0034)	(0.0044)	(0.0030)	(0.0028)	(0.0022)
age^2	0.0007***	0.0004***	0.0015***	0.0006***	0.0010***	0.0009***	0.0005***	0.0006***	0.0008***
	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	0.6735***	0.6498***	1.6852**	0.3964***	1.3516***	1.2466***	2.0545***	3.0871***	0.4662***
	(0.0692)	(0.0887)	(0.7453)	(0.1039)	(0.3069)	(0.2610)	(0.3278)	(0.3007)	(0.0802)
gross household $income^2$	-0.0355***	-0.0366***	-0.0860**	-0.0240***	-0.0685***	-0.0689***	-0.1064***	-0.1619***	-0.0298***
	(0.0036)	(0.0052)	(0.0350)	(0.0061)	(0.0149)	(0.0142)	(0.0163)	(0.0158)	(0.0043)
Observations	19142	4891	2344	4991	9187	4303	5091	8458	7575

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

1.3.2 Levels

Tabelle: 16: Residual dependence estimation for contributory benefits and migrant households (level equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
Log (contributory benefits)										
migrant dummy	-0.1752***	0.1837**	-0.1523**	0.1496**	0.0244	-0.0205	0.0150	0.0084	-0.1108	-0.0803
	(0.0634)	(0.0750)	(0.0693)	(0.0638)	(0.0436)	(0.0905)	(0.0646)	(0.0558)	(0.0765)	(0.1426)
age	0.0098	0.0231**	-0.0024	-0.0042	0.0033	0.0196	0.0282***	0.0268***	0.0183**	-0.0125
	(0.0088)	(0.0111)	(0.0112)	(0.0067)	(0.0071)	(0.0132)	(0.0082)	(0.0077)	(0.0083)	(0.0187)
age^2	-0.0001	-0.0003***	-0.0000	0.0000	-0.0001	-0.0001	-0.0003***	-0.0003***	-0.0003***	-0.0000
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
gross household income	1.5560**	-1.0732	-2.4131***	4.8875***	1.1359**	0.7845	-1.6912***	0.9276	-1.8143**	-9.0987***
	(0.7471)	(1.0690)	(0.8143)	(0.9172)	(0.5179)	(1.0806)	(0.5346)	(0.6857)	(0.8212)	(2.9068)
gross household income^2	-0.0405	0.0787	0.1614***	-0.2687***	-0.0194	-0.0500	0.1216***	-0.0181	0.1308***	0.4796***
	(0.0376)	(0.0555)	(0.0418)	(0.0512)	(0.0270)	(0.0624)	(0.0292)	(0.0337)	(0.0435)	(0.1482)
urban area	0.1209**	0.0133	0.1765***	0.1233***	0.0915***	-0.0611	0.0988***	0.1468***	0.1777***	0.1555
	(0.0524)	(0.0557)	(0.0520)	(0.0352)	(0.0327)	(0.0792)	(0.0361)	(0.0405)	(0.0424)	(0.1034)
secondary education	0.0702	0.1243*	0.1265*	0.0784*	0.0683	0.0609	0.2380***	-0.0236	0.1948***	0.1275
	(0.0607)	(0.0689)	(0.0647)	(0.0466)	(0.0517)	(0.0919)	(0.0517)	(0.0466)	(0.0536)	(0.1371)
tertiary education	0.2878***	0.4076***	0.2647***	0.1189*	0.1112**	0.0868	0.3441***	0.1909***	0.2644***	0.2204*
	(0.0764)	(0.0815)	(0.0838)	(0.0649)	(0.0546)	(0.1112)	(0.0517)	(0.0628)	(0.0614)	(0.1324)
houseowner	0.1807***	0.0737	0.0122	0.0421	0.0806**	0.2481**	0.1004**	0.1190***	-0.1077	0.1849
	(0.0512)	(0.0683)	(0.0563)	(0.0397)	(0.0360)	(0.1011)	(0.0506)	(0.0462)	(0.0675)	(0.1284)
single	-0.0889*	0.0041	-0.2307***	-0.1650***	-0.1742***	-0.0037	-0.2471***	-0.2129***	-0.3980***	-0.2495**
	(0.0513)	(0.0612)	(0.0637)	(0.0364)	(0.0356)	(0.0759)	(0.0531)	(0.0423)	(0.0517)	(0.1105)
child(ren) in household	-0.3129***	-0.4815***	0.1003	-0.3517***	-0.1987***	-0.2036*	0.0082	-0.2766***	0.1076	0.6532**
	(0.0928)	(0.0999)	(0.1084)	(0.0643)	(0.0648)	(0.1156)	(0.0639)	(0.0744)	(0.0930)	(0.2880)
three-person household	0.0944	0.0185	-0.0294	-0.0600	0.1015*	0.0789	-0.0456	-0.0724	-0.0641	-0.1276
	(0.0816)	(0.0919)	(0.0806)	(0.0545)	(0.0604)	(0.1050)	(0.0561)	(0.0678)	(0.0668)	(0.1805)
at least four-person household	0.0228	0.1047	-0.1977**	-0.2130***	0.0938	0.1047	0.0243	-0.0818	-0.1189	-0.1503
	(0.0950)	(0.1089)	(0.0892)	(0.0615)	(0.0783)	(0.1196)	(0.0598)	(0.0786)	(0.0733)	(0.2079)
Contributory benefits dummy										
migrant dummy	0.1236**	-0.0984*	0.3070***	0.0101	0.2508***	0.3234***	-0.0991**	0.1367***	-0.0542	0.0026
	(0.0551)	(0.0532)	(0.0697)	(0.0698)	(0.0471)	(0.0596)	(0.0437)	(0.0428)	(0.0618)	(0.0582)
age	-0.1885***	-0.1513***	-0.1628***	-0.2110***	-0.1937***	-0.1364***	-0.1201***	-0.1935***	-0.1158***	-0.0495***
	(0.0110)	(0.0118)	(0.0150)	(0.0102)	(0.0081)	(0.0122)	(0.0064)	(0.0088)	(0.0089)	(0.0092)
age^2	0.0026***	0.0021***	0.0022***	0.0028***	0.0026***	0.0019***	0.0016***	0.0026***	0.0017***	0.0008***
	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
gross household income	2.6903***	4.7725***	0.7213**	5.0667***	3.5166***	2.1135***	3.2969***	4.2949***	6.1510***	7.9907***
	(0.5658)	(0.5993)	(0.2871)	(0.6746)	(0.3615)	(0.5160)	(0.2994)	(0.4866)	(0.5704)	(0.5226)
gross household income^2	-0.1494***	-0.2704***	-0.0477***	-0.2972***	-0.2134***	-0.1213***	-0.1870***	-0.2189***	-0.3258***	-0.4103***
	(0.0283)	(0.0304)	(0.0153)	(0.0373)	(0.0185)	(0.0299)	(0.0161)	(0.0240)	(0.0299)	(0.0262)
social contacts	-0.1523**	-0.1110*	-0.0181	-0.0067	-0.1353***	-0.1253**	-0.1336***	-0.1200**	-0.1464*	-0.1800***
	(0.0671)	(0.0618)	(0.0994)	(0.0566)	(0.0347)	(0.0613)	(0.0478)	(0.0492)	(0.0797)	(0.0501)
leisure activities	-0.1505***	-0.0343	-0.1001	-0.2166***	-0.1332***	-0.2304***	-0.1569***	-0.1221***	-0.1004**	-0.1502**
	(0.0484)	(0.0512)	(0.0641)	(0.0356)	(0.0348)	(0.0468)	(0.0338)	(0.0323)	(0.0460)	(0.0598)
urban area	-0.1580***	-0.0073	-0.0987*	-0.1708***	-0.1036***	-0.0798	-0.0874***	-0.1370***	-0.1564***	-0.0630
	(0.0466)	(0.0421)	(0.0595)	(0.0349)	(0.0303)	(0.0504)	(0.0269)	(0.0313)	(0.0404)	(0.0461)
secondary education	-0.2666***	-0.2438***	-0.1173	-0.2277***	-0.2232***	-0.1704**	-0.1818***	-0.1174***	-0.1563***	-0.0839
	(0.0659)	(0.0533)	(0.0719)	(0.0626)	(0.0548)	(0.0696)	(0.0353)	(0.0390)	(0.0509)	(0.0620)
tertiary education	-0.5321***	-0.4291***	-0.2920***	-0.2722***	-0.2939***	-0.3108***	-0.2175***	-0.3532***	-0.1178**	-0.1668***
	(0.0729)	(0.0550)	(0.0852)	(0.0749)	(0.0568)	(0.0772)	(0.0342)	(0.0452)	(0.0571)	(0.0567)
houseowner	0.0256	0.1786***	-0.1000	0.2412***	0.0535	0.1147*	0.1858***	0.0675*	0.6245***	-0.0564
	(0.0481)	(0.0512)	(0.0700)	(0.0389)	(0.0340)	(0.0671)	(0.0361)	(0.0354)	(0.0491)	(0.0590)
single	0.1567***	0.0229	0.6001***	0.1701***	0.0841**	0.1615***	0.5771***	0.0648*	0.6454***	0.1018*
	(0.0496)	(0.0475)	(0.0753)	(0.0384)	(0.0352)	(0.0490)	(0.0324)	(0.0347)	(0.0508)	(0.0522)
child(ren) in household	-0.4072***	-0.1752***	-0.4683***	-0.3116***	-0.0597	-0.3090***	-0.3014***	-0.2053***	-0.5317***	-0.7420***
	(0.0626)	(0.0610)	(0.0779)	(0.0464)	(0.0470)	(0.0568)	(0.0357)	(0.0463)	(0.0554)	(0.0664)
three-person household	0.3480***	0.2470***	0.3796***	0.3605***	0.0649	0.2659***	0.3470***	0.2767***	0.4814***	0.3096***
	(0.0629)	(0.0614)	(0.0827)	(0.0459)	(0.0459)	(0.0620)	(0.0363)	(0.0467)	(0.0533)	(0.0679)
at least four-person household	0.3562***	0.0032	0.0864	0.3616***	-0.2207***	0.4051***	0.3225***	0.1362**	0.4434***	0.3593***
	(0.0730)	(0.0708)	(0.0837)	(0.0517)	(0.0567)	(0.0674)	(0.0390)	(0.0534)	(0.0580)	(0.0736)
mills										
lambda	-1.4143***	-1.6262***	-1.0643***	-1.3666***	-1.4114***	-2.0947***	-1.5485***	-1.6440***	-1.2699***	-2.9434***
	(0.1072)	(0.1639)	(0.1374)	(0.0936)	(0.0735)	(0.2598)	(0.1342)	(0.1122)	(0.1207)	(0.5046)
Observations	5799	5454	3087	9867	12765	4872	11752	10503	6823	4993

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 17: Residual dependence estimation for contributory benefits and migrant households (level equation)

	IT	LT	LU	LV	NL	PT	SE	SI	UK
Log (contributory benefits)									
migrant dummy	-0.1638***	0.0163	-0.2663***	-0.0117	-0.2122***	-0.0947	0.2077*	0.0390	-0.1272***
	(0.0509)	(0.0905)	(0.0434)	(0.0415)	(0.0673)	(0.0671)	(0.1207)	(0.0559)	(0.0462)
age	0.0430***	0.0010	0.0172**	0.0103	0.1051***	0.0128*	-0.0163	0.0246**	-0.0750***
	(0.0062)	(0.0132)	(0.0083)	(0.0072)	(0.0091)	(0.0070)	(0.0177)	(0.0101)	(0.0066)
age^2	-0.0004***	0.0001	-0.0002**	-0.0001	-0.0008***	-0.0002**	-0.0002	-0.0002***	0.0007***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)
gross household income	0.6883**	0.2244	3.6871***	0.9731***	3.7970***	0.4010	-4.5033***	0.7691	4.3450***
	(0.2871)	(0.8295)	(0.9768)	(0.2798)	(0.9481)	(0.4715)	(1.5488)	(1.1703)	(0.3039)
gross household income^2	-0.0003	-0.0114	-0.1459***	-0.0454***	-0.1558***	0.0127	0.2353***	-0.0320	-0.2056***
	(0.0149)	(0.0484)	(0.0464)	(0.0168)	(0.0456)	(0.0256)	(0.0785)	(0.0617)	(0.0159)
urban area	0.1575***	0.1449**	-0.0334	0.0237		0.0216	0.0402		0.0463
	(0.0279)	(0.0625)	(0.0385)	(0.0374)		(0.0349)	(0.1117)		(0.0309)
secondary education	0.1543***	-0.0584	0.1486***	-0.0095	0.1729***	0.2862***	-0.1345	0.1466***	0.0493
	(0.0342)	(0.0919)	(0.0448)	(0.0453)	(0.0436)	(0.0575)	(0.1152)	(0.0531)	(0.0337)
tertiary education	0.2716***	0.1303	0.2521***	0.0563	0.3159***	0.3590***	0.0402	0.2901***	0.1933***
	(0.0480)	(0.0862)	(0.0566)	(0.0531)	(0.0476)	(0.0604)	(0.1272)	(0.0762)	(0.0347)
houseowner	0.1426***	0.0015	0.2349***	0.2400***	0.0021	-0.0443	-0.0256	0.1145*	0.1196***
	(0.0336)	(0.1400)	(0.0515)	(0.0514)	(0.0397)	(0.0392)	(0.1014)	(0.0624)	(0.0321)
single	-0.0496	-0.1361*	-0.1467***	-0.1214***	0.2448***	-0.1782***	-0.0093	0.0363	-0.1963***
	(0.0315)	(0.0701)	(0.0417)	(0.0400)	(0.0373)	(0.0405)	(0.0946)	(0.0497)	(0.0287)
child(ren) in household	-0.0928	-0.1325	-0.3347***	-0.7331***	0.1720*	0.0794	-2.8820***	-0.4588***	-0.0013
	(0.0601)	(0.1029)	(0.0715)	(0.0570)	(0.1013)	(0.0688)	(0.3249)	(0.0687)	(0.0717)
three-person household	-0.1050**	-0.0698	0.1637**	0.0306	-0.0784	0.0220	0.2834	0.0116	-0.0585
	(0.0471)	(0.0929)	(0.0654)	(0.0579)	(0.0929)	(0.0494)	(0.1911)	(0.0645)	(0.0515)
at least four-person household	-0.2785***	0.0326	0.2246***	0.0859	0.2198*	-0.0317	0.4986**	0.0847	-0.1600**
	(0.0519)	(0.1117)	(0.0714)	(0.0757)	(0.1210)	(0.0605)	(0.2413)	(0.0809)	(0.0718)
Contributory benefits dummy									
migrant dummy	-0.0583*	0.1346*	0.0256	0.1911***	0.1605**	-0.1526*	-0.1115**	0.0267	-0.1990***
	(0.0354)	(0.0740)	(0.0552)	(0.0499)	(0.0655)	(0.0799)	(0.0543)	(0.0424)	(0.0605)
age	-0.1883***	-0.1981***	-0.2455***	-0.1707***	-0.1595***	-0.1733***	-0.0583***	-0.0747***	-0.2279***
	(0.0062)	(0.0157)	(0.0144)	(0.0110)	(0.0092)	(0.0116)	(0.0082)	(0.0077)	(0.0116)
age^2	0.0024***	0.0026***	0.0032***	0.0023***	0.0025***	0.0024***	0.0012***	0.0015***	0.0032***
	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
gross household income	2.2986***	3.7982***	4.7692***	1.5491***	3.5661***	3.2421***	4.0202***	8.1970***	1.8643***
	(0.1888)	(0.4114)	(1.0558)	(0.2219)	(0.7993)	(0.5735)	(0.5431)	(0.7633)	(0.3286)
gross household income^2	-0.1213***	-0.2143***	-0.2424***	-0.0938***	-0.1814***	-0.1791***	-0.2114***	-0.4301***	-0.1179***
	(0.0098)	(0.0244)	(0.0498)	(0.0135)	(0.0384)	(0.0311)	(0.0273)	(0.0398)	(0.0173)
social contacts	-0.0410	-0.1602***	-0.1576**	-0.1064*	0.0386	-0.0537	-0.0639	-0.0790	-0.0487
	(0.0297)	(0.0582)	(0.0781)	(0.0553)	(0.0587)	(0.0591)	(0.0632)	(0.0505)	(0.0481)
leisure activities	-0.0901***	-0.1657***	-0.0591	-0.0321	-0.2191***	-0.0132	-0.2284***	-0.1527***	-0.1258***
	(0.0251)	(0.0559)	(0.0645)	(0.0497)	(0.0473)	(0.0549)	(0.0510)	(0.0353)	(0.0458)
urban area	-0.1112***	-0.1026**	-0.0084	-0.0983**		0.1109**	-0.0256		0.0841*
	(0.0224)	(0.0492)	(0.0490)	(0.0432)		(0.0487)	(0.0508)		(0.0494)
secondary education	-0.2874***	-0.1205	-0.1332**	-0.0738	0.0329	-0.0241	0.1653***	0.1179***	-0.1224**
	(0.0255)	(0.0873)	(0.0595)	(0.0614)	(0.0477)	(0.0718)	(0.0578)	(0.0425)	(0.0583)
tertiary education	-0.4013***	-0.2830***	-0.2855***	-0.0936	-0.0542	0.0944	0.0285	0.2351***	-0.1229*
	(0.0323)	(0.0862)	(0.0693)	(0.0710)	(0.0517)	(0.0794)	(0.0620)	(0.0583)	(0.0628)
houseowner	0.1802***	0.2531***	0.2826***	0.0924	-0.0850*	0.0692	-0.0420	-0.0507	-0.1276**
	(0.0257)	(0.0919)	(0.0578)	(0.0587)	(0.0470)	(0.0550)	(0.0484)	(0.0440)	(0.0504)
single	0.4020***	0.3178***	0.2059***	0.2301***	0.3666***	0.5546***	0.0220	-0.0070	0.1194**
	(0.0264)	(0.0573)	(0.0545)	(0.0473)	(0.0440)	(0.0567)	(0.0463)	(0.0406)	(0.0471)
child(ren) in household	-0.6377***	-0.1884***	-0.4605***	-0.0708	0.3450***	-0.4412***	1.1998***	0.3603***	-0.4397***
	(0.0301)	(0.0641)	(0.0704)	(0.0568)	(0.0704)	(0.0639)	(0.0715)	(0.0411)	(0.0605)
three-person household	0.6365***	0.3377***	0.4567***	0.4436***	-0.1212*	0.2953***	-0.2097***	-0.2839***	0.2552***
	(0.0301)	(0.0648)	(0.0718)	(0.0577)	(0.0683)	(0.0621)	(0.0712)	(0.0483)	(0.0583)
at least four-person household	0.6280***	0.5132***	0.4054***	0.8185***	-0.3916***	0.3985***	-0.4751***	-0.5390***	0.1349**
	(0.0332)	(0.0741)	(0.0790)	(0.0673)	(0.0793)	(0.0716)	(0.0796)	(0.0495)	(0.0671)
mills									
lambda	-1.6260***	-1.9415***	-0.8007***	-1.1782***	-0.7504***	-0.8274***	-2.5375***	-1.6092***	-0.4579***
	(0.0879)	(0.2209)	(0.0834)	(0.1237)	(0.0807)	(0.0883)	(0.3687)	(0.1649)	(0.0589)
Observations	19983	5106	4204	5716	9472	4424	5582	9001	8128

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 18: Residual dependence estimation for contributory benefits and exclusively migrant households (level equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
Log (contributory benefits)										
migrant dummy	-0.1885**	0.3825***	-0.2412*	-0.0048	-0.0541	-0.1329	-0.0260	0.0747	-0.1962*	0.0459
	(0.0810)	(0.1028)	(0.1277)	(0.1022)	(0.0642)	(0.1100)	(0.0907)	(0.0741)	(0.1031)	(0.2007)
age	0.0078	0.0209*	0.0194	-0.0059	0.0001	0.0164	0.0299***	0.0308***	0.0187**	-0.0084
	(0.0092)	(0.0109)	(0.0135)	(0.0068)	(0.0074)	(0.0133)	(0.0085)	(0.0077)	(0.0082)	(0.0186)
age^2	-0.0001	-0.0003**	-0.0002	0.0000	-0.0000	-0.0001	-0.0004***	-0.0003***	-0.0003***	-0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
gross household income	1.2911*	-0.6214	-1.6414*	5.0107***	1.2546**	0.8084	-1.6761***	1.0301	-1.6497**	-8.6218***
	(0.7785)	(1.1612)	(0.9960)	(0.9224)	(0.5306)	(1.0552)	(0.5529)	(0.6963)	(0.8290)	(2.9161)
gross household income^2	-0.0270	0.0541	0.1218**	-0.2758***	-0.0258	-0.0522	0.1210***	-0.0227	0.1223***	0.4575***
	(0.0392)	(0.0601)	(0.0511)	(0.0515)	(0.0277)	(0.0611)	(0.0302)	(0.0343)	(0.0439)	(0.1490)
urban area	0.1123**	-0.0105	0.1514**	0.1242***	0.1014***	-0.0978	0.0913**	0.1446***	0.1854***	0.1053
	(0.0555)	(0.0558)	(0.0626)	(0.0358)	(0.0344)	(0.0826)	(0.0373)	(0.0413)	(0.0420)	(0.1016)
secondary education	0.0858	0.1299*	0.1717**	0.0671	0.0744	0.0648	0.2360***	-0.0200	0.1848***	0.0432
	(0.0633)	(0.0684)	(0.0799)	(0.0477)	(0.0538)	(0.0923)	(0.0533)	(0.0475)	(0.0535)	(0.1348)
tertiary education	0.2996***	0.4322***	0.3505***	0.1012	0.1054*	0.0763	0.3496***	0.1810***	0.2582***	0.1870
	(0.0800)	(0.0817)	(0.1038)	(0.0663)	(0.0570)	(0.1111)	(0.0538)	(0.0642)	(0.0617)	(0.1294)
houseowner	0.1872***	0.1088	0.0210	0.0436	0.0792**	0.2459**	0.1031*	0.0984**	-0.1058	0.1974
	(0.0540)	(0.0680)	(0.0684)	(0.0405)	(0.0380)	(0.0997)	(0.0528)	(0.0472)	(0.0670)	(0.1305)
single	-0.0892*	-0.0124	-0.1998***	-0.1728***	-0.1676***	-0.0596	-0.2430***	-0.2417***	-0.3987***	-0.2727**
	(0.0539)	(0.0611)	(0.0749)	(0.0373)	(0.0371)	(0.0773)	(0.0539)	(0.0428)	(0.0514)	(0.1089)
child(ren) in household	-0.2743***	-0.5651***	0.0976	-0.3540***	-0.1966***	-0.2060*	0.0314	-0.2888***	0.0819	0.5804**
	(0.0974)	(0.1009)	(0.1248)	(0.0653)	(0.0670)	(0.1205)	(0.0663)	(0.0767)	(0.0933)	(0.2917)
three-person household	0.0991	0.0771	0.0761	-0.0598	0.0567	0.0837	-0.0524	-0.0174	-0.0611	-0.0687
	(0.0863)	(0.0925)	(0.1027)	(0.0558)	(0.0635)	(0.1086)	(0.0582)	(0.0704)	(0.0670)	(0.1770)
at least four-person household	-0.0054	0.1810	0.0291	-0.2486***	0.0450	0.0859	0.0162	-0.0966	-0.1212*	-0.1075
	(0.0999)	(0.1136)	(0.1143)	(0.0629)	(0.0816)	(0.1229)	(0.0616)	(0.0825)	(0.0733)	(0.2063)
Contributory benefits dummy										
migrant dummy	-0.0496	-0.4375***	-0.2130*	-0.3346***	0.0043	0.2366**	-0.2523***	0.0246	-0.1585**	-0.2084***
	(0.0692)	(0.0737)	(0.1219)	(0.1291)	(0.0733)	(0.0923)	(0.0582)	(0.0612)	(0.0802)	(0.0798)
age	-0.1892***	-0.1439***	-0.1895***	-0.2126***	-0.1976***	-0.1431***	-0.1227***	-0.1939***	-0.1147***	-0.0475***
	(0.0115)	(0.0122)	(0.0171)	(0.0104)	(0.0085)	(0.0131)	(0.0066)	(0.0092)	(0.0091)	(0.0095)
age^2	0.0026***	0.0020***	0.0026***	0.0028***	0.0027***	0.0020***	0.0016***	0.0026***	0.0017***	0.0008***
	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
gross household income	2.6658***	5.2412***	0.6973*	4.6347***	3.5558***	1.9442***	3.2914***	4.3122***	6.3753***	8.1240***
	(0.5750)	(0.6829)	(0.3630)	(0.6834)	(0.3682)	(0.5299)	(0.3070)	(0.5084)	(0.5869)	(0.5456)
gross household income^2	-0.1498***	-0.2958***	-0.0429**	-0.2734***	-0.2163***	-0.1118***	-0.1869***	-0.2194***	-0.3371***	-0.4183***
	(0.0288)	(0.0346)	(0.0192)	(0.0378)	(0.0189)	(0.0308)	(0.0166)	(0.0252)	(0.0308)	(0.0274)
social contacts	-0.1470**	-0.0952	0.0079	0.0013	-0.1454***	-0.1065*	-0.1484***	-0.1167**	-0.1331	-0.1942***
	(0.0700)	(0.0662)	(0.1153)	(0.0577)	(0.0361)	(0.0647)	(0.0491)	(0.0513)	(0.0815)	(0.0524)
leisure activities	-0.1442***	-0.0615	-0.0910	-0.2212***	-0.1323***	-0.2411***	-0.1515***	-0.1167***	-0.1101**	-0.1288**
	(0.0507)	(0.0547)	(0.0718)	(0.0364)	(0.0362)	(0.0503)	(0.0347)	(0.0338)	(0.0473)	(0.0623)
urban area	-0.1362***	0.0359	-0.1106*	-0.1682***	-0.1012***	-0.0726	-0.0833***	-0.1330***	-0.1531***	-0.0160
	(0.0491)	(0.0449)	(0.0658)	(0.0357)	(0.0315)	(0.0551)	(0.0276)	(0.0328)	(0.0415)	(0.0483)
secondary education	-0.2992***	-0.2583***	-0.1217	-0.2485***	-0.2225***	-0.1720**	-0.1692***	-0.1314***	-0.1468***	-0.0238
	(0.0687)	(0.0566)	(0.0799)	(0.0644)	(0.0572)	(0.0736)	(0.0363)	(0.0409)	(0.0523)	(0.0647)
tertiary education	-0.5309***	-0.4576***	-0.2083**	-0.2858***	-0.2922***	-0.2743***	-0.2176***	-0.3537***	-0.1168**	-0.1099*
	(0.0762)	(0.0586)	(0.0963)	(0.0769)	(0.0593)	(0.0820)	(0.0353)	(0.0476)	(0.0590)	(0.0597)
houseowner	-0.0218	0.1641***	-0.0856	0.2344***	0.0396	0.1190*	0.1560***	0.0702*	0.6096***	-0.0992
	(0.0508)	(0.0548)	(0.0807)	(0.0399)	(0.0354)	(0.0699)	(0.0379)	(0.0370)	(0.0511)	(0.0636)
single	0.1319**	0.0145	0.6933***	0.1711***	0.0559	0.1436***	0.5650***	0.0607*	0.6642***	0.1014*
	(0.0522)	(0.0507)	(0.0874)	(0.0394)	(0.0365)	(0.0527)	(0.0334)	(0.0363)	(0.0522)	(0.0543)
child(ren) in household	-0.4029***	-0.1253*	-0.2856***	-0.3010***	-0.0357	-0.3405***	-0.2982***	-0.1692***	-0.5186***	-0.7468***
	(0.0648)	(0.0656)	(0.0886)	(0.0474)	(0.0487)	(0.0612)	(0.0367)	(0.0490)	(0.0572)	(0.0702)
three-person household	0.3731***	0.2209***	0.4070***	0.3659***	0.0702	0.2860***	0.3575***	0.2654***	0.5046***	0.2660***
	(0.0655)	(0.0653)	(0.0942)	(0.0469)	(0.0481)	(0.0666)	(0.0373)	(0.0493)	(0.0546)	(0.0711)
at least four-person household	0.3762***	-0.0796	0.1407	0.3707***	-0.2275***	0.4291***	0.3210***	0.1108*	0.4600***	0.3186***
	(0.0764)	(0.0764)	(0.0957)	(0.0529)	(0.0591)	(0.0729)	(0.0400)	(0.0567)	(0.0596)	(0.0779)
mills										
lambda	-1.4276***	-1.5399***	-1.1837***	-1.3647***	-1.4066***	-1.9873***	-1.5669***	-1.6071***	-1.2367***	-2.8009***
	(0.1110)	(0.1585)	(0.1443)	(0.0942)	(0.0757)	(0.2522)	(0.1376)	(0.1130)	(0.1204)	(0.5064)
Observations	5408	4984	2631	9493	11760	4305	11231	9751	6553	4587

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 19: Residual dependence estimation for contributory benefits and exclusively migrant households (level equation)

	IT	LT	LU	LV	NL	PT	SE	SI	UK
Log (contributory benefits)									
migrant dummy	-0.4356***	-0.0707	-0.3769***	-0.0637	-0.1935**	0.0313	0.2157	0.0726	-0.0715
	(0.0752)	(0.1429)	(0.0502)	(0.0499)	(0.0985)	(0.1387)	(0.1551)	(0.0936)	(0.0616)
age	0.0393***	0.0008	0.0188**	0.0123*	0.1079***	0.0088	-0.0203	0.0186*	-0.0742***
	(0.0064)	(0.0134)	(0.0085)	(0.0069)	(0.0094)	(0.0070)	(0.0181)	(0.0106)	(0.0067)
age^2	-0.0004***	0.0001	-0.0002**	-0.0001	-0.0008***	-0.0001*	-0.0001	-0.0002*	0.0007***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)
gross household income	0.8053***	0.1340	4.0190***	1.2193***	3.9320***	0.3247	-4.3149***	0.7848	4.3444***
	(0.2958)	(0.8219)	(1.0284)	(0.2658)	(0.9540)	(0.4788)	(1.5149)	(1.2251)	(0.3020)
gross household income^2	-0.0061	-0.0055	-0.1626***	-0.0596***	-0.1625***	0.0179	0.2278***	-0.0324	-0.2052***
	(0.0154)	(0.0480)	(0.0490)	(0.0160)	(0.0459)	(0.0260)	(0.0769)	(0.0647)	(0.0158)
urban area	0.1578***	0.1325**	-0.0248	0.0218		0.0240	0.0970		0.0343
	(0.0287)	(0.0637)	(0.0409)	(0.0373)		(0.0351)	(0.1156)		(0.0309)
secondary education	0.1483***	-0.0539	0.1538***	-0.0013	0.1909***	0.2704***	-0.1242	0.1659***	0.0568*
	(0.0354)	(0.0931)	(0.0474)	(0.0441)	(0.0440)	(0.0589)	(0.1167)	(0.0567)	(0.0337)
tertiary education	0.2785***	0.1193	0.2838***	0.0477	0.3107***	0.3233***	0.0504	0.2777***	0.2030***
	(0.0498)	(0.0864)	(0.0597)	(0.0520)	(0.0480)	(0.0619)	(0.1301)	(0.0816)	(0.0349)
houseowner	0.1132***	0.0267	0.1802***	0.2396***	0.0091	-0.0601	-0.0272	0.1550**	0.1237***
	(0.0349)	(0.1438)	(0.0540)	(0.0500)	(0.0400)	(0.0393)	(0.1033)	(0.0659)	(0.0322)
single	-0.0580*	-0.1590**	-0.1519***	-0.1554***	0.2568***	-0.1924***	-0.0219	0.0497	-0.2084***
	(0.0325)	(0.0706)	(0.0433)	(0.0398)	(0.0380)	(0.0406)	(0.0964)	(0.0529)	(0.0289)
child(ren) in household	-0.0878	-0.1287	-0.3709***	-0.7629***	0.1708	0.0845	-2.8913***	-0.4557***	0.0416
	(0.0626)	(0.1058)	(0.0739)	(0.0578)	(0.1051)	(0.0703)	(0.3235)	(0.0729)	(0.0730)
three-person household	-0.1279***	-0.0656	0.1598**	0.0493	0.0071	0.0594	0.2802	0.0228	-0.0123
	(0.0489)	(0.0957)	(0.0702)	(0.0603)	(0.0965)	(0.0498)	(0.1943)	(0.0692)	(0.0531)
at least four-person household	-0.3212***	0.0135	0.2118***	0.1092	0.2054*	-0.0577	0.4991**	0.0583	-0.1606**
	(0.0539)	(0.1160)	(0.0768)	(0.0750)	(0.1240)	(0.0611)	(0.2418)	(0.0859)	(0.0739)
Contributory benefits dummy									
migrant dummy	-0.1264**	-0.1507	-0.1155*	0.0094	0.1256	-0.6758***	-0.1203*	-0.1332**	-0.4562***
	(0.0497)	(0.1358)	(0.0632)	(0.0767)	(0.1048)	(0.1572)	(0.0724)	(0.0678)	(0.0840)
age	-0.1881***	-0.2028***	-0.2306***	-0.1815***	-0.1584***	-0.1738***	-0.0587***	-0.0765***	-0.2270***
	(0.0064)	(0.0163)	(0.0155)	(0.0119)	(0.0095)	(0.0121)	(0.0086)	(0.0082)	(0.0120)
age^2	0.0024***	0.0026***	0.0031***	0.0025***	0.0025***	0.0024***	0.0012***	0.0015***	0.0032***
	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
gross household income	2.2643***	3.6408***	5.2782***	1.4905***	3.4649***	3.1981***	3.9598***	8.2030***	1.8368***
	(0.1954)	(0.4189)	(1.1477)	(0.2216)	(0.8143)	(0.5949)	(0.5460)	(0.7963)	(0.3342)
gross household income^2	-0.1196***	-0.2049***	-0.2701***	-0.0898***	-0.1763***	-0.1761***	-0.2090***	-0.4314***	-0.1170***
	(0.0102)	(0.0248)	(0.0543)	(0.0135)	(0.0391)	(0.0323)	(0.0275)	(0.0416)	(0.0176)
social contacts	-0.0376	-0.1596***	-0.1296	-0.1063*	0.0269	-0.0539	-0.0748	-0.0694	-0.0499
	(0.0306)	(0.0608)	(0.0834)	(0.0603)	(0.0606)	(0.0612)	(0.0663)	(0.0541)	(0.0495)
leisure activities	-0.0924***	-0.1844***	-0.0823	-0.0617	-0.2135***	-0.0185	-0.2407***	-0.1565***	-0.1511***
	(0.0258)	(0.0585)	(0.0700)	(0.0546)	(0.0489)	(0.0573)	(0.0536)	(0.0376)	(0.0475)
urban area	-0.1042***	-0.1190**	0.0226	-0.1342***		0.1151**	-0.0466		0.1002**
	(0.0230)	(0.0513)	(0.0539)	(0.0469)		(0.0508)	(0.0536)		(0.0509)
secondary education	-0.2908***	-0.0954	-0.1391**	-0.0552	0.0378	0.0009	0.1662***	0.0897**	-0.1202**
	(0.0263)	(0.0897)	(0.0651)	(0.0658)	(0.0491)	(0.0758)	(0.0607)	(0.0456)	(0.0598)
tertiary education	-0.4102***	-0.2416***	-0.2475***	-0.0686	-0.0416	0.0898	0.0138	0.2366***	-0.1157*
	(0.0332)	(0.0886)	(0.0754)	(0.0770)	(0.0531)	(0.0837)	(0.0652)	(0.0623)	(0.0649)
houseowner	0.1690***	0.2732***	0.2247***	0.0820	-0.0842*	0.0470	-0.0475	-0.0854*	-0.1674***
	(0.0268)	(0.0956)	(0.0637)	(0.0621)	(0.0485)	(0.0570)	(0.0508)	(0.0465)	(0.0525)
single	0.4125***	0.3054***	0.1192**	0.1939***	0.3942***	0.5636***	0.0408	-0.0093	0.1029**
	(0.0272)	(0.0599)	(0.0601)	(0.0520)	(0.0457)	(0.0594)	(0.0485)	(0.0431)	(0.0488)
child(ren) in household	-0.6390***	-0.1835***	-0.3372***	-0.0380	0.3129***	-0.4430***	1.2027***	0.3397***	-0.4359***
	(0.0311)	(0.0671)	(0.0784)	(0.0617)	(0.0732)	(0.0671)	(0.0743)	(0.0438)	(0.0635)
three-person household	0.6507***	0.3475***	0.3880***	0.5013***	-0.1321*	0.2873***	-0.1810**	-0.2777***	0.2500***
	(0.0310)	(0.0681)	(0.0802)	(0.0646)	(0.0714)	(0.0645)	(0.0744)	(0.0514)	(0.0608)
at least four-person household	0.6381***	0.5337***	0.3198***	0.8177***	-0.3351***	0.3896***	-0.4484***	-0.5149***	0.1374*
	(0.0343)	(0.0783)	(0.0887)	(0.0744)	(0.0824)	(0.0745)	(0.0829)	(0.0525)	(0.0710)
mills									
lambda	-1.6417***	-1.8935***	-0.7839***	-0.9847***	-0.7453***	-0.8177***	-2.4916***	-1.6093***	-0.5067***
	(0.0904)	(0.2182)	(0.0878)	(0.1130)	(0.0812)	(0.0875)	(0.3628)	(0.1726)	(0.0591)
Observations	19089	4713	3642	4962	9007	4171	5189	7960	7663

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 20: Residual dependence estimation for contributory benefits and mixed households (level equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
Log (contributory benefits)										
migrant dummy	-0.1958**	-0.0358	-0.1750**	0.2405***	0.0707	0.1656	0.0239	-0.0446	-0.0637	-0.1866
	(0.0946)	(0.1010)	(0.0855)	(0.0813)	(0.0563)	(0.1122)	(0.0866)	(0.0734)	(0.1016)	(0.1764)
Age at the end of the income reference period	0.0036	0.0222*	0.0033	-0.0045	0.0036	0.0191	0.0245***	0.0269***	0.0147*	-0.0020
	(0.0096)	(0.0118)	(0.0118)	(0.0068)	(0.0074)	(0.0137)	(0.0082)	(0.0078)	(0.0082)	(0.0184)
age^2	-0.0001	-0.0003**	-0.0001	0.0000	-0.0001	-0.0001	-0.0003***	-0.0003***	-0.0003***	-0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
gross household income	1.8703**	0.1185	-3.1804***	4.9220***	0.9797*	0.6156	-1.3207**	0.8355	-1.4529*	-8.2976***
	(0.8242)	(1.0746)	(0.9443)	(0.9438)	(0.5676)	(1.0948)	(0.5384)	(0.7070)	(0.8417)	(2.8066)
gross household income^2	-0.0551	0.0211	0.2000***	-0.2704***	-0.0109	-0.0404	0.1021***	-0.0137	0.1114**	0.4386***
	(0.0414)	(0.0556)	(0.0482)	(0.0527)	(0.0295)	(0.0633)	(0.0294)	(0.0347)	(0.0445)	(0.1430)
urban area	0.1377**	-0.0078	0.1518***	0.1199***	0.0960***	-0.1283	0.0932**	0.1395***	0.1752***	0.1334
	(0.0577)	(0.0579)	(0.0547)	(0.0360)	(0.0345)	(0.0824)	(0.0363)	(0.0410)	(0.0417)	(0.0998)
secondary education	0.0514	0.1024	0.1394**	0.0737	0.0798	0.0852	0.2665***	-0.0184	0.1902***	0.1384
	(0.0669)	(0.0721)	(0.0683)	(0.0483)	(0.0554)	(0.0957)	(0.0530)	(0.0473)	(0.0535)	(0.1322)
tertiary education	0.2550***	0.3700***	0.3029***	0.1147*	0.1147*	0.1463	0.3562***	0.1851***	0.2512***	0.2163*
	(0.0835)	(0.0835)	(0.0904)	(0.0666)	(0.0586)	(0.1188)	(0.0525)	(0.0638)	(0.0611)	(0.1283)
houseowner	0.1626***	0.1292*	0.0075	0.0536	0.0799**	0.2678***	0.0988*	0.1253***	-0.1116*	0.1938
	(0.0551)	(0.0712)	(0.0600)	(0.0408)	(0.0379)	(0.1037)	(0.0518)	(0.0471)	(0.0672)	(0.1301)
single	-0.1098**	0.0165	-0.2541***	-0.1475***	-0.1592***	0.0732	-0.2665***	-0.2136***	-0.4091***	-0.2444**
	(0.0560)	(0.0647)	(0.0674)	(0.0373)	(0.0383)	(0.0776)	(0.0540)	(0.0430)	(0.0512)	(0.1074)
child(ren) in household	-0.2812***	-0.5112***	0.0607	-0.3408***	-0.1924***	-0.1898	0.0270	-0.3147***	0.1314	0.4970*
	(0.1040)	(0.1046)	(0.1139)	(0.0654)	(0.0681)	(0.1180)	(0.0661)	(0.0754)	(0.0955)	(0.2764)
three-person household	0.1297	0.0326	0.0219	-0.0658	0.1164*	0.0336	-0.0235	-0.0708	-0.0500	-0.0955
	(0.0869)	(0.0953)	(0.0839)	(0.0553)	(0.0628)	(0.1082)	(0.0558)	(0.0682)	(0.0656)	(0.1737)
at least four-person household	0.0563	0.1296	-0.1217	-0.2164***	0.1081	0.0861	0.0264	-0.0761	-0.1169	-0.0778
	(0.1037)	(0.1141)	(0.0953)	(0.0623)	(0.0816)	(0.1227)	(0.0600)	(0.0804)	(0.0726)	(0.1973)
Contributory benefits dummy										
migrant dummy	0.3727***	0.2113***	0.5174***	0.1429*	0.4015***	0.3341***	0.0795	0.2306***	0.1083	0.1838**
	(0.0795)	(0.0702)	(0.0780)	(0.0822)	(0.0591)	(0.0699)	(0.0612)	(0.0552)	(0.0909)	(0.0764)
Age at the end of the income reference period	-0.1830***	-0.1582***	-0.1647***	-0.2119***	-0.1922***	-0.1304***	-0.1206***	-0.1960***	-0.1144***	-0.0588***
	(0.0119)	(0.0130)	(0.0156)	(0.0104)	(0.0083)	(0.0127)	(0.0067)	(0.0094)	(0.0094)	(0.0097)
age^2	0.0026***	0.0021***	0.0022***	0.0028***	0.0026***	0.0018***	0.0016***	0.0026***	0.0017***	0.0009***
	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
gross household income	2.6590***	3.7470***	0.6137**	5.0152***	3.4505***	2.2994***	3.3210***	4.6384***	6.8301***	8.1427***
	(0.6880)	(0.6522)	(0.3112)	(0.6843)	(0.3791)	(0.5281)	(0.3136)	(0.5148)	(0.6093)	(0.5345)
gross household income^2	-0.1483***	-0.2216***	-0.0436***	-0.2949***	-0.2110***	-0.1329***	-0.1883***	-0.2352***	-0.3604***	-0.4175***
	(0.0341)	(0.0329)	(0.0165)	(0.0379)	(0.0194)	(0.0306)	(0.0169)	(0.0254)	(0.0319)	(0.0268)
social contacts	-0.1738**	-0.1746**	-0.0405	-0.0104	-0.1410***	-0.1207*	-0.1301**	-0.1454***	-0.1293	-0.1764***
	(0.0759)	(0.0684)	(0.1060)	(0.0575)	(0.0355)	(0.0626)	(0.0510)	(0.0523)	(0.0836)	(0.0534)
leisure activities	-0.1474***	-0.0499	-0.0872	-0.2198***	-0.1342***	-0.2231***	-0.1784***	-0.1406***	-0.1230**	-0.1607**
	(0.0525)	(0.0548)	(0.0676)	(0.0359)	(0.0356)	(0.0485)	(0.0354)	(0.0335)	(0.0482)	(0.0640)
urban area	-0.1666***	0.0190	-0.0768	-0.1585***	-0.1029***	-0.0407	-0.0760***	-0.1361***	-0.1458***	-0.0579
	(0.0510)	(0.0441)	(0.0624)	(0.0353)	(0.0310)	(0.0524)	(0.0279)	(0.0324)	(0.0424)	(0.0487)
secondary education	-0.2671***	-0.2399***	-0.0988	-0.2281***	-0.2604***	-0.1893***	-0.2034***	-0.1372***	-0.1656***	-0.0864
	(0.0750)	(0.0573)	(0.0754)	(0.0637)	(0.0571)	(0.0716)	(0.0372)	(0.0412)	(0.0541)	(0.0645)
tertiary education	-0.5190***	-0.3944***	-0.2800***	-0.2680***	-0.3202***	-0.3456***	-0.2357***	-0.3622***	-0.1016*	-0.1758***
	(0.0825)	(0.0590)	(0.0907)	(0.0761)	(0.0592)	(0.0797)	(0.0355)	(0.0476)	(0.0604)	(0.0592)
houseowner	0.0163	0.0810	-0.1949***	0.2343***	0.0470	0.1186*	0.1651***	0.0798**	0.6388***	-0.1080*
	(0.0513)	(0.0550)	(0.0750)	(0.0394)	(0.0348)	(0.0687)	(0.0388)	(0.0369)	(0.0529)	(0.0656)
single	0.2088***	0.0067	0.6428***	0.1687***	0.0837**	0.1333***	0.6195***	0.0672*	0.6867***	0.0977*
	(0.0535)	(0.0514)	(0.0793)	(0.0388)	(0.0362)	(0.0504)	(0.0340)	(0.0362)	(0.0531)	(0.0562)
child(ren) in household	-0.4865***	-0.1961***	-0.4547***	-0.3122***	-0.0707	-0.3310***	-0.3315***	-0.1934***	-0.5921***	-0.7398***
	(0.0663)	(0.0638)	(0.0811)	(0.0467)	(0.0482)	(0.0584)	(0.0372)	(0.0483)	(0.0581)	(0.0704)
three-person household	0.3275***	0.2484***	0.3366***	0.3538***	0.0582	0.2922***	0.3433***	0.2708***	0.4866***	0.3074***
	(0.0659)	(0.0644)	(0.0865)	(0.0462)	(0.0468)	(0.0647)	(0.0374)	(0.0485)	(0.0554)	(0.0714)
at least four-person household	0.3461***	-0.0227	0.0264	0.3552***	-0.2023***	0.4220***	0.3331***	0.1061*	0.4517***	0.3197***
	(0.0780)	(0.0744)	(0.0872)	(0.0520)	(0.0580)	(0.0697)	(0.0404)	(0.0558)	(0.0604)	(0.0778)
mills										
lambda	-1.4438***	-1.6249***	-1.0828***	-1.3799***	-1.4375***	-2.0226***	-1.5208***	-1.6002***	-1.2224***	-2.7457***
	(0.1169)	(0.1656)	(0.1430)	(0.0961)	(0.0773)	(0.2793)	(0.1316)	(0.1120)	(0.1178)	(0.4810)
Observations	5153	4916	2880	9627	12079	4366	11064	9777	6375	4610

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 21: Residual dependence estimation for contributory benefits and mixed households (level equation)

	IT	LT	LU	LV	NL	PT	SE	SI	UK
Log (contributory benefits)									
migrant dummy	0.0223	0.0585	-0.1765***	0.0323	-0.2294***	-0.1694**	0.2092	0.0209	-0.1873***
	(0.0668)	(0.1127)	(0.0480)	(0.0607)	(0.0879)	(0.0753)	(0.1584)	(0.0662)	(0.0651)
Age at the end of the income reference period	0.0415***	-0.0004	0.0136*	0.0136	0.1068***	0.0107	-0.0114	0.0262**	-0.0759***
	(0.0064)	(0.0136)	(0.0079)	(0.0085)	(0.0091)	(0.0070)	(0.0170)	(0.0106)	(0.0069)
age^2	-0.0004***	0.0001	-0.0001*	-0.0001	-0.0008***	-0.0002**	-0.0002	-0.0002***	0.0007***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)
gross household income	0.7692***	0.2182	5.8927***	0.9132***	3.9088***	0.3168	-5.8730***	0.7626	4.5690***
	(0.2956)	(0.8541)	(1.1002)	(0.3115)	(0.9490)	(0.4749)	(2.2055)	(1.2127)	(0.3309)
gross household income^2	-0.0048	-0.0121	-0.2494***	-0.0420**	-0.1617***	0.0176	0.2994***	-0.0312	-0.2160***
	(0.0153)	(0.0498)	(0.0519)	(0.0187)	(0.0456)	(0.0258)	(0.1093)	(0.0639)	(0.0173)
urban area	0.1592***	0.1449**	0.0101	0.0324		0.0212	0.0206		0.0454
	(0.0286)	(0.0648)	(0.0379)	(0.0435)		(0.0352)	(0.1115)		(0.0311)
secondary education	0.1791***	-0.0534	0.1250***	-0.0239	0.1970***	0.2961***	-0.1179	0.1489***	0.0491
	(0.0353)	(0.0950)	(0.0440)	(0.0536)	(0.0438)	(0.0581)	(0.1129)	(0.0552)	(0.0344)
tertiary education	0.2744***	0.1410	0.2356***	0.0436	0.3274***	0.3533***	0.0963	0.2859***	0.1905***
	(0.0492)	(0.0896)	(0.0578)	(0.0632)	(0.0478)	(0.0610)	(0.1246)	(0.0782)	(0.0356)
houseowner	0.1178***	0.0065	0.1470**	0.2747***	-0.0068	-0.0346	0.0195	0.1484**	0.1204***
	(0.0347)	(0.1451)	(0.0588)	(0.0599)	(0.0400)	(0.0397)	(0.1009)	(0.0654)	(0.0330)
single	-0.0493	-0.1340*	-0.2025***	-0.1075**	0.2445***	-0.1842***	0.0017	0.0519	-0.2078***
	(0.0324)	(0.0738)	(0.0425)	(0.0478)	(0.0377)	(0.0412)	(0.0929)	(0.0512)	(0.0295)
child(ren) in household	-0.0924	-0.1299	-0.2985***	-0.7341***	0.1365	0.0894	-2.9269***	-0.4512***	0.0094
	(0.0621)	(0.1049)	(0.0764)	(0.0633)	(0.1023)	(0.0693)	(0.3265)	(0.0711)	(0.0743)
three-person household	-0.1193**	-0.0687	0.2347***	0.0078	-0.0800	0.0188	0.2907	0.0147	-0.0767
	(0.0477)	(0.0953)	(0.0636)	(0.0666)	(0.0938)	(0.0496)	(0.1930)	(0.0660)	(0.0528)
at least four-person household	-0.2971***	0.0369	0.3497***	0.0579	0.1630	-0.0409	0.4079*	0.0878	-0.2126***
	(0.0526)	(0.1140)	(0.0734)	(0.0877)	(0.1225)	(0.0607)	(0.2443)	(0.0841)	(0.0747)
Contributory benefits dummy									
migrant dummy	0.0133	0.2453***	0.3384***	0.3060***	0.1822**	0.0480	-0.1158	0.1106**	0.0495
	(0.0475)	(0.0860)	(0.0783)	(0.0599)	(0.0818)	(0.0924)	(0.0744)	(0.0509)	(0.0817)
Age at the end of the income reference period	-0.1943***	-0.1908***	-0.3303***	-0.1613***	-0.1624***	-0.1718***	-0.0642***	-0.0771***	-0.2261***
	(0.0065)	(0.0159)	(0.0221)	(0.0116)	(0.0094)	(0.0118)	(0.0087)	(0.0081)	(0.0120)
age^2	0.0024***	0.0025***	0.0042***	0.0022***	0.0025***	0.0024***	0.0012***	0.0015***	0.0032***
	(0.0001)	(0.0002)	(0.0003)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
gross household income	2.2763***	3.7481***	4.8043**	1.4482***	3.6079***	3.2607***	5.1870***	7.9786***	1.7771***
	(0.1961)	(0.4182)	(1.8701)	(0.2264)	(0.8213)	(0.5791)	(0.7929)	(0.7953)	(0.3442)
gross household income^2	-0.1201***	-0.2108***	-0.2452***	-0.0876***	-0.1829***	-0.1803***	-0.2686***	-0.4185***	-0.1135***
	(0.0102)	(0.0248)	(0.0876)	(0.0138)	(0.0394)	(0.0314)	(0.0392)	(0.0414)	(0.0180)
social contacts	-0.0504	-0.1452**	-0.1807	-0.0896	0.0488	-0.0500	-0.0267	-0.0810	-0.0734
	(0.0311)	(0.0592)	(0.1379)	(0.0581)	(0.0604)	(0.0599)	(0.0677)	(0.0536)	(0.0500)
leisure activities	-0.0826***	-0.1724***	-0.0085	-0.0361	-0.2220***	-0.0230	-0.2558***	-0.1456***	-0.1110**
	(0.0258)	(0.0568)	(0.0989)	(0.0518)	(0.0482)	(0.0556)	(0.0545)	(0.0364)	(0.0474)
urban area	-0.1109***	-0.1136**	-0.0363	-0.1188***		0.1151**	-0.0117		0.0927*
	(0.0231)	(0.0501)	(0.0706)	(0.0450)		(0.0496)	(0.0549)		(0.0499)
secondary education	-0.3054***	-0.1216	-0.2820***	-0.0614	0.0208	-0.0210	0.1830***	0.1073**	-0.1231**
	(0.0265)	(0.0884)	(0.0836)	(0.0642)	(0.0487)	(0.0731)	(0.0615)	(0.0450)	(0.0606)
tertiary education	-0.4152***	-0.2850***	-0.3785***	-0.0651	-0.0548	0.0981	0.0570	0.2224***	-0.0849
	(0.0333)	(0.0874)	(0.1025)	(0.0747)	(0.0526)	(0.0811)	(0.0659)	(0.0604)	(0.0661)
houseowner	0.1716***	0.2494***	0.3601***	0.0563	-0.0881*	0.0519	-0.0596	-0.0864*	-0.1797***
	(0.0268)	(0.0936)	(0.0995)	(0.0620)	(0.0480)	(0.0563)	(0.0520)	(0.0464)	(0.0529)
single	0.4232***	0.3546***	0.4427***	0.2826***	0.3649***	0.5720***	0.0074	-0.0181	0.1234**
	(0.0274)	(0.0586)	(0.0798)	(0.0494)	(0.0448)	(0.0578)	(0.0489)	(0.0422)	(0.0491)
child(ren) in household	-0.6457***	-0.1712***	-0.5209***	-0.0362	0.3430***	-0.4406***	1.2834***	0.3784***	-0.4372***
	(0.0309)	(0.0649)	(0.0986)	(0.0585)	(0.0717)	(0.0648)	(0.0773)	(0.0425)	(0.0629)
three-person household	0.6352***	0.3134***	0.3365***	0.4254***	-0.1190*	0.2822***	-0.2502***	-0.2912***	0.2549***
	(0.0308)	(0.0658)	(0.0944)	(0.0601)	(0.0695)	(0.0630)	(0.0761)	(0.0503)	(0.0602)
at least four-person household	0.6191***	0.4876***	0.3120***	0.8076***	-0.4035***	0.3809***	-0.5192***	-0.5656***	0.1328*
	(0.0341)	(0.0751)	(0.1068)	(0.0693)	(0.0807)	(0.0725)	(0.0862)	(0.0515)	(0.0696)
mills									
lambda	-1.6367***	-1.9636***	-0.6205***	-1.2797***	-0.7370***	-0.8382***	-2.3655***	-1.6013***	-0.4439***
	(0.0883)	(0.2319)	(0.0647)	(0.1517)	(0.0805)	(0.0890)	(0.3475)	(0.1671)	(0.0615)
Observations	19142	4891	2344	4991	9187	4303	5091	8458	7575

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

1.4 Non contributory benefits

1.4.1 Participation

Tabelle: 22: Residual dependence estimation for non contributory benefits and migrant households (participation equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
migrant dummy (d)	-0.1081***	-0.0563**	-0.1718***	0.0091	-0.0630***	-0.1433***	-0.0094**	0.0094	0.0356**	-0.0025
	(0.0274)	(0.0274)	(0.0317)	(0.0116)	(0.0220)	(0.0298)	(0.0039)	(0.0203)	(0.0172)	(0.0157)
social contacts (d)	0.0223	0.0123	0.0735**	-0.0096	-0.0434***	-0.0217	0.0022	-0.0648***	-0.0468***	-0.0377***
	(0.0285)	(0.0307)	(0.0373)	(0.0088)	(0.0156)	(0.0302)	(0.0051)	(0.0184)	(0.0166)	(0.0110)
leisure activities (d)	-0.0625***	-0.0639**	-0.1066***	-0.0270***	-0.0588***	0.0163	-0.0154***	-0.0437***	-0.0441***	-0.0445***
	(0.0216)	(0.0261)	(0.0269)	(0.0058)	(0.0158)	(0.0244)	(0.0043)	(0.0143)	(0.0118)	(0.0120)
urban area (d)	0.0319	0.0274	-0.1183***	0.0116**	0.0391***	0.0369	0.0111***	0.0167	-0.0178*	0.0097
	(0.0212)	(0.0211)	(0.0227)	(0.0059)	(0.0140)	(0.0274)	(0.0031)	(0.0138)	(0.0099)	(0.0108)
secondary education (d)	-0.0518*	0.0440	-0.0140	-0.0261***	-0.0723***	-0.0247	-0.0041	-0.0345**	-0.0537***	-0.0238
	(0.0266)	(0.0272)	(0.0301)	(0.0093)	(0.0229)	(0.0344)	(0.0039)	(0.0169)	(0.0120)	(0.0158)
tertiary education (d)	0.0396	0.1329***	-0.0341	-0.0253***	-0.0328	0.0045	0.0040	0.0397*	-0.0571***	-0.0388***
	(0.0302)	(0.0292)	(0.0372)	(0.0083)	(0.0238)	(0.0385)	(0.0041)	(0.0216)	(0.0138)	(0.0144)
houseowner (d)	-0.0766***	-0.0681**	-0.0118	-0.0122*	-0.0235	-0.0155	-0.0141***	-0.4171***	-0.0103	-0.0690***
	(0.0209)	(0.0268)	(0.0261)	(0.0064)	(0.0154)	(0.0351)	(0.0047)	(0.0145)	(0.0124)	(0.0123)
single (d)	-0.0192	-0.0039	-0.0538*	0.0252***	0.0313**	-0.0507**	-0.0036	0.0693***	0.0850***	0.0654***
	(0.0218)	(0.0247)	(0.0276)	(0.0064)	(0.0158)	(0.0258)	(0.0039)	(0.0156)	(0.0124)	(0.0134)
child(ren) in household (d)	0.6706***	0.6616***	0.4838***	0.3164***	0.6750***	0.7158***	0.1126***	0.4803***	0.1165***	0.4133***
	(0.0175)	(0.0244)	(0.0215)	(0.0182)	(0.0187)	(0.0164)	(0.0091)	(0.0194)	(0.0163)	(0.0123)
three-person household (d)	0.4140***	0.4585***	0.2869***	0.1223***	0.5654***	0.3937***	-0.0050	0.1089***	0.1198***	0.0933***
	(0.0228)	(0.0236)	(0.0243)	(0.0155)	(0.0137)	(0.0232)	(0.0048)	(0.0239)	(0.0188)	(0.0137)
at least four-person household (d)	0.5771***	0.6924***	0.5565***	0.1421***	0.7510***	0.6166***	-0.0163***	0.5429***	0.2632***	0.1750***
	(0.0218)	(0.0203)	(0.0223)	(0.0171)	(0.0098)	(0.0195)	(0.0046)	(0.0196)	(0.0211)	(0.0195)
age	0.0163***	0.0534***	0.0081	-0.0006	0.0355***	0.0225***	-0.0037***	0.0048**	-0.0013	-0.0184***
	(0.0037)	(0.0061)	(0.0051)	(0.0012)	(0.0033)	(0.0053)	(0.0007)	(0.0025)	(0.0020)	(0.0024)
age^2	-0.0002***	-0.0006***	-0.0001	-0.0000*	-0.0004***	-0.0003***	0.0000***	-0.0001***	0.0000*	0.0003***
	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	0.4020***	0.3271***	0.6463	-0.3116**	0.3706***	0.2357***	0.0125***	0.4657***	0.3229**	0.6019***
	(0.1483)	(0.1043)	(0.4179)	(0.1584)	(0.1204)	(0.0367)	(0.0038)	(0.1324)	(0.1463)	(0.1618)
gross household $income^2$	-0.0300***	-0.0247***	-0.0359*	0.0108	-0.0261***	-0.0236***	-0.0007**	-0.0402***	-0.0183**	-0.0346***
	(0.0079)	(0.0058)	(0.0214)	(0.0088)	(0.0063)	(0.0031)	(0.0003)	(0.0068)	(0.0078)	(0.0083)
Observations	5799	5454	3087	9867	12765	4872	11752	10503	6823	4993

	IT	LT	LU	LV	NL	PT	SE	SI	UK
migrant dummy (d)	-0.0254**	-0.0173	-0.0432	-0.0505**	0.0400	-0.0672***	0.0447*	-0.0176	-0.1576***
	(0.0111)	(0.0222)	(0.0263)	(0.0199)	(0.0339)	(0.0204)	(0.0267)	(0.0186)	(0.0262)
social contacts (d)	-0.0160**	-0.0251	-0.1443***	-0.0419*	-0.0432*	-0.0627***	0.0007	-0.0008	-0.0600***
	(0.0080)	(0.0168)	(0.0368)	(0.0215)	(0.0233)	(0.0205)	(0.0284)	(0.0215)	(0.0184)
leisure activities (d)	-0.0361***	0.0279	-0.0035	-0.0071	-0.0590***	-0.0465***	-0.1501***	-0.0193	-0.0753***
	(0.0075)	(0.0193)	(0.0329)	(0.0217)	(0.0198)	(0.0173)	(0.0244)	(0.0160)	(0.0178)
urban area (d)	-0.0375***	-0.0664***	0.0553**	-0.0078		0.0265	-0.0443*		0.0081
	(0.0065)	(0.0150)	(0.0243)	(0.0182)		(0.0164)	(0.0234)		(0.0193)
secondary education (d)	-0.0404***	-0.0168	-0.0374	0.0214	-0.0804***	-0.0048	-0.1041***	-0.0245	-0.0587***
	(0.0076)	(0.0219)	(0.0304)	(0.0231)	(0.0215)	(0.0229)	(0.0240)	(0.0175)	(0.0209)
tertiary education (d)	-0.0613***	-0.0199	-0.0397	0.0456*	-0.0397*	-0.0512**	-0.0209	0.0258	-0.0731***
	(0.0097)	(0.0213)	(0.0337)	(0.0265)	(0.0239)	(0.0244)	(0.0273)	(0.0256)	(0.0224)
houseowner (d)	-0.0159**	-0.1516***	-0.0238	-0.0870***	-0.3576***	0.0368**	-0.1455***	-0.0905***	-0.5317***
	(0.0079)	(0.0373)	(0.0304)	(0.0252)	(0.0179)	(0.0165)	(0.0226)	(0.0206)	(0.0162)
single (d)	-0.1283***	0.0604***	0.0295	0.0339*	0.1537***	-0.0971***	0.0917***	0.0143	0.0713***
	(0.0073)	(0.0165)	(0.0273)	(0.0188)	(0.0204)	(0.0173)	(0.0216)	(0.0182)	(0.0188)
child(ren) in household (d)	0.2038***	0.6419***	0.6388***	0.7009***	0.8028***	0.3860***	0.6590***	0.4815***	0.7586***
	(0.0107)	(0.0198)	(0.0176)	(0.0137)	(0.0117)	(0.0247)	(0.0214)	(0.0146)	(0.0132)
three-person household (d)	0.2139***	0.1639***	0.3696***	0.2181***	0.4605***	0.1909***	0.4021***	0.3841***	0.4162***
	(0.0114)	(0.0243)	(0.0214)	(0.0236)	(0.0218)	(0.0246)	(0.0291)	(0.0177)	(0.0230)
at least four-person household (d)	0.2225***	0.2661***	0.5466***	0.3868***	0.6892***	0.2883***	0.6571***	0.6215***	0.5494***
	(0.0125)	(0.0279)	(0.0200)	(0.0260)	(0.0169)	(0.0276)	(0.0234)	(0.0153)	(0.0237)
age	-0.0024*	0.0011	0.0546***	0.0004	0.0056*	0.0183***	0.0002	0.0015	0.0263***
	(0.0014)	(0.0030)	(0.0058)	(0.0032)	(0.0030)	(0.0038)	(0.0031)	(0.0026)	(0.0036)
age^2	0.0000**	-0.0000	-0.0006***	-0.0000	-0.0001**	-0.0003***	0.0000	-0.0001***	-0.0002***
	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	1.1707***	0.2352***	-1.4352**	0.3417***	0.8945***	0.1814	1.1739***	3.2672***	0.6410**
	(0.1054)	(0.0614)	(0.6287)	(0.1135)	(0.2562)	(0.1694)	(0.2130)	(0.3706)	(0.2521)
gross household $income^2$	-0.0649***	-0.0187***	0.0564*	-0.0240***	-0.0638***	-0.0121	-0.0687***	-0.1939***	-0.0392***
	(0.0054)	(0.0039)	(0.0292)	(0.0067)	(0.0129)	(0.0094)	(0.0112)	(0.0195)	(0.0130)
Observations	19983	5106	4204	5716	9472	4424	5582	9001	8128

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 23: Residual dependence estimation for non contributory benefits and exclusively migrant households (participation equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
migrant dummy (d)	-0.1053***	-0.0652*	-0.3446***	-0.0059	-0.0050	-0.0295	-0.0114***	0.0633**	0.0335	-0.0602*
	(0.0340)	(0.0374)	(0.0535)	(0.0179)	(0.0340)	(0.0440)	(0.0044)	(0.0275)	(0.0214)	(0.0314)
social contacts (d)	0.0299	0.0002	0.0872**	-0.0111	-0.0530***	-0.0127	0.0017	-0.0651***	-0.0440***	-0.0385***
	(0.0290)	(0.0309)	(0.0405)	(0.0090)	(0.0164)	(0.0318)	(0.0052)	(0.0188)	(0.0166)	(0.0121)
leisure activities (d)	-0.0573**	-0.0674***	-0.1014***	-0.0260***	-0.0576***	0.0202	-0.0158***	-0.0458***	-0.0466***	-0.0455***
	(0.0222)	(0.0258)	(0.0303)	(0.0059)	(0.0165)	(0.0263)	(0.0044)	(0.0149)	(0.0119)	(0.0133)
urban area (d)	0.0330	0.0281	-0.1294***	0.0112*	0.0370**	0.0497*	0.0111***	0.0127	-0.0218**	0.0127
	(0.0220)	(0.0213)	(0.0246)	(0.0059)	(0.0147)	(0.0297)	(0.0032)	(0.0145)	(0.0100)	(0.0119)
secondary education (d)	-0.0660**	0.0497*	-0.0104	-0.0275***	-0.0773***	-0.0365	-0.0033	-0.0436**	-0.0533***	-0.0253
	(0.0270)	(0.0276)	(0.0331)	(0.0095)	(0.0240)	(0.0363)	(0.0039)	(0.0176)	(0.0121)	(0.0172)
tertiary education (d)	0.0265	0.1338***	-0.0514	-0.0239***	-0.0358	-0.0174	0.0034	0.0376*	-0.0566***	-0.0416***
	(0.0308)	(0.0297)	(0.0420)	(0.0085)	(0.0250)	(0.0404)	(0.0040)	(0.0227)	(0.0141)	(0.0159)
houseowner (d)	-0.0792***	-0.0551**	-0.0230	-0.0128**	-0.0160	-0.0116	-0.0134***	-0.4298***	-0.0137	-0.0823***
	(0.0215)	(0.0266)	(0.0286)	(0.0065)	(0.0163)	(0.0355)	(0.0049)	(0.0150)	(0.0128)	(0.0137)
single (d)	-0.0119	0.0028	-0.0347	0.0267***	0.0355**	-0.0211	-0.0037	0.0649***	0.0820***	0.0724***
	(0.0225)	(0.0250)	(0.0298)	(0.0065)	(0.0167)	(0.0278)	(0.0039)	(0.0164)	(0.0124)	(0.0145)
child(ren) in household (d)	0.6779***	0.6580***	0.4856***	0.3125***	0.6760***	0.7022***	0.1131***	0.4762***	0.1172***	0.4115***
	(0.0181)	(0.0264)	(0.0249)	(0.0185)	(0.0180)	(0.0186)	(0.0094)	(0.0208)	(0.0168)	(0.0128)
three-person household (d)	0.4265***	0.4436***	0.3083***	0.1219***	0.5548***	0.4138***	-0.0028	0.1238***	0.1126***	0.0961***
	(0.0235)	(0.0262)	(0.0270)	(0.0157)	(0.0141)	(0.0236)	(0.0050)	(0.0255)	(0.0190)	(0.0143)
at least four-person household (d)	0.5762***	0.6929***	0.5818***	0.1429***	0.7385***	0.6396***	-0.0149***	0.5566***	0.2599***	0.1714***
	(0.0229)	(0.0232)	(0.0241)	(0.0176)	(0.0101)	(0.0195)	(0.0047)	(0.0203)	(0.0217)	(0.0185)
age	0.0158***	0.0506***	0.0103*	-0.0004	0.0357***	0.0223***	-0.0038***	0.0052**	-0.0013	-0.0200***
	(0.0038)	(0.0060)	(0.0056)	(0.0012)	(0.0035)	(0.0056)	(0.0007)	(0.0025)	(0.0020)	(0.0026)
age^2	-0.0002***	-0.0006***	-0.0001	-0.0000**	-0.0004***	-0.0003***	0.0000***	-0.0001***	0.0000*	0.0003***
	(0.0000)	(0.0001)	(0.0001)	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	0.4185***	0.2983***	0.8411*	-0.3035*	0.4554***	0.2255***	0.0118***	0.5329***	0.3484**	0.6575***
	(0.1497)	(0.0941)	(0.4848)	(0.1608)	(0.1302)	(0.0384)	(0.0038)	(0.1560)	(0.1512)	(0.1834)
gross household income^2	-0.0312***	-0.0227***	-0.0452*	0.0104	-0.0307***	-0.0222***	-0.0006*	-0.0440***	-0.0196**	-0.0379***
	(0.0080)	(0.0053)	(0.0248)	(0.0090)	(0.0068)	(0.0033)	(0.0003)	(0.0080)	(0.0080)	(0.0094)
Observations	5408	4984	2631	9493	11760	4305	11231	9751	6553	4587

	IT	LT	LU	LV	NL	PT	SE	SI	UK
migrant dummy (d)	-0.0523***	0.0490	-0.0088	0.0020	0.1583***	-0.0557	0.0784**	0.0412	-0.2262***
	(0.0149)	(0.0404)	(0.0301)	(0.0263)	(0.0414)	(0.0351)	(0.0356)	(0.0319)	(0.0310)
social contacts (d)	-0.0192**	-0.0300*	-0.1530***	-0.0391*	-0.0425*	-0.0567***	0.0065	-0.0243	-0.0581***
	(0.0081)	(0.0177)	(0.0383)	(0.0230)	(0.0238)	(0.0207)	(0.0288)	(0.0227)	(0.0189)
leisure activities (d)	-0.0346***	0.0166	-0.0086	-0.0265	-0.0611***	-0.0507***	-0.1609***	-0.0033	-0.0796***
	(0.0076)	(0.0203)	(0.0351)	(0.0236)	(0.0202)	(0.0178)	(0.0249)	(0.0170)	(0.0182)
urban area (d)	-0.0365***	-0.0638***	0.0552**	0.0013		0.0261	-0.0389		0.0119
	(0.0066)	(0.0158)	(0.0262)	(0.0197)		(0.0168)	(0.0238)		(0.0198)
secondary education (d)	-0.0395***	-0.0134	-0.0322	0.0088	-0.0786***	-0.0011	-0.0968***	-0.0181	-0.0561***
	(0.0077)	(0.0231)	(0.0330)	(0.0244)	(0.0221)	(0.0240)	(0.0245)	(0.0187)	(0.0214)
tertiary education (d)	-0.0651***	-0.0114	-0.0529	0.0472*	-0.0389	-0.0528**	-0.0204	0.0224	-0.0757***
	(0.0098)	(0.0223)	(0.0362)	(0.0280)	(0.0248)	(0.0254)	(0.0279)	(0.0274)	(0.0229)
houseowner (d)	-0.0205**	-0.1686***	0.0049	-0.0811***	-0.3682***	0.0376**	-0.1358***	-0.0757***	-0.5451***
	(0.0081)	(0.0387)	(0.0328)	(0.0265)	(0.0182)	(0.0167)	(0.0229)	(0.0217)	(0.0161)
single (d)	-0.1282***	0.0600***	0.0644**	0.0480**	0.1409***	-0.0868***	0.0909***	0.0138	0.0759***
	(0.0074)	(0.0171)	(0.0287)	(0.0206)	(0.0212)	(0.0180)	(0.0219)	(0.0192)	(0.0194)
child(ren) in household (d)	0.2050***	0.6327***	0.6343***	0.6937***	0.8070***	0.3862***	0.6519***	0.4719***	0.7589***
	(0.0111)	(0.0209)	(0.0195)	(0.0150)	(0.0121)	(0.0258)	(0.0229)	(0.0157)	(0.0134)
three-person household (d)	0.2105***	0.1743***	0.3690***	0.2284***	0.4600***	0.1951***	0.3969***	0.3836***	0.4185***
	(0.0117)	(0.0255)	(0.0236)	(0.0264)	(0.0226)	(0.0254)	(0.0310)	(0.0187)	(0.0240)
at least four-person household (d)	0.2182***	0.2834***	0.5500***	0.4304***	0.6950***	0.2990***	0.6567***	0.6201***	0.5474***
	(0.0129)	(0.0296)	(0.0221)	(0.0277)	(0.0172)	(0.0286)	(0.0249)	(0.0163)	(0.0250)
age	-0.0029**	-0.0000	0.0534***	-0.0003	0.0054*	0.0178***	-0.0002	0.0015	0.0264***
	(0.0014)	(0.0032)	(0.0061)	(0.0034)	(0.0031)	(0.0038)	(0.0031)	(0.0028)	(0.0037)
age^2	0.0000***	-0.0000	-0.0005***	-0.0000	-0.0001**	-0.0003***	0.0000	-0.0001***	-0.0002***
	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	1.1577***	0.2248***	-1.3798**	0.3217***	1.1420***	0.1559	1.3616***	3.1625***	0.6158***
	(0.1089)	(0.0496)	(0.6519)	(0.1066)	(0.3787)	(0.1717)	(0.2299)	(0.3789)	(0.2309)
gross household income^2	-0.0641***	-0.0183***	0.0540*	-0.0229***	-0.0762***	-0.0106	-0.0781***	-0.1882***	-0.0381***
	(0.0056)	(0.0033)	(0.0303)	(0.0063)	(0.0189)	(0.0095)	(0.0121)	(0.0199)	(0.0120)
Observations	19089	4713	3642	4962	9007	4171	5189	7960	7663

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 24: Residual dependence estimation for non contributory benefits and mixed households (participation equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
migrant dummy (d)	-0.1355***	-0.0586	-0.0893**	0.0184	-0.1111***	-0.2424***	-0.0057	-0.0511*	0.0348	0.0282*
	(0.0423)	(0.0365)	(0.0367)	(0.0150)	(0.0274)	(0.0343)	(0.0058)	(0.0276)	(0.0260)	(0.0163)
social contacts (d)	-0.0087	0.0266	0.0730*	-0.0097	-0.0353**	-0.0304	0.0028	-0.0720***	-0.0475***	-0.0334***
	(0.0302)	(0.0334)	(0.0375)	(0.0090)	(0.0162)	(0.0323)	(0.0053)	(0.0193)	(0.0169)	(0.0111)
leisure activities (d)	-0.0475**	-0.0719**	-0.0952***	-0.0286***	-0.0653***	0.0279	-0.0129***	-0.0389***	-0.0512***	-0.0417***
	(0.0233)	(0.0281)	(0.0273)	(0.0059)	(0.0164)	(0.0265)	(0.0044)	(0.0147)	(0.0122)	(0.0123)
urban area (d)	0.0487**	0.0344	-0.1256***	0.0124**	0.0400***	0.0513*	0.0087***	0.0169	-0.0210**	0.0072
	(0.0228)	(0.0231)	(0.0228)	(0.0060)	(0.0145)	(0.0293)	(0.0032)	(0.0142)	(0.0102)	(0.0104)
secondary education (d)	-0.0501*	0.0436	-0.0126	-0.0227**	-0.0857***	-0.0383	-0.0027	-0.0336*	-0.0602***	-0.0209
	(0.0287)	(0.0301)	(0.0304)	(0.0095)	(0.0237)	(0.0371)	(0.0040)	(0.0174)	(0.0124)	(0.0153)
tertiary education (d)	0.0528	0.1577***	-0.0265	-0.0223**	-0.0474*	-0.0185	0.0028	0.0424*	-0.0632***	-0.0335**
	(0.0328)	(0.0318)	(0.0387)	(0.0088)	(0.0246)	(0.0408)	(0.0041)	(0.0223)	(0.0143)	(0.0141)
houseowner (d)	-0.0862***	-0.1145***	-0.0433*	-0.0108*	-0.0187	-0.0088	-0.0189***	-0.4036***	-0.0220*	-0.0776***
	(0.0226)	(0.0294)	(0.0260)	(0.0065)	(0.0160)	(0.0381)	(0.0052)	(0.0153)	(0.0132)	(0.0140)
single (d)	-0.0454*	-0.0373	-0.0584**	0.0251***	0.0306*	-0.0668**	-0.0038	0.0607***	0.0869***	0.0579***
	(0.0235)	(0.0282)	(0.0281)	(0.0065)	(0.0164)	(0.0279)	(0.0040)	(0.0161)	(0.0126)	(0.0132)
child(ren) in household (d)	0.6879***	0.7060***	0.5001***	0.3160***	0.6771***	0.7164***	0.1114***	0.4712***	0.1266***	0.3951***
	(0.0187)	(0.0258)	(0.0198)	(0.0184)	(0.0187)	(0.0156)	(0.0095)	(0.0203)	(0.0173)	(0.0127)
three-person household (d)	0.4293***	0.4774***	0.2656***	0.1201***	0.5678***	0.3914***	-0.0039	0.1201***	0.1073***	0.0833***
	(0.0241)	(0.0250)	(0.0232)	(0.0155)	(0.0137)	(0.0235)	(0.0049)	(0.0245)	(0.0192)	(0.0153)
at least four-person household (d)	0.5962***	0.7247***	0.5336***	0.1395***	0.7477***	0.6182***	-0.0151***	0.5567***	0.2448***	0.1625***
	(0.0221)	(0.0189)	(0.0233)	(0.0171)	(0.0100)	(0.0200)	(0.0046)	(0.0203)	(0.0219)	(0.0215)
age	0.0199***	0.0542***	0.0098*	-0.0006	0.0367***	0.0273***	-0.0040***	0.0040	-0.0004	-0.0186***
	(0.0039)	(0.0071)	(0.0051)	(0.0013)	(0.0035)	(0.0061)	(0.0007)	(0.0025)	(0.0021)	(0.0029)
age^2	-0.0002***	-0.0006***	-0.0001	-0.0000*	-0.0004***	-0.0004***	0.0000***	-0.0001***	0.0000	0.0003***
	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	0.4594***	0.4941*	0.3764	-0.2869*	0.3882***	0.2282***	0.0103**	0.4693***	0.2935**	0.5771***
	(0.1568)	(0.2607)	(0.4360)	(0.1576)	(0.1289)	(0.0399)	(0.0040)	(0.1372)	(0.1452)	(0.1684)
gross household $income^2$	-0.0333***	-0.0327**	-0.0221	0.0095	-0.0268***	-0.0231***	-0.0004	-0.0398***	-0.0165**	-0.0329***
	(0.0084)	(0.0135)	(0.0222)	(0.0088)	(0.0067)	(0.0033)	(0.0003)	(0.0071)	(0.0077)	(0.0087)
Observations	5153	4916	2880	9627	12079	4366	11064	9777	6375	4610

	IT	LT	LU	LV	NL	PT	SE	SI	UK
migrant dummy (d)	-0.0049	-0.0576**	-0.1349***	-0.1195***	-0.0916*	-0.0705***	-0.0228	-0.0457**	-0.0803*
	(0.0149)	(0.0240)	(0.0430)	(0.0261)	(0.0490)	(0.0231)	(0.0352)	(0.0216)	(0.0427)
social contacts (d)	-0.0150*	-0.0332*	-0.1428**	-0.0414*	-0.0278	-0.0667***	0.0156	0.0002	-0.0653***
	(0.0082)	(0.0175)	(0.0587)	(0.0242)	(0.0242)	(0.0208)	(0.0289)	(0.0225)	(0.0195)
leisure activities (d)	-0.0359***	0.0323	-0.0367	-0.0044	-0.0544***	-0.0390**	-0.1561***	-0.0165	-0.0718***
	(0.0076)	(0.0198)	(0.0456)	(0.0239)	(0.0202)	(0.0175)	(0.0260)	(0.0165)	(0.0193)
urban area (d)	-0.0363***	-0.0605***	0.0805**	-0.0155		0.0286*	-0.0397		0.0132
	(0.0067)	(0.0156)	(0.0335)	(0.0202)		(0.0167)	(0.0248)		(0.0212)
secondary education (d)	-0.0441***	-0.0147	-0.0347	0.0434*	-0.0808***	-0.0048	-0.1088***	-0.0239	-0.0721***
	(0.0078)	(0.0229)	(0.0399)	(0.0260)	(0.0220)	(0.0233)	(0.0250)	(0.0184)	(0.0225)
tertiary education (d)	-0.0664***	-0.0208	-0.0222	0.0705**	-0.0433*	-0.0487*	-0.0156	0.0200	-0.0555**
	(0.0099)	(0.0221)	(0.0496)	(0.0301)	(0.0246)	(0.0251)	(0.0283)	(0.0266)	(0.0234)
houseowner (d)	-0.0222***	-0.1563***	-0.0933*	-0.1072***	-0.3625***	0.0365**	-0.1304***	-0.0951***	-0.5577***
	(0.0082)	(0.0389)	(0.0482)	(0.0281)	(0.0183)	(0.0168)	(0.0242)	(0.0219)	(0.0153)
single (d)	-0.1322***	0.0513***	-0.0354	-0.0005	0.1460***	-0.0981***	0.0863***	0.0124	0.0448**
	(0.0075)	(0.0171)	(0.0383)	(0.0209)	(0.0209)	(0.0176)	(0.0225)	(0.0189)	(0.0202)
child(ren) in household (d)	0.2020***	0.6375***	0.7085***	0.7023***	0.8083***	0.3890***	0.6548***	0.4909***	0.7955***
	(0.0110)	(0.0201)	(0.0274)	(0.0138)	(0.0119)	(0.0251)	(0.0232)	(0.0149)	(0.0114)
three-person household (d)	0.2167***	0.1716***	0.4688***	0.2327***	0.4727***	0.1879***	0.4295***	0.3845***	0.4241***
	(0.0117)	(0.0250)	(0.0321)	(0.0247)	(0.0221)	(0.0249)	(0.0303)	(0.0187)	(0.0239)
at least four-person household (d)	0.2208***	0.2798***	0.6586***	0.3831***	0.6999***	0.2816***	0.6827***	0.6256***	0.5646***
	(0.0129)	(0.0285)	(0.0256)	(0.0267)	(0.0171)	(0.0279)	(0.0242)	(0.0159)	(0.0239)
age	-0.0032**	0.0012	0.0550***	0.0008	0.0058*	0.0181***	-0.0014	0.0017	0.0236***
	(0.0014)	(0.0032)	(0.0078)	(0.0036)	(0.0031)	(0.0038)	(0.0032)	(0.0027)	(0.0039)
age^2	0.0000***	-0.0000	-0.0006***	-0.0000	-0.0001**	-0.0003***	0.0000	-0.0001***	-0.0002***
	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
gross household income	1.1618***	0.2361***	-1.3591	0.3397***	0.7580***	0.2326	1.1475***	3.1578***	0.7879**
	(0.1083)	(0.0641)	(0.9985)	(0.1143)	(0.2287)	(0.1813)	(0.2222)	(0.3791)	(0.3652)
gross household $income^2$	-0.0645***	-0.0188***	0.0507	-0.0238***	-0.0568***	-0.0148	-0.0670***	-0.1881***	-0.0478**
	(0.0056)	(0.0040)	(0.0469)	(0.0068)	(0.0116)	(0.0100)	(0.0116)	(0.0199)	(0.0188)
Observations	19142	4891	2344	4991	9187	4303	5091	8458	7575

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

1.4.2 Levels

Tabelle: 25: Residual dependence estimation for non contributory benefits and migrant households (level equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
Log (non contributory benefits)										
migrant dummy	0.0185	-0.0250	-0.2701***	0.0534	0.0209	-0.1990***	0.0286	0.0777**	-0.0619	-0.0265
	(0.0443)	(0.0371)	(0.0913)	(0.0944)	(0.0291)	(0.0614)	(0.1298)	(0.0387)	(0.0717)	(0.0355)
age	0.0474***	0.0553***	0.0305**	-0.0384***	0.0292***	-0.0291**	-0.0524	0.0072	0.0084	0.0095*
	(0.0076)	(0.0121)	(0.0145)	(0.0119)	(0.0060)	(0.0123)	(0.0320)	(0.0057)	(0.0089)	(0.0056)
age^2	-0.0008***	-0.0006***	-0.0002	0.0003*	-0.0004***	0.0001	0.0005	-0.0002***	-0.0000	-0.0002***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0001)	(0.0001)	(0.0001)
gross household income	1.3970***	-1.2580**	1.7402	-0.3990	0.6713**	-0.4130	0.2639	-1.3178***	0.9216	2.1230***
	(0.4723)	(0.5462)	(1.6901)	(0.6722)	(0.2957)	(0.4708)	(0.5176)	(0.4542)	(0.5909)	(0.2758)
gross household income^2	-0.0705***	0.0460*	-0.1019	0.0110	-0.0394***	0.0211	-0.0009	0.0304	-0.0464	-0.1160***
	(0.0237)	(0.0274)	(0.0858)	(0.0392)	(0.0149)	(0.0275)	(0.0294)	(0.0234)	(0.0328)	(0.0142)
urban area	0.1210***	0.0399	-0.2051***	0.0470	0.0513***	-0.0416	0.0926	0.0471	-0.0495	-0.0584**
	(0.0373)	(0.0300)	(0.0730)	(0.0521)	(0.0183)	(0.0506)	(0.1105)	(0.0292)	(0.0490)	(0.0265)
secondary education	0.0312	0.0794*	-0.2336***	-0.0381	-0.2813***	0.0870	-0.0455	-0.1599***	-0.0293	-0.0491
	(0.0509)	(0.0406)	(0.0903)	(0.0838)	(0.0343)	(0.0664)	(0.1115)	(0.0370)	(0.0802)	(0.0359)
tertiary education	0.1741***	0.2069***	-0.2047*	0.2875***	-0.2227***	-0.0288	0.0464	0.0048	0.0963	-0.0926***
	(0.0564)	(0.0412)	(0.1067)	(0.1107)	(0.0357)	(0.0750)	(0.0992)	(0.0441)	(0.0929)	(0.0338)
houseowner	-0.1163***	-0.0404	-0.1007	-0.0318	-0.0779***	-0.1178*	-0.3402**	-0.4400***	0.0510	-0.3253***
	(0.0389)	(0.0398)	(0.0844)	(0.0532)	(0.0213)	(0.0682)	(0.1330)	(0.0426)	(0.0543)	(0.0335)
single	-0.0082	0.1809***	0.2117**	-0.2006***	0.1067***	0.0249	-0.1464	0.1680***	0.1930**	0.1778***
	(0.0420)	(0.0358)	(0.0939)	(0.0586)	(0.0263)	(0.0477)	(0.0988)	(0.0343)	(0.0957)	(0.0300)
child(ren) in household	0.5989***	0.4746***	1.2144***	0.6539***	0.2893***	1.1342***	0.3388	0.9403***	0.0964	1.0965***
	(0.0915)	(0.0678)	(0.1438)	(0.2105)	(0.0310)	(0.1029)	(0.5184)	(0.0558)	(0.1164)	(0.0758)
three-person household	0.6009***	0.3982***	0.6642***	0.2073*	0.1447***	0.5346***	0.3516**	0.1491***	-0.2504*	0.2264***
	(0.0848)	(0.0811)	(0.1890)	(0.1183)	(0.0452)	(0.1165)	(0.1518)	(0.0514)	(0.1283)	(0.0504)
at least four-person household	1.1291***	1.2007***	1.8725***	0.2649**	0.7032***	0.9888***	0.3439*	0.9963***	0.0643	0.5234***
	(0.0941)	(0.0919)	(0.2419)	(0.1248)	(0.0501)	(0.1317)	(0.1895)	(0.0615)	(0.2160)	(0.0525)
Non contributory benefits dummy										
migrant dummy	-0.2839***	-0.1572**	-0.4389***	0.0735	-0.1726***	-0.3730***	-0.1465**	0.0241	0.1307**	-0.0122
	(0.0692)	(0.0753)	(0.0807)	(0.0890)	(0.0596)	(0.0747)	(0.0659)	(0.0497)	(0.0597)	(0.0786)
age	0.0418***	0.1458***	0.0211*	-0.0052	0.0948***	0.0571***	-0.0522***	0.0124*	-0.0050	-0.0923***
	(0.0087)	(0.0141)	(0.0122)	(0.0093)	(0.0081)	(0.0116)	(0.0096)	(0.0065)	(0.0076)	(0.0101)
age^2	-0.0005***	-0.0017***	-0.0002	-0.0002**	-0.0012***	-0.0008***	0.0003***	-0.0002***	0.0001**	0.0014***
	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
gross household income	1.0285***	0.8934**	1.6830	-2.6317***	0.9893***	0.5975***	0.1746*	1.1937***	1.2420***	3.0106***
	(0.3369)	(0.4117)	(1.2013)	(0.7797)	(0.3377)	(0.1973)	(0.1017)	(0.2240)	(0.4625)	(0.5038)
gross household income^2	-0.0768***	-0.0673***	-0.0934	0.0914**	-0.0696***	-0.0597***	-0.0092	-0.1030***	-0.0704***	-0.1731***
	(0.0177)	(0.0217)	(0.0613)	(0.0440)	(0.0176)	(0.0127)	(0.0065)	(0.0118)	(0.0247)	(0.0256)
social contacts	0.0573	0.0337	0.1884**	-0.0772	-0.1155***	-0.0549	0.0320	-0.1644***	-0.1710***	-0.1962***
	(0.0701)	(0.0831)	(0.0938)	(0.0689)	(0.0436)	(0.0748)	(0.0752)	(0.0500)	(0.0567)	(0.0576)
leisure activities	-0.1596***	-0.1729**	-0.2786***	-0.2259***	-0.1561***	0.0415	-0.1997***	-0.1118***	-0.1717***	-0.2407***
	(0.0566)	(0.0710)	(0.0709)	(0.0481)	(0.0436)	(0.0620)	(0.0527)	(0.0369)	(0.0469)	(0.0666)
urban area	0.0813	0.0750	-0.3106***	0.0952**	0.1044***	0.0933	0.1548***	0.0427	-0.0690*	0.0491
	(0.0539)	(0.0589)	(0.0608)	(0.0465)	(0.0374)	(0.0665)	(0.0431)	(0.0355)	(0.0388)	(0.0557)
secondary education	-0.1325**	0.1190	-0.0365	-0.2048***	-0.1939***	-0.0626	-0.0596	-0.0886**	-0.2152***	-0.1141
	(0.0659)	(0.0748)	(0.0800)	(0.0727)	(0.0618)	(0.0868)	(0.0580)	(0.0445)	(0.0499)	(0.0736)
tertiary education	0.1010	0.3578***	-0.0885	-0.2450***	-0.0878	0.0113	0.0548	0.1014*	-0.2309***	-0.1883***
	(0.0772)	(0.0770)	(0.0971)	(0.0941)	(0.0648)	(0.0982)	(0.0545)	(0.0534)	(0.0581)	(0.0667)
houseowner	-0.1959***	-0.1835***	-0.0309	-0.0988**	-0.0628	-0.0393	-0.1772***	-1.1003***	-0.0393	-0.3946***
	(0.0547)	(0.0696)	(0.0672)	(0.0499)	(0.0424)	(0.0890)	(0.0538)	(0.0395)	(0.0464)	(0.0718)
single	-0.0491	-0.0107	-0.1393**	0.2122***	0.0834*	-0.1284*	-0.0500	0.1779***	0.3189***	0.3228***
	(0.0561)	(0.0667)	(0.0700)	(0.0537)	(0.0427)	(0.0676)	(0.0526)	(0.0401)	(0.0456)	(0.0586)
child(ren) in household	2.0329***	1.9149***	1.5120***	1.5031***	2.0179***	2.2665***	1.0323***	1.2902***	0.4112***	3.5304***
	(0.0910)	(0.0898)	(0.0980)	(0.0568)	(0.0863)	(0.1048)	(0.0627)	(0.0542)	(0.0538)	(0.2492)
three-person household	1.1076***	1.2210***	0.8636***	0.7192***	1.6061***	1.0446***	-0.0726	0.2755***	0.4156***	0.6068***
	(0.0709)	(0.0738)	(0.0865)	(0.0709)	(0.0527)	(0.0724)	(0.0693)	(0.0551)	(0.0596)	(0.0786)
at least four-person household	1.6775***	2.0637***	1.7386***	0.8294***	2.7099***	1.7967***	-0.2453***	1.5188***	0.8649***	1.2800***
	(0.0918)	(0.0955)	(0.0910)	(0.0749)	(0.1044)	(0.0858)	(0.0729)	(0.0647)	(0.0626)	(0.0983)
mills										
lambda	0.2862***	0.4743***	1.4215***	-0.2198	0.0676*	0.3743***	0.4939	0.6656***	-0.1466	0.1361*
	(0.1050)	(0.0833)	(0.2271)	(0.1961)	(0.0406)	(0.1260)	(0.5698)	(0.0646)	(0.3090)	(0.0756)
Observations	5799	5454	3087	9867	12765	4872	11752	10503	6823	4993

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 26: Residual dependence estimation for non contributory benefits and migrant households (level equation)

	IT	LT	LU	LV	NL	PT	SE	SI	UK
Log (non contributory benefits)									
migrant dummy	0.0467	0.0262	0.0197	-0.2669***	0.0522	-0.0354	0.0829	-0.1178***	-0.0455
	(0.0454)	(0.1001)	(0.0356)	(0.0638)	(0.0393)	(0.0808)	(0.0539)	(0.0392)	(0.0419)
age	0.0095	-0.0053	0.0199**	-0.0318***	0.0540***	-0.0011	-0.0102	-0.0089	0.0230***
	(0.0062)	(0.0134)	(0.0099)	(0.0099)	(0.0044)	(0.0181)	(0.0077)	(0.0058)	(0.0060)
age^2	-0.0001*	-0.0001	-0.0002*	0.0003**	-0.0005***	-0.0001	0.0001	0.0000	-0.0003***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0000)	(0.0002)	(0.0001)	(0.0001)	(0.0001)
gross household income	1.9331**	0.0279	-2.0616***	-0.3139	-0.4204	0.2185	3.1240***	-0.7040	2.1415***
	(0.7649)	(0.4005)	(0.6316)	(0.3725)	(0.3965)	(0.5274)	(0.5759)	(0.9399)	(0.2708)
gross household $income^2$	-0.1098***	-0.0050	0.0907***	0.0217	-0.0023	-0.0316	-0.1717***	-0.0102	-0.1254***
	(0.0420)	(0.0257)	(0.0299)	(0.0226)	(0.0195)	(0.0298)	(0.0298)	(0.0508)	(0.0141)
urban area	0.0565*	-0.0250	0.0061	-0.0777		0.1299**	0.0093		0.1269***
	(0.0342)	(0.0754)	(0.0309)	(0.0514)		(0.0506)	(0.0561)		(0.0355)
secondary education	-0.1530***	-0.2019**	0.0265	0.0313	-0.1976***	-0.0735	-0.0970	-0.0514	-0.1251***
	(0.0389)	(0.0961)	(0.0373)	(0.0681)	(0.0312)	(0.0688)	(0.0637)	(0.0381)	(0.0406)
tertiary education	-0.1338**	-0.1959**	0.1662***	-0.0390	-0.2216***	-0.1154	0.0551	0.1622***	-0.1539***
	(0.0568)	(0.0930)	(0.0435)	(0.0809)	(0.0341)	(0.0921)	(0.0682)	(0.0546)	(0.0442)
houseowner	-0.1967***	-0.3156**	-0.0931***	-0.1935***	-0.3165***	-0.2017***	-0.1542***	-0.1214***	-0.8350***
	(0.0320)	(0.1255)	(0.0348)	(0.0724)	(0.0395)	(0.0585)	(0.0571)	(0.0382)	(0.0429)
single	-0.0440	0.1904**	0.0702*	0.0606	0.2822***	0.0256	-0.1384***	-0.0145	0.2518***
	(0.0792)	(0.0898)	(0.0376)	(0.0593)	(0.0296)	(0.0760)	(0.0525)	(0.0391)	(0.0356)
child(ren) in household	1.0163***	1.3213***	0.2672***	1.4455***	0.3280***	0.4976***	1.5939***	0.8273***	0.3954***
	(0.1046)	(0.4486)	(0.0644)	(0.2621)	(0.0637)	(0.1810)	(0.1238)	(0.0601)	(0.0671)
three-person household	0.2458**	0.5059***	0.0992	0.4410***	0.0474	-0.3324**	-0.1777	0.2221**	-0.0492
	(0.1208)	(0.1615)	(0.0744)	(0.1207)	(0.0544)	(0.1529)	(0.1108)	(0.0982)	(0.0524)
at least four-person household	0.6275***	1.0440***	0.8084***	1.1317***	0.6401***	0.1146	-0.0534	0.7546***	0.1942***
	(0.1229)	(0.2011)	(0.0781)	(0.1465)	(0.0577)	(0.1810)	(0.1286)	(0.1204)	(0.0559)
Non contributory benefits dummy									
migrant dummy	-0.0834**	-0.0590	-0.1151	-0.1322***	0.1003	-0.2522***	0.1196*	-0.0442	-0.4356***
	(0.0366)	(0.0739)	(0.0711)	(0.0511)	(0.0776)	(0.0865)	(0.0689)	(0.0471)	(0.0686)
age	-0.0078*	0.0037	0.1448***	0.0010	0.0140**	0.0628***	0.0006	0.0037	0.0684***
	(0.0044)	(0.0101)	(0.0140)	(0.0082)	(0.0071)	(0.0117)	(0.0081)	(0.0066)	(0.0085)
age^2	0.0001**	-0.0000	-0.0015***	-0.0000	-0.0001**	-0.0009***	0.0000	-0.0003***	-0.0006***
	(0.0000)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
gross household income	3.7476***	0.7866***	-3.8092***	0.8854***	2.2525***	0.6229	3.1848***	8.2095***	1.6637***
	(0.2441)	(0.2468)	(1.2965)	(0.2743)	(0.6594)	(0.5899)	(0.5445)	(0.8273)	(0.3578)
gross household $income^2$	-0.2076***	-0.0627***	0.1496**	-0.0622***	-0.1606***	-0.0414	-0.1863***	-0.4873***	-0.1017***
	(0.0127)	(0.0154)	(0.0612)	(0.0167)	(0.0330)	(0.0324)	(0.0285)	(0.0437)	(0.0188)
social contacts	-0.0509**	-0.0831	-0.4085***	-0.1081**	-0.1085*	-0.2079***	0.0020	-0.0021	-0.1546***
	(0.0254)	(0.0545)	(0.1042)	(0.0537)	(0.0613)	(0.0656)	(0.0737)	(0.0534)	(0.0481)
leisure activities	-0.1162***	0.0919	-0.0093	-0.0185	-0.1484***	-0.1629***	-0.3960***	-0.0486	-0.1952***
	(0.0246)	(0.0636)	(0.0853)	(0.0560)	(0.0527)	(0.0618)	(0.0631)	(0.0401)	(0.0477)
urban area	-0.1214***	-0.2250***	0.1469**	-0.0202		0.0901*	-0.1221*		0.0211
	(0.0215)	(0.0506)	(0.0657)	(0.0463)		(0.0542)	(0.0641)		(0.0509)
secondary education	-0.1313***	-0.0568	-0.0989	0.0555	-0.2034***	-0.0167	-0.2851***	-0.0616	-0.1532***
	(0.0252)	(0.0750)	(0.0785)	(0.0581)	(0.0542)	(0.0782)	(0.0662)	(0.0455)	(0.0563)
tertiary education	-0.2063***	-0.0665	-0.1048	0.1175*	-0.1002	-0.1859**	-0.0570	0.0647	-0.1914***
	(0.0341)	(0.0706)	(0.0942)	(0.0683)	(0.0611)	(0.0904)	(0.0748)	(0.0646)	(0.0591)
houseowner	-0.0505**	-0.4472***	-0.0633	-0.2221***	-0.9337***	0.1298**	-0.3866***	-0.2274***	-1.4522***
	(0.0247)	(0.1000)	(0.0795)	(0.0628)	(0.0516)	(0.0632)	(0.0568)	(0.0519)	(0.0484)
single	-0.4168***	0.1997***	0.0785	0.0880*	0.3891***	-0.3450***	0.2511***	0.0359	0.1853***
	(0.0237)	(0.0567)	(0.0721)	(0.0519)	(0.0532)	(0.0640)	(0.0617)	(0.0462)	(0.0490)
child(ren) in household	0.6027***	1.8840***	2.1767***	2.1617***	2.8558***	1.1661***	1.9048***	1.3187***	2.5015***
	(0.0285)	(0.0677)	(0.1127)	(0.0739)	(0.0925)	(0.0624)	(0.0792)	(0.0495)	(0.0806)
three-person household	0.6230***	0.4972***	1.2405***	0.5556***	1.3298***	0.5926***	1.0551***	1.0254***	1.1045***
	(0.0309)	(0.0730)	(0.0851)	(0.0627)	(0.0762)	(0.0713)	(0.0776)	(0.0541)	(0.0666)
at least four-person household	0.6494***	0.7851***	1.9461***	1.0114***	2.2542***	0.8800***	1.9142***	1.7651***	1.5453***
	(0.0334)	(0.0803)	(0.1078)	(0.0753)	(0.0873)	(0.0774)	(0.0909)	(0.0557)	(0.0797)
mills									
lambda	0.6703***	0.7191*	-0.0752	0.9657***	0.2333***	0.2827	0.3733***	0.1606	0.0042
	(0.2481)	(0.3919)	(0.0788)	(0.2503)	(0.0558)	(0.2528)	(0.1258)	(0.1059)	(0.0578)
Observations	19983	5106	4204	5716	9472	4424	5582	9001	8128

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 27: Residual dependence estimation for non contributory benefits and exclusively migrant households (level equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
Log (non contributory benefits)										
migrant dummy	0.0524	0.1073**	-0.6199***	0.1933	0.0427	-0.2316**	-0.0223	0.1871***	-0.0504	-0.0827
	(0.0563)	(0.0534)	(0.1804)	(0.1807)	(0.0439)	(0.0986)	(0.1580)	(0.0502)	(0.0855)	(0.0509)
age	0.0475***	0.0608***	0.0326**	-0.0384***	0.0324***	-0.0243*	-0.0533	0.0071	0.0058	0.0025
	(0.0079)	(0.0126)	(0.0150)	(0.0122)	(0.0061)	(0.0128)	(0.0328)	(0.0059)	(0.0090)	(0.0058)
age^2	-0.0008***	-0.0007***	-0.0002	0.0002*	-0.0004***	0.0001	0.0005	-0.0002***	0.0000	-0.0001
	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0003)	(0.0001)	(0.0001)	(0.0001)
gross household income	1.5597***	-0.6476	1.1697	-0.2192	0.6811**	-0.2935	0.2438	-1.1084**	0.9717	2.3789***
	(0.4893)	(0.5632)	(1.7896)	(0.6939)	(0.3033)	(0.4784)	(0.5259)	(0.4685)	(0.6056)	(0.2986)
gross household income^2	-0.0783***	0.0147	-0.0726	0.0024	-0.0397***	0.0133	-0.0004	0.0201	-0.0479	-0.1300***
	(0.0246)	(0.0282)	(0.0909)	(0.0404)	(0.0153)	(0.0280)	(0.0299)	(0.0242)	(0.0336)	(0.0155)
urban area	0.1239***	0.0310	-0.1859**	0.0524	0.0530***	-0.0171	0.0643	0.0291	-0.0522	-0.0580**
	(0.0399)	(0.0322)	(0.0753)	(0.0532)	(0.0190)	(0.0555)	(0.1125)	(0.0301)	(0.0509)	(0.0277)
secondary education	0.0486	0.0851*	-0.2222**	-0.0401	-0.2959***	0.0852	-0.0296	-0.1619***	-0.0542	-0.0663*
	(0.0535)	(0.0437)	(0.0931)	(0.0866)	(0.0358)	(0.0699)	(0.1129)	(0.0384)	(0.0812)	(0.0376)
tertiary education	0.1863***	0.2207***	-0.2025*	0.2761**	-0.2403***	-0.0337	0.0444	0.0194	0.0223	-0.1099***
	(0.0592)	(0.0445)	(0.1131)	(0.1127)	(0.0373)	(0.0792)	(0.1032)	(0.0459)	(0.0951)	(0.0357)
houseowner	-0.1043**	-0.0523	-0.0965	-0.0217	-0.0774***	-0.1317*	-0.3056**	-0.4330***	0.0723	-0.3372***
	(0.0419)	(0.0435)	(0.0891)	(0.0547)	(0.0222)	(0.0708)	(0.1327)	(0.0443)	(0.0561)	(0.0358)
single	-0.0193	0.2000***	0.2193**	-0.2142***	0.1155***	0.0642	-0.1790*	0.1628***	0.2168**	0.1796***
	(0.0448)	(0.0386)	(0.0977)	(0.0609)	(0.0272)	(0.0510)	(0.1030)	(0.0355)	(0.0947)	(0.0312)
child(ren) in household	0.5923***	0.4961***	1.1680***	0.6332***	0.2857***	1.1726***	0.3376	0.9141***	0.1737	1.2005***
	(0.0952)	(0.0725)	(0.1391)	(0.2184)	(0.0319)	(0.1039)	(0.5146)	(0.0571)	(0.1187)	(0.0822)
three-person household	0.5790***	0.4711***	0.6997***	0.1710	0.1488***	0.6322***	0.3484**	0.1737***	-0.2190*	0.2097***
	(0.0877)	(0.0824)	(0.1980)	(0.1214)	(0.0455)	(0.1234)	(0.1524)	(0.0532)	(0.1251)	(0.0523)
at least four-person household	1.0804***	1.2629***	1.8986***	0.2228*	0.7078***	1.0991***	0.3245*	0.9989***	0.1334	0.5016***
	(0.0968)	(0.0946)	(0.2499)	(0.1291)	(0.0504)	(0.1403)	(0.1869)	(0.0635)	(0.2137)	(0.0546)
Non contributory benefits dummy										
migrant dummy	-0.2790***	-0.1927**	-0.9035***	-0.0525	-0.0131	-0.0750	-0.1907**	0.1606**	0.1241*	-0.2519**
	(0.0845)	(0.0982)	(0.1375)	(0.1500)	(0.0844)	(0.1026)	(0.0843)	(0.0688)	(0.0751)	(0.1105)
age	0.0406***	0.1435***	0.0264**	-0.0034	0.0937***	0.0565***	-0.0546***	0.0132**	-0.0051	-0.0937***
	(0.0089)	(0.0145)	(0.0134)	(0.0095)	(0.0083)	(0.0123)	(0.0098)	(0.0067)	(0.0078)	(0.0105)
age^2	-0.0005***	-0.0017***	-0.0002	-0.0002**	-0.0012***	-0.0008***	0.0004***	-0.0003***	0.0001*	0.0014***
	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
gross household income	1.0744***	0.8461**	2.1618	-2.5824***	1.1933***	0.5713***	0.1686*	1.3684***	1.3565***	3.0758***
	(0.3413)	(0.4077)	(1.3632)	(0.7938)	(0.3595)	(0.2026)	(0.1021)	(0.2601)	(0.4742)	(0.5184)
gross household income^2	-0.0800***	-0.0643***	-0.1162*	0.0885**	-0.0803***	-0.0563***	-0.0089	-0.1131***	-0.0765***	-0.1773***
	(0.0180)	(0.0215)	(0.0695)	(0.0448)	(0.0187)	(0.0131)	(0.0066)	(0.0136)	(0.0253)	(0.0264)
social contacts	0.0772	0.0006	0.2212**	-0.0894	-0.1384***	-0.0321	0.0251	-0.1655***	-0.1631***	-0.1864***
	(0.0722)	(0.0867)	(0.1017)	(0.0699)	(0.0450)	(0.0794)	(0.0773)	(0.0521)	(0.0575)	(0.0594)
leisure activities	-0.1466**	-0.1888**	-0.2613***	-0.2192***	-0.1503***	0.0513	-0.2094***	-0.1175***	-0.1838***	-0.2282***
	(0.0584)	(0.0742)	(0.0777)	(0.0490)	(0.0452)	(0.0666)	(0.0542)	(0.0385)	(0.0482)	(0.0688)
urban area	0.0844	0.0799	-0.3352***	0.0928*	0.0969**	0.1256*	0.1580***	0.0326	-0.0857**	0.0601
	(0.0559)	(0.0617)	(0.0654)	(0.0474)	(0.0386)	(0.0725)	(0.0444)	(0.0372)	(0.0398)	(0.0576)
secondary education	-0.1694**	0.1390*	-0.0267	-0.2164***	-0.2035***	-0.0926	-0.0489	-0.1124**	-0.2164***	-0.1140
	(0.0677)	(0.0782)	(0.0877)	(0.0744)	(0.0635)	(0.0918)	(0.0596)	(0.0466)	(0.0513)	(0.0756)
tertiary education	0.0677	0.3722***	-0.1313	-0.2311**	-0.0940	-0.0442	0.0473	0.0962*	-0.2325***	-0.1886***
	(0.0798)	(0.0810)	(0.1095)	(0.0961)	(0.0667)	(0.1046)	(0.0565)	(0.0564)	(0.0601)	(0.0693)
houseowner	-0.2032***	-0.1543**	-0.0592	-0.1041**	-0.0420	-0.0292	-0.1720***	-1.1380***	-0.0528	-0.4443***
	(0.0566)	(0.0728)	(0.0735)	(0.0511)	(0.0438)	(0.0922)	(0.0566)	(0.0414)	(0.0484)	(0.0752)
single	-0.0305	0.0080	-0.0888	0.2270***	0.0931**	-0.0535	-0.0526	0.1669***	0.3122***	0.3315***
	(0.0586)	(0.0703)	(0.0760)	(0.0553)	(0.0442)	(0.0734)	(0.0546)	(0.0421)	(0.0464)	(0.0603)
child(ren) in household	2.0716***	1.9030***	1.5020***	1.4942***	2.0512***	2.1998***	1.0422***	1.2773***	0.4165***	3.5094***
	(0.0972)	(0.0941)	(0.1135)	(0.0581)	(0.0903)	(0.1122)	(0.0641)	(0.0579)	(0.0555)	(0.2546)
three-person household	1.1458***	1.1819***	0.9224***	0.7200***	1.5914***	1.1102***	-0.0402	0.3134***	0.3961***	0.5729***
	(0.0743)	(0.0775)	(0.0970)	(0.0722)	(0.0556)	(0.0769)	(0.0710)	(0.0587)	(0.0610)	(0.0829)
at least four-person household	1.6707***	2.0536***	1.8286***	0.8354***	2.7063***	1.9147***	-0.2289***	1.5730***	0.8592***	1.1582***
	(0.0955)	(0.1030)	(0.1021)	(0.0766)	(0.1098)	(0.0943)	(0.0748)	(0.0699)	(0.0640)	(0.1046)
mills										
lambda	0.2699**	0.5128***	1.3451***	-0.2216	0.0629	0.4696***	0.4656	0.6377***	-0.0178	0.2179***
	(0.1087)	(0.0867)	(0.2230)	(0.2033)	(0.0412)	(0.1340)	(0.5586)	(0.0651)	(0.3084)	(0.0798)
Observations	5408	4984	2631	9493	11760	4305	11231	9751	6553	4587

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 28: Residual dependence estimation for non contributory benefits and exclusively migrant households (level equation)

	IT	LT	LU	LV	NL	PT	SE	SI	UK
Log (non contributory benefits)									
migrant dummy	0.1277*	0.1924	0.0325	-0.1088	0.2105***	0.0287	0.2417***	-0.1372**	-0.0823
	(0.0709)	(0.1865)	(0.0396)	(0.0920)	(0.0606)	(0.1317)	(0.0686)	(0.0614)	(0.0554)
age	0.0093	-0.0050	0.0239**	-0.0382***	0.0548***	-0.0000	-0.0116	-0.0109*	0.0259***
	(0.0064)	(0.0136)	(0.0106)	(0.0104)	(0.0045)	(0.0186)	(0.0080)	(0.0062)	(0.0062)
age^2	-0.0001*	-0.0001	-0.0002**	0.0003***	-0.0005***	-0.0001	0.0001	0.0000	-0.0003***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0000)	(0.0002)	(0.0001)	(0.0001)	(0.0001)
gross household income	2.0952***	0.0083	-2.1772***	-0.3849	-0.3792	0.5644	2.2340***	-1.0491	2.2549***
	(0.7857)	(0.3979)	(0.6634)	(0.3731)	(0.4133)	(0.5436)	(0.7818)	(0.9868)	(0.2799)
gross household income^2	-0.1184***	-0.0022	0.0963***	0.0267	-0.0041	-0.0528*	-0.1262***	0.0070	-0.1314***
	(0.0431)	(0.0257)	(0.0314)	(0.0227)	(0.0203)	(0.0308)	(0.0398)	(0.0534)	(0.0146)
urban area	0.0411	-0.0125	0.0233	-0.1048*		0.1386***	-0.0428		0.1471***
	(0.0348)	(0.0747)	(0.0340)	(0.0549)		(0.0530)	(0.0587)		(0.0366)
secondary education	-0.1636***	-0.1386	0.0151	0.0280	-0.2018***	-0.0468	-0.0994	-0.0540	-0.1183***
	(0.0399)	(0.0973)	(0.0410)	(0.0713)	(0.0320)	(0.0725)	(0.0661)	(0.0410)	(0.0419)
tertiary education	-0.1481**	-0.1659*	0.1617***	-0.0225	-0.2186***	-0.1112	0.0398	0.1802***	-0.1285***
	(0.0603)	(0.0939)	(0.0477)	(0.0856)	(0.0351)	(0.0986)	(0.0714)	(0.0584)	(0.0458)
houseowner	-0.1907***	-0.2646**	-0.0790**	-0.1489**	-0.3142***	-0.1724***	-0.1167**	-0.1110***	-0.8591***
	(0.0342)	(0.1296)	(0.0380)	(0.0744)	(0.0413)	(0.0613)	(0.0595)	(0.0406)	(0.0452)
single	-0.0269	0.1782*	0.1119***	0.1068*	0.2873***	0.0023	-0.1574***	-0.0407	0.2818***
	(0.0810)	(0.0911)	(0.0419)	(0.0642)	(0.0306)	(0.0764)	(0.0550)	(0.0417)	(0.0369)
child(ren) in household	1.0394***	1.0857**	0.2995***	1.4448***	0.3306***	0.5716***	1.5723***	0.8361***	0.4055***
	(0.1071)	(0.4447)	(0.0689)	(0.2502)	(0.0637)	(0.1880)	(0.1254)	(0.0629)	(0.0690)
three-person household	0.2617**	0.4689***	0.1618**	0.3860***	0.0508	-0.2764*	-0.1753	0.2388**	-0.0228
	(0.1217)	(0.1665)	(0.0783)	(0.1234)	(0.0556)	(0.1600)	(0.1124)	(0.1028)	(0.0538)
at least four-person household	0.6445***	0.9637***	0.8472***	1.1452***	0.6306***	0.1622	-0.1075	0.7674***	0.2288***
	(0.1234)	(0.2082)	(0.0824)	(0.1516)	(0.0589)	(0.1914)	(0.1303)	(0.1259)	(0.0575)
Non contributory benefits dummy									
migrant dummy	-0.1808***	0.1547	-0.0234	0.0053	0.4011***	-0.2110	0.2092**	0.1033	-0.6730***
	(0.0541)	(0.1145)	(0.0818)	(0.0662)	(0.1056)	(0.1565)	(0.0847)	(0.0768)	(0.0878)
age	-0.0093**	-0.0001	0.1420***	-0.0007	0.0136*	0.0620***	-0.0007	0.0039	0.0688***
	(0.0045)	(0.0105)	(0.0152)	(0.0087)	(0.0073)	(0.0120)	(0.0084)	(0.0070)	(0.0088)
age^2	0.0001***	-0.0000	-0.0015***	-0.0000	-0.0001**	-0.0009***	0.0000	-0.0003***	-0.0006***
	(0.0000)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
gross household income	3.7586***	0.7456***	-3.6695***	0.8301***	2.8752***	0.5424	3.7520***	7.9442***	1.6031***
	(0.2536)	(0.2245)	(1.3609)	(0.2686)	(0.8296)	(0.6063)	(0.6480)	(0.8562)	(0.3543)
gross household income^2	-0.2082***	-0.0607***	0.1436**	-0.0590***	-0.1919***	-0.0369	-0.2151***	-0.4729***	-0.0992***
	(0.0132)	(0.0142)	(0.0643)	(0.0165)	(0.0414)	(0.0333)	(0.0336)	(0.0453)	(0.0187)
social contacts	-0.0616**	-0.0985*	-0.4357***	-0.1006*	-0.1067*	-0.1907***	0.0180	-0.0610	-0.1501***
	(0.0260)	(0.0565)	(0.1091)	(0.0574)	(0.0626)	(0.0676)	(0.0759)	(0.0569)	(0.0493)
leisure activities	-0.1130***	0.0545	-0.0229	-0.0684	-0.1536***	-0.1804***	-0.4286***	-0.0084	-0.2069***
	(0.0253)	(0.0666)	(0.0912)	(0.0609)	(0.0540)	(0.0645)	(0.0651)	(0.0426)	(0.0490)
urban area	-0.1198***	-0.2146***	0.1469**	0.0033		0.0900	-0.1088		0.0310
	(0.0220)	(0.0527)	(0.0712)	(0.0498)		(0.0565)	(0.0663)		(0.0522)
secondary education	-0.1303***	-0.0449	-0.0853	0.0226	-0.1988***	-0.0037	-0.2691***	-0.0455	-0.1468**
	(0.0259)	(0.0776)	(0.0849)	(0.0614)	(0.0556)	(0.0826)	(0.0683)	(0.0487)	(0.0577)
tertiary education	-0.2239***	-0.0379	-0.1396	0.1210*	-0.0982	-0.1953**	-0.0564	0.0563	-0.1991***
	(0.0352)	(0.0727)	(0.1016)	(0.0725)	(0.0631)	(0.0952)	(0.0776)	(0.0688)	(0.0608)
houseowner	-0.0657**	-0.4898***	0.0130	-0.2066***	-0.9640***	0.1346**	-0.3658***	-0.1900***	-1.4958***
	(0.0256)	(0.1046)	(0.0867)	(0.0660)	(0.0531)	(0.0656)	(0.0584)	(0.0547)	(0.0499)
single	-0.4213***	0.1970***	0.1719**	0.1244**	0.3563***	-0.3110***	0.2533***	0.0346	0.1983***
	(0.0243)	(0.0592)	(0.0785)	(0.0572)	(0.0549)	(0.0666)	(0.0640)	(0.0491)	(0.0507)
child(ren) in household	0.6105***	1.8487***	2.1766***	2.1404***	2.9198***	1.1686***	1.8767***	1.2870***	2.5071***
	(0.0295)	(0.0708)	(0.1261)	(0.0812)	(0.1000)	(0.0650)	(0.0820)	(0.0524)	(0.0851)
three-person household	0.6187***	0.5222***	1.2698***	0.5813***	1.3325***	0.6088***	1.0415***	1.0261***	1.1106***
	(0.0317)	(0.0764)	(0.0950)	(0.0701)	(0.0798)	(0.0733)	(0.0809)	(0.0573)	(0.0696)
at least four-person household	0.6421***	0.8254***	2.0032***	1.1432***	2.3067***	0.9141***	1.9064***	1.7614***	1.5383***
	(0.0344)	(0.0844)	(0.1247)	(0.0849)	(0.0917)	(0.0798)	(0.0947)	(0.0590)	(0.0846)
mills									
lambda	0.6974***	0.5192	-0.0419	0.9363***	0.2164***	0.3830	0.3126**	0.1770	0.0223
	(0.2504)	(0.3969)	(0.0837)	(0.2440)	(0.0557)	(0.2627)	(0.1274)	(0.1132)	(0.0588)
Observations	19089	4713	3642	4962	9007	4171	5189	7960	7663

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 29: Residual dependence estimation for non contributory benefits and mixed households (level equation)

	AT	BE	CY	CZ	DE	EE	ES	FR	GR	IE
Log (non contributory benefits)										
migrant dummy	-0.0080	-0.1364***	-0.1524	0.0094	0.0084	-0.1847**	0.1127	-0.0552	-0.0534	-0.0052
	(0.0608)	(0.0435)	(0.0936)	(0.1073)	(0.0370)	(0.0718)	(0.1930)	(0.0548)	(0.1014)	(0.0447)
age	0.0444***	0.0492***	0.0294**	-0.0398***	0.0306***	-0.0356***	-0.0897**	0.0045	0.0039	0.0041
	(0.0085)	(0.0124)	(0.0150)	(0.0120)	(0.0061)	(0.0132)	(0.0411)	(0.0062)	(0.0095)	(0.0058)
age^2	-0.0008***	-0.0005***	-0.0002	0.0003*	-0.0004***	0.0002	0.0008**	-0.0002***	0.0000	-0.0001*
	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0003)	(0.0001)	(0.0001)	(0.0001)
gross household income	0.9280	-1.4774**	1.7846	-0.3699	0.4526	-0.4339	0.2577	-1.4226***	0.7009	2.1223***
	(0.7469)	(0.7341)	(1.7699)	(0.6670)	(0.3127)	(0.4837)	(0.5395)	(0.4812)	(0.5880)	(0.2765)
gross household income^2	-0.0456	0.0591	-0.1034	0.0069	-0.0279*	0.0227	-0.0000	0.0360	-0.0330	-0.1156***
	(0.0369)	(0.0364)	(0.0897)	(0.0390)	(0.0157)	(0.0282)	(0.0303)	(0.0247)	(0.0324)	(0.0142)
urban area	0.1264***	0.0187	-0.2198***	0.0522	0.0576***	-0.0502	0.1368	0.0538*	-0.0514	-0.0591**
	(0.0414)	(0.0302)	(0.0754)	(0.0522)	(0.0186)	(0.0529)	(0.1183)	(0.0308)	(0.0522)	(0.0273)
secondary education	0.0901	0.0947**	-0.2507***	-0.0401	-0.2912***	0.0955	-0.0533	-0.1555***	-0.0116	-0.0579
	(0.0593)	(0.0423)	(0.0925)	(0.0834)	(0.0356)	(0.0683)	(0.1231)	(0.0400)	(0.0872)	(0.0367)
tertiary education	0.2230***	0.2238***	-0.1968*	0.2839***	-0.2417***	-0.0116	0.0662	0.0202	0.1055	-0.0940***
	(0.0647)	(0.0426)	(0.1102)	(0.1094)	(0.0372)	(0.0776)	(0.1097)	(0.0473)	(0.0990)	(0.0347)
houseowner	-0.0904**	-0.0686	-0.1470	-0.0363	-0.0732***	-0.1251*	-0.3722**	-0.4542***	0.0665	-0.3727***
	(0.0420)	(0.0419)	(0.0894)	(0.0529)	(0.0217)	(0.0704)	(0.1815)	(0.0456)	(0.0612)	(0.0360)
single	0.0183	0.1670***	0.1390	-0.1939***	0.1084***	0.0253	-0.1234	0.1705***	0.1571*	0.1363***
	(0.0447)	(0.0369)	(0.0974)	(0.0584)	(0.0267)	(0.0491)	(0.1124)	(0.0365)	(0.0951)	(0.0309)
child(ren) in household	0.5288***	0.4516***	1.2268***	0.7341***	0.2745***	1.1290***	0.7489	0.9763***	0.0562	1.1130***
	(0.0896)	(0.0636)	(0.1482)	(0.2118)	(0.0314)	(0.1020)	(0.6595)	(0.0602)	(0.1195)	(0.0751)
three-person household	0.5682***	0.4308***	0.6330***	0.2824**	0.1369***	0.5289***	0.3616**	0.1546***	-0.2517**	0.2451***
	(0.0886)	(0.0793)	(0.1902)	(0.1188)	(0.0460)	(0.1184)	(0.1669)	(0.0546)	(0.1184)	(0.0520)
at least four-person household	1.0880***	1.2319***	1.8183***	0.3381***	0.6941***	0.9826***	0.3097	1.0265***	-0.0739	0.5111***
	(0.0983)	(0.0887)	(0.2395)	(0.1252)	(0.0509)	(0.1325)	(0.2226)	(0.0678)	(0.1959)	(0.0542)
Non contributory benefits dummy										
migrant dummy	-0.3679***	-0.1647	-0.2364**	0.1408	-0.3108***	-0.6383***	-0.0889	-0.1349**	0.1284	0.1649
	(0.1109)	(0.1088)	(0.0946)	(0.1093)	(0.0804)	(0.0949)	(0.0945)	(0.0678)	(0.0891)	(0.1046)
age	0.0512***	0.1478***	0.0267**	-0.0052	0.0973***	0.0685***	-0.0578***	0.0104	-0.0016	-0.0999***
	(0.0095)	(0.0158)	(0.0127)	(0.0095)	(0.0083)	(0.0127)	(0.0100)	(0.0067)	(0.0080)	(0.0107)
age^2	-0.0006***	-0.0017***	-0.0002*	-0.0002**	-0.0012***	-0.0009***	0.0004***	-0.0002***	0.0001	0.0014***
	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
gross household income	1.1827***	1.3477*	1.0239	-2.4239***	1.0282***	0.5721***	0.1494	1.2181***	1.1411**	3.0937***
	(0.3775)	(0.7858)	(1.3071)	(0.7894)	(0.3594)	(0.2065)	(0.1111)	(0.2363)	(0.4709)	(0.5129)
gross household income^2	-0.0858***	-0.0892**	-0.0602	0.0801*	-0.0709***	-0.0579***	-0.0064	-0.1033***	-0.0643**	-0.1766***
	(0.0196)	(0.0400)	(0.0665)	(0.0445)	(0.0186)	(0.0133)	(0.0070)	(0.0124)	(0.0251)	(0.0261)
social contacts	-0.0225	0.0733	0.1932**	-0.0779	-0.0933**	-0.0762	0.0424	-0.1843***	-0.1752***	-0.1865***
	(0.0768)	(0.0942)	(0.0981)	(0.0707)	(0.0448)	(0.0796)	(0.0828)	(0.0523)	(0.0583)	(0.0600)
leisure activities	-0.1220**	-0.1937**	-0.2595***	-0.2388***	-0.1721***	0.0699	-0.1756***	-0.1006***	-0.2017***	-0.2431***
	(0.0608)	(0.0788)	(0.0756)	(0.0486)	(0.0449)	(0.0663)	(0.0559)	(0.0381)	(0.0492)	(0.0691)
urban area	0.1249**	0.0939	-0.3456***	0.1015**	0.1061***	0.1287*	0.1262***	0.0437	-0.0826**	0.0391
	(0.0583)	(0.0633)	(0.0638)	(0.0472)	(0.0384)	(0.0719)	(0.0450)	(0.0368)	(0.0406)	(0.0579)
secondary education	-0.1290*	0.1178	-0.0342	-0.1798**	-0.2281***	-0.0961	-0.0395	-0.0874*	-0.2463***	-0.1075
	(0.0722)	(0.0830)	(0.0838)	(0.0753)	(0.0638)	(0.0930)	(0.0616)	(0.0462)	(0.0532)	(0.0764)
tertiary education	0.1352	0.4240***	-0.0716	-0.2116**	-0.1257*	-0.0464	0.0400	0.1096**	-0.2601***	-0.1735**
	(0.0849)	(0.0853)	(0.1041)	(0.0964)	(0.0672)	(0.1063)	(0.0569)	(0.0557)	(0.0615)	(0.0689)
houseowner	-0.2213***	-0.3050***	-0.1190*	-0.0877*	-0.0494	-0.0221	-0.2340***	-1.0646***	-0.0837*	-0.5113***
	(0.0579)	(0.0768)	(0.0713)	(0.0509)	(0.0435)	(0.0951)	(0.0571)	(0.0412)	(0.0494)	(0.0777)
single	-0.1168*	-0.1017	-0.1570**	0.2106***	0.0809*	-0.1676**	-0.0548	0.1579***	0.3298***	0.3063***
	(0.0607)	(0.0743)	(0.0727)	(0.0542)	(0.0442)	(0.0722)	(0.0556)	(0.0419)	(0.0469)	(0.0614)
child(ren) in household	2.1198***	2.1025***	1.7352***	1.5064***	2.0377***	2.3491***	1.0319***	1.2597***	0.4460***	3.7878***
	(0.1044)	(0.1057)	(0.1167)	(0.0572)	(0.0893)	(0.1128)	(0.0651)	(0.0558)	(0.0565)	(0.3492)
three-person household	1.1497***	1.2789***	0.8628***	0.7107***	1.6249***	1.0690***	-0.0579	0.3058***	0.3786***	0.5827***
	(0.0746)	(0.0796)	(0.0904)	(0.0716)	(0.0538)	(0.0772)	(0.0717)	(0.0569)	(0.0621)	(0.0817)
at least four-person household	1.7534***	2.2253***	1.7557***	0.8209***	2.7192***	1.8557***	-0.2364***	1.5549***	0.8133***	1.3127***
	(0.0989)	(0.1056)	(0.0960)	(0.0756)	(0.1068)	(0.0908)	(0.0759)	(0.0669)	(0.0653)	(0.1039)
mills										
lambda	0.1901*	0.3995***	1.4220***	-0.1520	0.0474	0.3525***	0.9563	0.7120***	-0.3111	0.1691**
	(0.1037)	(0.0756)	(0.2280)	(0.1965)	(0.0410)	(0.1239)	(0.7316)	(0.0704)	(0.2909)	(0.0754)
Observations	5153	4916	2880	9627	12079	4366	11064	9777	6375	4610

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 30: Residual dependence estimation for non contributory benefits and mixed households (level equation)

	IT	LT	LU	LV	NL	PT	SE	SI	UK
Log (non contributory benefits)									
migrant dummy	-0.0116	-0.0292	-0.0261	-0.3393***	-0.0590	-0.0585	-0.1327*	-0.1056**	-0.0162
	(0.0563)	(0.1199)	(0.0510)	(0.0811)	(0.0497)	(0.0940)	(0.0767)	(0.0481)	(0.0577)
age	0.0085	-0.0112	-0.0031	-0.0339***	0.0545***	-0.0060	-0.0193**	-0.0098	0.0216***
	(0.0065)	(0.0135)	(0.0140)	(0.0106)	(0.0045)	(0.0183)	(0.0082)	(0.0061)	(0.0061)
age^2	-0.0001	-0.0000	0.0001	0.0003**	-0.0005***	-0.0000	0.0002***	0.0000	-0.0003***
	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0000)	(0.0002)	(0.0001)	(0.0001)	(0.0001)
gross household income	2.1391***	-0.0320	-3.4450***	-0.3843	-0.3873	-0.3796	3.3066***	-0.9348	2.0320***
	(0.7829)	(0.3938)	(1.2100)	(0.3798)	(0.3948)	(0.5883)	(0.5886)	(0.9710)	(0.2859)
gross household income^2	-0.1213***	0.0000	0.1540***	0.0270	-0.0031	0.0026	-0.1774***	0.0018	-0.1191***
	(0.0431)	(0.0253)	(0.0568)	(0.0230)	(0.0194)	(0.0331)	(0.0305)	(0.0524)	(0.0148)
urban area	0.0658*	-0.0080	-0.0548	-0.1054**		0.1273**	-0.0130		0.1270***
	(0.0350)	(0.0719)	(0.0478)	(0.0533)		(0.0518)	(0.0616)		(0.0357)
secondary education	-0.1532***	-0.2176**	-0.0201	0.0370	-0.1912***	-0.1106	-0.0710	-0.0562	-0.1387***
	(0.0416)	(0.0948)	(0.0563)	(0.0725)	(0.0317)	(0.0702)	(0.0698)	(0.0407)	(0.0424)
tertiary education	-0.1373**	-0.1960**	0.1450**	-0.0202	-0.2179***	-0.1565*	0.0983	0.1550***	-0.1634***
	(0.0608)	(0.0925)	(0.0682)	(0.0861)	(0.0346)	(0.0933)	(0.0742)	(0.0569)	(0.0467)
houseowner	-0.1942***	-0.2659**	-0.1837***	-0.2271***	-0.3166***	-0.2270***	-0.1038*	-0.1186***	-0.8641***
	(0.0345)	(0.1221)	(0.0651)	(0.0755)	(0.0406)	(0.0602)	(0.0625)	(0.0406)	(0.0439)
single	-0.0578	0.1520*	-0.0111	0.0205	0.2755***	0.0200	-0.1102**	-0.0225	0.2617***
	(0.0842)	(0.0861)	(0.0571)	(0.0594)	(0.0298)	(0.0786)	(0.0558)	(0.0409)	(0.0367)
child(ren) in household	1.0425***	1.0868**	0.1793**	1.3433***	0.3282***	0.4620**	1.7838***	0.8529***	0.3981***
	(0.1064)	(0.4402)	(0.0864)	(0.2622)	(0.0657)	(0.1864)	(0.1335)	(0.0636)	(0.0674)
three-person household	0.2978**	0.4779***	0.0029	0.4440***	0.0445	-0.3599**	-0.0628	0.2271**	-0.0230
	(0.1259)	(0.1639)	(0.1121)	(0.1269)	(0.0562)	(0.1548)	(0.1278)	(0.1034)	(0.0536)
at least four-person household	0.6685***	0.9876***	0.6799***	1.1076***	0.6412***	0.0798	0.0567	0.7622***	0.2045***
	(0.1262)	(0.2045)	(0.1211)	(0.1488)	(0.0597)	(0.1827)	(0.1496)	(0.1269)	(0.0567)
Non contributory benefits dummy									
migrant dummy	-0.0158	-0.2043**	-0.3482***	-0.3131***	-0.2361**	-0.2689***	-0.0641	-0.1156**	-0.2111**
	(0.0472)	(0.0927)	(0.1081)	(0.0702)	(0.1140)	(0.1002)	(0.1081)	(0.0560)	(0.1045)
age	-0.0103**	0.0039	0.1390***	0.0020	0.0147**	0.0622***	-0.0039	0.0042	0.0606***
	(0.0045)	(0.0104)	(0.0181)	(0.0089)	(0.0073)	(0.0118)	(0.0086)	(0.0068)	(0.0091)
age^2	0.0001***	-0.0000	-0.0015***	-0.0000	-0.0001**	-0.0009***	0.0000	-0.0003***	-0.0006***
	(0.0000)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
gross household income	3.7122***	0.7821***	-3.4354	0.8647***	1.9137***	0.8007	3.1871***	7.9429***	2.0184***
	(0.2501)	(0.2527)	(2.2249)	(0.2808)	(0.6063)	(0.6310)	(0.5663)	(0.8502)	(0.4034)
gross household income^2	-0.2061***	-0.0622***	0.1282	-0.0606***	-0.1434***	-0.0509	-0.1862***	-0.4731***	-0.1225***
	(0.0130)	(0.0158)	(0.1051)	(0.0171)	(0.0305)	(0.0346)	(0.0297)	(0.0449)	(0.0212)
social contacts	-0.0476*	-0.1086*	-0.3600**	-0.1051*	-0.0700	-0.2211***	0.0436	0.0005	-0.1664***
	(0.0261)	(0.0561)	(0.1563)	(0.0595)	(0.0638)	(0.0665)	(0.0798)	(0.0559)	(0.0511)
leisure activities	-0.1153***	0.1051	-0.0924	-0.0111	-0.1370**	-0.1365**	-0.4178***	-0.0415	-0.1838***
	(0.0251)	(0.0650)	(0.1166)	(0.0596)	(0.0542)	(0.0626)	(0.0680)	(0.0413)	(0.0510)
urban area	-0.1174***	-0.2032***	0.2035**	-0.0395		0.0974*	-0.1121		0.0339
	(0.0220)	(0.0520)	(0.0868)	(0.0501)		(0.0552)	(0.0703)		(0.0534)
secondary education	-0.1432***	-0.0491	-0.0879	0.1105*	-0.2052***	-0.0168	-0.3054***	-0.0601	-0.1859***
	(0.0259)	(0.0771)	(0.1009)	(0.0644)	(0.0557)	(0.0799)	(0.0711)	(0.0477)	(0.0596)
tertiary education	-0.2241***	-0.0688	-0.0562	0.1787**	-0.1096*	-0.1769*	-0.0434	0.0503	-0.1431**
	(0.0350)	(0.0730)	(0.1305)	(0.0760)	(0.0629)	(0.0921)	(0.0801)	(0.0668)	(0.0629)
houseowner	-0.0699***	-0.4569***	-0.2348*	-0.2704***	-0.9461***	0.1291**	-0.3525***	-0.2389***	-1.5551***
	(0.0254)	(0.1034)	(0.1200)	(0.0685)	(0.0530)	(0.0649)	(0.0609)	(0.0549)	(0.0516)
single	-0.4289***	0.1682***	-0.0896	-0.0013	0.3700***	-0.3500***	0.2420***	0.0312	0.1147**
	(0.0244)	(0.0584)	(0.1003)	(0.0560)	(0.0545)	(0.0653)	(0.0661)	(0.0479)	(0.0526)
child(ren) in household	0.5955***	1.8691***	2.2646***	2.1891***	2.8609***	1.1732***	1.8882***	1.3456***	2.9138***
	(0.0291)	(0.0683)	(0.1724)	(0.0777)	(0.0935)	(0.0633)	(0.0841)	(0.0510)	(0.1065)
three-person household	0.6301***	0.5157***	1.2998***	0.5917***	1.3643***	0.5849***	1.1356***	1.0231***	1.1406***
	(0.0316)	(0.0746)	(0.1094)	(0.0663)	(0.0779)	(0.0721)	(0.0823)	(0.0563)	(0.0717)
at least four-person household	0.6435***	0.8201***	2.0854***	1.0040***	2.2820***	0.8619***	2.0150***	1.7787***	1.6378***
	(0.0343)	(0.0818)	(0.1405)	(0.0782)	(0.0889)	(0.0784)	(0.0977)	(0.0579)	(0.0883)
mills									
lambda	0.7243***	0.5058	-0.2913***	0.8648***	0.2308***	0.2357	0.4916***	0.1866*	-0.0016
	(0.2564)	(0.3876)	(0.1042)	(0.2510)	(0.0573)	(0.2597)	(0.1365)	(0.1093)	(0.0550)
Observations	19142	4891	2344	4991	9187	4303	5091	8458	7575

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

2 Oaxaca decompositions

2.1 Total benefits

2.1.1 Participation

Tabelle: 31: Oaxaca decompositions for total benefits and migrant households (participation equation)

	AT	BE	CY	CZ	DE	EE	ES
overall							
group_1	0.7798***	0.7739***	0.7864***	0.8065***	0.8724***	0.9043***	0.4272***
	(0.0123)	(0.0126)	(0.0154)	(0.0172)	(0.0071)	(0.0091)	(0.0162)
group_2	0.7864***	0.7890***	0.8495***	0.7494***	0.7397***	0.8779***	0.5627***
	(0.0058)	(0.0059)	(0.0069)	(0.0054)	(0.0038)	(0.0052)	(0.0055)
difference	-0.0065	-0.0151	-0.0630***	0.0571***	0.1327***	0.0263**	-0.1356***
	(0.0135)	(0.0139)	(0.0169)	(0.0180)	(0.0081)	(0.0105)	(0.0171)
explained	0.0333***	0.0181*	-0.0692***	0.0386***	0.1102***	0.0202***	-0.0843***
	(0.0086)	(0.0106)	(0.0123)	(0.0138)	(0.0051)	(0.0066)	(0.0132)
unexplained	-0.0399***	-0.0332***	0.0062	0.0185	0.0225***	0.0062	-0.0513***
	(0.0114)	(0.0114)	(0.0183)	(0.0136)	(0.0067)	(0.0100)	(0.0156)
explained							
age	0.0925***	0.0441***	0.2222***	-0.0914***	-0.1795***	-0.1088***	0.2325***
	(0.0202)	(0.0141)	(0.0335)	(0.0297)	(0.0147)	(0.0420)	(0.0219)
age^2	-0.1401***	-0.0756***	-0.3490***	0.1251***	0.3034***	0.1614***	-0.2993***
	(0.0288)	(0.0207)	(0.0393)	(0.0417)	(0.0197)	(0.0602)	(0.0271)
gross household income	-0.0693***	-0.1007***	-0.0075	-0.0141*	-0.0553***	-0.0170*	-0.1241***
	(0.0201)	(0.0317)	(0.0080)	(0.0076)	(0.0134)	(0.0102)	(0.0262)
gross household income^2	0.0818***	0.1048***	0.0071	0.0192**	0.0678***	0.0226*	0.1185***
	(0.0204)	(0.0323)	(0.0078)	(0.0090)	(0.0142)	(0.0116)	(0.0210)
social contacts	0.0006	0.0006	-0.0004	0.0000	0.0009***	-0.0005	0.0006**
	(0.0004)	(0.0004)	(0.0005)	(0.0001)	(0.0003)	(0.0006)	(0.0003)
leisure activities	0.0007	0.0003	-0.0017*	0.0017***	0.0006**	0.0021*	0.0010***
	(0.0007)	(0.0004)	(0.0009)	(0.0005)	(0.0003)	(0.0011)	(0.0003)
urban area	0.0007	0.0005	-0.0003	-0.0003*	-0.0001	0.0049	-0.0003
	(0.0012)	(0.0006)	(0.0005)	(0.0002)	(0.0001)	(0.0032)	(0.0002)
less than secondary education	0.0013**	0.0001	0.0016	0.0035***	0.0006*	0.0012	-0.0032***
	(0.0006)	(0.0001)	(0.0030)	(0.0011)	(0.0004)	(0.0012)	(0.0007)
secondary education	0.0006	0.0000	0.0001	0.0013***	0.0009*	0.0011	-0.0012**
	(0.0004)	(0.0000)	(0.0002)	(0.0005)	(0.0005)	(0.0008)	(0.0005)
tertiary education	-0.0002	0.0000	-0.0000	0.0001	-0.0002	-0.0025	-0.0002
	(0.0003)	(0.0001)	(0.0028)	(0.0002)	(0.0002)	(0.0016)	(0.0003)
houseowner	0.0009	-0.0013*	0.0010	-0.0012***	0.0001	0.0004	-0.0045***
	(0.0012)	(0.0007)	(0.0013)	(0.0004)	(0.0002)	(0.0007)	(0.0016)
single	0.0009	0.0003	-0.0016*	-0.0003	0.0014*	-0.0008	-0.0029***
	(0.0007)	(0.0004)	(0.0008)	(0.0002)	(0.0008)	(0.0010)	(0.0009)
child(ren) in household	0.0180***	0.0109***	0.0167***	-0.0012**	-0.0103***	-0.0194**	-0.0013
	(0.0026)	(0.0030)	(0.0042)	(0.0005)	(0.0022)	(0.0098)	(0.0009)
less than three person household	0.0134***	0.0137***	0.0212***	-0.0019**	-0.0064***	-0.0047	0.0057***
	(0.0026)	(0.0037)	(0.0047)	(0.0009)	(0.0017)	(0.0042)	(0.0010)
three-person household	0.0004	0.0006	0.0019	-0.0003	-0.0064***	0.0005	0.0001
	(0.0004)	(0.0004)	(0.0013)	(0.0003)	(0.0017)	(0.0005)	(0.0004)
at least four-person household	0.0091***	0.0085***	0.0057*	-0.0006*		-0.0068	0.0015**
	(0.0019)	(0.0024)	(0.0034)	(0.0003)		(0.0043)	(0.0006)
unexplained							
age	-0.1229	-0.0796	-0.1157	1.0736	-0.4372	-0.0270	0.5670
	(0.1414)	(0.1276)	(0.3935)	(5.7713)	(0.8972)	(0.1467)	(0.3671)
age^2	0.0324	0.0458	0.0733	-0.7187	0.3243	0.0277	-0.2732
	(0.0783)	(0.0728)	(0.2490)	(3.9361)	(0.5664)	(0.1048)	(0.1850)
gross household income	-0.7984	-1.5940	-0.0579	-9.4718	-5.9169	-0.0541	-1.8093
	(0.8055)	(0.9938)	(0.3268)	(44.1605)	(13.2140)	(0.5534)	(3.2247)
gross household income^2	0.5153	0.8589*	0.0686	4.2466	3.8182	0.0207	0.9187
	(0.4297)	(0.5161)	(0.2651)	(19.9885)	(8.2872)	(0.2799)	(1.6822)
social contacts	0.0012	0.0061	0.0007	0.0174	-0.0009	-0.0012	-0.0009
	(0.0065)	(0.0055)	(0.0044)	(0.0970)	(0.0195)	(0.0082)	(0.0221)
leisure activities	-0.0037	0.0031	-0.0003	0.0092	0.0160	0.0013	0.0049
	(0.0033)	(0.0036)	(0.0018)	(0.0446)	(0.0396)	(0.0048)	(0.0133)
urban area	-0.0031	-0.0054	0.0009	-0.0180	0.0095	0.0121	-0.0076
	(0.0034)	(0.0041)	(0.0034)	(0.0810)	(0.0256)	(0.0351)	(0.0097)
less than secondary education	0.0002	0.0030	-0.0002	-0.0001	-0.0003	0.0054	-0.0188*
	(0.0022)	(0.0029)	(0.0011)	(0.0219)	(0.0080)	(0.0159)	(0.0109)
secondary education	0.0045	-0.0004	-0.0001	0.0352	0.0121	-0.0083	0.0001
	(0.0036)	(0.0021)	(0.0012)	(0.1635)	(0.0315)	(0.0247)	(0.0071)
tertiary education	-0.0033	-0.0026	0.0004	-0.0078	-0.0139	-0.0028	0.0148
	(0.0027)	(0.0028)	(0.0021)	(0.0361)	(0.0357)	(0.0084)	(0.0090)
houseowner	0.0075**	0.0073*	-0.0050	0.0199	0.0105	0.0093	0.0084
	(0.0030)	(0.0040)	(0.0168)	(0.0930)	(0.0283)	(0.0291)	(0.0100)
single	0.0023	0.0012	0.0003	0.0130	0.0169	-0.0045	-0.0240**
	(0.0026)	(0.0024)	(0.0012)	(0.0586)	(0.0364)	(0.0135)	(0.0107)
child(ren) in household	-0.0036	-0.0071**	0.0070	0.0053	-0.0304	-0.0015	0.0237*
	(0.0036)	(0.0032)	(0.0235)	(0.0241)	(0.0673)	(0.0061)	(0.0138)
less than three person household	0.0140**	0.0089*	-0.0003	0.0122	0.0273	-0.0204	0.0106
	(0.0064)	(0.0048)	(0.0019)	(0.0736)	(0.0727)	(0.0594)	(0.0107)
three person household	-0.0011	0.0002	0.0003	0.0087	-0.0089	-0.0000	-0.0045
	(0.0018)	(0.0018)	(0.0013)	(0.0396)	(0.0236)	(0.0019)	(0.0065)
at least four-person household	-0.0050	-0.0062*	-0.0002	-0.0128		0.0094	-0.0059
	(0.0037)	(0.0037)	(0.0018)	(0.0593)		(0.0274)	(0.0119)
Observations	5799	5454	3087	9867	12765	4872	11752

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 32: Oaxaca decompositions for total benefits and migrant households (participation equation)

	FR	GR	IE	IT	LT	LU	LV
overall							
group_1	0.8523***	0.4591***	0.8430***	0.6752***	0.8766***	0.7596***	0.8639***
	(0.0094)	(0.0208)	(0.0123)	(0.0132)	(0.0192)	(0.0074)	(0.0096)
group_2	0.8254***	0.6305***	0.8748***	0.7591***	0.8667***	0.7777***	0.8378***
	(0.0044)	(0.0083)	(0.0052)	(0.0038)	(0.0055)	(0.0092)	(0.0056)
difference	0.0269***	-0.1714***	-0.0318**	-0.0839***	0.0100	-0.0182	0.0261**
	(0.0104)	(0.0224)	(0.0134)	(0.0137)	(0.0200)	(0.0118)	(0.0111)
explained	0.0254***	-0.1728***	-0.0159*	-0.0702***	-0.0167	-0.0105	0.0086
	(0.0065)	(0.0216)	(0.0096)	(0.0097)	(0.0109)	(0.0113)	(0.0070)
unexplained	0.0015	0.0014	-0.0159	-0.0137	0.0266*	-0.0077	0.0176*
	(0.0087)	(0.0210)	(0.0117)	(0.0118)	(0.0149)	(0.0128)	(0.0100)
explained							
age	-0.0078	0.2561***	-0.1184	0.2075***	-0.0124	0.1076	1.3501
	(0.0222)	(0.0271)	(0.1472)	(0.0201)	(0.0113)	(0.0733)	(18.0589)
age^2	-0.0199	-0.4064***	0.1807	-0.2840***	0.0117	-0.1550	-1.9138
	(0.0320)	(0.0346)	(0.2238)	(0.0269)	(0.0159)	(0.1058)	(25.6150)
gross household income	-0.0411***	-0.1935***	-0.0519	-0.0758***	0.0030	0.0207	0.0741
	(0.0086)	(0.0464)	(0.0653)	(0.0143)	(0.0081)	(0.0322)	(0.9991)
gross household income^2	0.0561***	0.2022***	0.0556	0.0777***	-0.0060	-0.0100	-0.1360
	(0.0108)	(0.0386)	(0.0707)	(0.0120)	(0.0061)	(0.0285)	(1.8310)
social contacts	0.0009**	-0.0011	0.0001	0.0002	0.0002	0.0006	-0.0102
	(0.0004)	(0.0008)	(0.0002)	(0.0001)	(0.0002)	(0.0007)	(0.1362)
leisure activities	0.0011**	0.0004	0.0010	0.0003***	0.0002	0.0000	-0.0084
	(0.0004)	(0.0005)	(0.0013)	(0.0001)	(0.0002)	(0.0004)	(0.1128)
urban area	-0.0025**	-0.0021***	0.0001	0.0001	-0.0022**	0.0005	0.0574
	(0.0011)	(0.0007)	(0.0002)	(0.0001)	(0.0009)	(0.0005)	(0.7574)
less than secondary education	0.0022***	-0.0022**	0.0014	-0.0031***	-0.0016*	0.0003	-0.0000
	(0.0007)	(0.0009)	(0.0025)	(0.0006)	(0.0008)	(0.0002)	(0.0005)
secondary education	0.0003	-0.0014**	-0.0001	-0.0007***	-0.0000	0.0005	0.0001
	(0.0005)	(0.0006)	(0.0002)	(0.0002)	(0.0001)	(0.0006)	(0.0008)
tertiary education	-0.0002	-0.0001	0.0036	0.0001	-0.0013*	-0.0005	-0.0001
	(0.0003)	(0.0002)	(0.0047)	(0.0002)	(0.0007)	(0.0007)	(0.0010)
houseowner	0.0016***	-0.0169***	-0.0045	-0.0030***	-0.0001	-0.0031	-0.0002
	(0.0005)	(0.0024)	(0.0053)	(0.0007)	(0.0001)	(0.0030)	(0.0040)
single	-0.0012	-0.0088***	0.0017	-0.0016***	-0.0002	-0.0000	0.0039
	(0.0008)	(0.0017)	(0.0023)	(0.0003)	(0.0003)	(0.0004)	(0.0513)
child(ren) in household	0.0055***	-0.0025	-0.0295	0.0008*	-0.0039***		0.2101
	(0.0015)	(0.0015)	(0.0330)	(0.0004)	(0.0014)		(2.7863)
less than three person household	0.0117***	0.0218***	-0.0144	0.0098***	0.0014	0.0181	0.0649
	(0.0023)	(0.0027)	(0.0171)	(0.0011)	(0.0009)	(0.0123)	(0.8615)
three person household	-0.0014**	0.0021***	-0.0001	0.0011***	0.0004	0.0008	-0.0028
	(0.0006)	(0.0007)	(0.0005)	(0.0004)	(0.0003)	(0.0006)	(0.0376)
at least four-person household	0.0147***	0.0103***	-0.0102	0.0038***	0.0003	0.0110	0.0669
	(0.0026)	(0.0018)	(0.0120)	(0.0006)	(0.0004)	(0.0076)	(0.8865)
unexplained							
age	-0.0702	-0.0358	0.1822	0.4307*	-0.5426	0.4865	0.6982
	(0.5202)	(0.4909)	(0.2010)	(0.2395)	(0.5631)	(0.5644)	(1.7501)
age^2	0.0547	0.0113	-0.0863	-0.2538*	0.2382	-0.2602	-0.2762
	(0.4048)	(0.1559)	(0.0966)	(0.1383)	(0.2799)	(0.2998)	(0.7966)
gross household income	2.8185	-0.6547	0.2540	-0.1868	5.8304	0.8111	-3.8263
	(21.0924)	(8.9340)	(1.1095)	(0.7369)	(8.8552)	(2.4937)	(8.2171)
gross household income^2	-1.3478	0.3006	-0.0939	0.0872	-2.9432	-0.2974	1.9200
	(10.0845)	(4.0998)	(0.5551)	(0.3846)	(4.4749)	(1.1835)	(4.1327)
social contacts	-0.0029	-0.0018	0.0043	0.0037	0.0031	0.0015	0.0100
	(0.0217)	(0.0254)	(0.0058)	(0.0046)	(0.0144)	(0.0081)	(0.0256)
leisure activities	-0.0007	0.0019	0.0034	-0.0034	0.0019	-0.0006	-0.0032
	(0.0052)	(0.0266)	(0.0068)	(0.0028)	(0.0059)	(0.0044)	(0.0088)
urban area	-0.0006	0.0006	-0.0025	-0.0014	0.0126	-0.0005	-0.0256
	(0.0049)	(0.0086)	(0.0032)	(0.0019)	(0.0213)	(0.0026)	(0.0564)
less than secondary education	0.0013	-0.0007	0.0020	-0.0091*	0.0151	-0.0025	-0.0051
	(0.0098)	(0.0100)	(0.0029)	(0.0055)	(0.0206)	(0.0038)	(0.0135)
secondary education	-0.0017	0.0008	-0.0006	0.0027	-0.0090	0.0008	-0.0020
	(0.0127)	(0.0115)	(0.0018)	(0.0031)	(0.0139)	(0.0020)	(0.0114)
tertiary education	0.0005	-0.0001	-0.0038	0.0028	-0.0253	0.0013	0.0075
	(0.0037)	(0.0014)	(0.0060)	(0.0020)	(0.0359)	(0.0028)	(0.0177)
houseowner	0.0006	0.0007	0.0111	0.0043	-0.0298	-0.0002	-0.0144
	(0.0051)	(0.0092)	(0.0116)	(0.0036)	(0.0572)	(0.0029)	(0.0381)
single	-0.0009	-0.0024	-0.0015	-0.0068	-0.0034	-0.0009	0.0033
	(0.0064)	(0.0333)	(0.0026)	(0.0042)	(0.0104)	(0.0020)	(0.0127)
child(ren) in household	0.0014	0.0007	-0.0076*	-0.0002	0.0015		0.0189
	(0.0108)	(0.0099)	(0.0044)	(0.0029)	(0.0052)		(0.0390)
less than three person household	0.0014	-0.0004	-0.0034	0.0035	0.0199	-0.0050	-0.0431
	(0.0104)	(0.0058)	(0.0051)	(0.0039)	(0.0336)	(0.0082)	(0.0891)
three person household	0.0002	-0.0004	0.0016	-0.0033	-0.0004	0.0041	0.0108
	(0.0015)	(0.0053)	(0.0024)	(0.0025)	(0.0062)	(0.0049)	(0.0236)
at least four-person household	-0.0012	0.0010	0.0001	0.0015	-0.0078	-0.0026	0.0025
	(0.0090)	(0.0133)	(0.0044)	(0.0029)	(0.0136)	(0.0036)	(0.0084)
Observations	10503	6823	4993	19983	5106	4204	5716

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 33: Oaxaca decompositions for total benefits and migrant households (participation equation)

	NL	PT	SE	SI	UK
overall					
group_1	0.6975***	0.6448***	0.7259***	0.8287***	0.7047***
	(0.0155)	(0.0245)	(0.0151)	(0.0096)	(0.0136)
group_2	0.6839***	0.7563***	0.6817***	0.8142***	0.7977***
	(0.0045)	(0.0070)	(0.0067)	(0.0046)	(0.0045)
difference	0.0136	-0.1115***	0.0442***	0.0145	-0.0931***
	(0.0161)	(0.0255)	(0.0165)	(0.0106)	(0.0143)
explained	-0.0013	-0.0254**	0.0374**	0.0126**	-0.0397***
	(0.0112)	(0.0116)	(0.0153)	(0.0063)	(0.0093)
unexplained	0.0150	-0.0861***	0.0069	0.0019	-0.0534***
	(0.0120)	(0.0239)	(0.0138)	(0.0094)	(0.0112)
explained					
age	-0.1136	0.1473***	0.2690	-0.0166	0.1959***
	(2.0210)	(0.0416)	(0.3910)	(0.0812)	(0.0188)
age^2	0.1653	-0.2082***	-0.4218	0.0737	-0.2942***
	(2.9422)	(0.0584)	(0.6108)	(0.2124)	(0.0270)
gross household income	0.0014	0.0581**	-0.6706	0.5440	0.0020
	(0.0237)	(0.0249)	(1.0323)	(1.9819)	(0.0086)
gross household income^2	-0.0016	-0.0615**	0.5775	-0.6164	-0.0136
	(0.0260)	(0.0262)	(0.8621)	(2.2431)	(0.0091)
social contacts	0.0001	-0.0006	0.0007	-0.0018	-0.0001
	(0.0014)	(0.0004)	(0.0013)	(0.0067)	(0.0002)
leisure activities	-0.0007	-0.0005	0.0161	-0.0017	-0.0000
	(0.0115)	(0.0003)	(0.0219)	(0.0062)	(0.0001)
less than secondary education	0.0005	0.0004	0.0021	0.0088	-0.0009*
	(0.0095)	(0.0013)	(0.0033)	(0.0312)	(0.0005)
secondary education	0.0003	0.0001	0.0004	0.0001	0.0020***
	(0.0057)	(0.0009)	(0.0014)	(0.0004)	(0.0007)
tertiary education	-0.0001	0.0001	-0.0000	0.0072	0.0005
	(0.0017)	(0.0006)	(0.0006)	(0.0255)	(0.0011)
houseowner	-0.0020	-0.0002	0.0046	-0.0023	0.0025***
	(0.0347)	(0.0002)	(0.0067)	(0.0084)	(0.0007)
single	-0.0000	0.0002	0.0008	-0.0035	-0.0001
	(0.0009)	(0.0004)	(0.0017)	(0.0126)	(0.0006)
child(ren) in household	-0.0183	0.0100***	0.0812	0.0196	0.0210***
	(0.3213)	(0.0024)	(0.1077)	(0.0666)	(0.0037)
less than three person household	-0.0098	0.0116***	0.0389	-0.0076	0.0134***
	(0.1731)	(0.0029)	(0.0523)	(0.0268)	(0.0020)
three person household	0.0017	0.0007	-0.0034	0.0012	0.0013**
	(0.0294)	(0.0005)	(0.0051)	(0.0041)	(0.0005)
at least four-person household	-0.0038	0.0056***	0.0369	-0.0023	0.0063***
	(0.0671)	(0.0017)	(0.0492)	(0.0099)	(0.0015)
urban area		0.0011**	0.0008		0.0005
		(0.0005)	(0.0030)		(0.0005)
unexplained					
age	0.2362	-0.0693	0.1222	-0.0319	0.2504*
	(1.1569)	(0.4746)	(0.2268)	(0.1659)	(0.1293)
age^2	-0.0811	-0.0758	-0.0732	0.0228	-0.1434*
	(0.5371)	(0.2388)	(0.1367)	(0.1185)	(0.0770)
gross household income	0.1067	-6.2100*	-1.4670	-0.4770	0.0353
	(9.3090)	(3.5483)	(2.1953)	(2.4998)	(0.5669)
gross household income^2	0.3758	3.1069*	0.6835	0.2336	0.0221
	(5.0187)	(1.8150)	(1.0325)	(1.2249)	(0.3008)
social contacts	0.0305	-0.0105	-0.0065	-0.0018	0.0043
	(0.1114)	(0.0258)	(0.0119)	(0.0093)	(0.0047)
leisure activities	0.0054	-0.0029	0.0103	0.0006	0.0001
	(0.0326)	(0.0100)	(0.0166)	(0.0029)	(0.0033)
less than secondary education	-0.0026	0.0144	0.0004	0.0001	0.0024
	(0.0138)	(0.0184)	(0.0023)	(0.0006)	(0.0023)
secondary education	-0.0008	-0.0068	-0.0013	0.0007	0.0008
	(0.0148)	(0.0089)	(0.0034)	(0.0039)	(0.0021)
tertiary education	0.0053	0.0002	0.0006	-0.0002	-0.0084*
	(0.0241)	(0.0086)	(0.0028)	(0.0012)	(0.0046)
houseowner	-0.0176	0.0434**	-0.0026	-0.0014	0.0147***
	(0.0632)	(0.0191)	(0.0051)	(0.0072)	(0.0045)
single	-0.0030	-0.0149	-0.0028	-0.0002	0.0041*
	(0.0212)	(0.0100)	(0.0053)	(0.0011)	(0.0025)
child(ren) in household	0.0075	-0.0006	0.0014	0.0003	-0.0141***
	(0.0234)	(0.0129)	(0.0030)	(0.0016)	(0.0029)
less than three person household	-0.0489	0.0018	0.0069	-0.0005	-0.0017
	(0.1696)	(0.0108)	(0.0117)	(0.0025)	(0.0044)
three person household	-0.0076	0.0033	-0.0005	-0.0000	0.0003
	(0.0269)	(0.0103)	(0.0017)	(0.0003)	(0.0016)
at least four-person household	0.0364	-0.0064	-0.0030	0.0007	0.0005
	(0.1241)	(0.0138)	(0.0061)	(0.0037)	(0.0028)
urban area		-0.0048	-0.0025		-0.0110
		(0.0102)	(0.0040)		(0.0072)
Observations	9472	4424	5582	9001	8128

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 34: Oaxaca decompositions for total benefits and exclusively migrant households (participation equation)

	AT	BE	CY	CZ	DE	EE	ES
overall							
group_1	0.4633***	0.4063***	0.3004***	0.1133***	0.2658***	0.2051***	0.0872***
	(0.0162)	(0.0173)	(0.0391)	(0.0198)	(0.0128)	(0.0143)	(0.0108)
group_2	0.3656***	0.3561***	0.5315***	0.1677***	0.3489***	0.4375***	0.0533***
	(0.0059)	(0.0052)	(0.0098)	(0.0032)	(0.0037)	(0.0062)	(0.0022)
difference	0.0977***	0.0502***	-0.2312***	-0.0544***	-0.0831***	-0.2324***	0.0339***
	(0.0173)	(0.0181)	(0.0403)	(0.0201)	(0.0134)	(0.0156)	(0.0110)
explained	0.1451***	0.0686***	-0.0603**	-0.0513***	-0.0820***	-0.2202***	0.0675***
	(0.0145)	(0.0140)	(0.0252)	(0.0073)	(0.0092)	(0.0113)	(0.0079)
unexplained	-0.0474***	-0.0184	-0.1709***	-0.0031	-0.0011	-0.0122	-0.0336***
	(0.0145)	(0.0154)	(0.0332)	(0.0181)	(0.0100)	(0.0145)	(0.0129)
explained							
age	-0.0406***	-0.1028***	-0.0388**	-0.0085	0.1221***	0.1537***	0.0716***
	(0.0099)	(0.0180)	(0.0189)	(0.0265)	(0.0130)	(0.0310)	(0.0143)
age^2	0.0472***	0.1210***	0.0257	-0.0697**	-0.1767***	-0.2180***	-0.0499***
	(0.0105)	(0.0206)	(0.0173)	(0.0341)	(0.0158)	(0.0349)	(0.0139)
gross household income	-0.0831***	-0.0700	-0.0972	0.1942*	-0.0598***	-0.0281**	-0.0086
	(0.0268)	(0.0523)	(0.0741)	(0.1053)	(0.0200)	(0.0117)	(0.0071)
gross household income^2	0.1147***	0.0779*	0.0911	-0.1102	0.0731***	0.0489***	0.0057
	(0.0271)	(0.0471)	(0.0648)	(0.0808)	(0.0195)	(0.0136)	(0.0073)
social contacts	0.0000	-0.0003	-0.0012	0.0015	0.0011**	-0.0001	-0.0002
	(0.0007)	(0.0008)	(0.0008)	(0.0014)	(0.0005)	(0.0002)	(0.0004)
leisure activities	0.0019	0.0026**	-0.0019*	0.0079**	0.0015***	-0.0012	0.0015***
	(0.0011)	(0.0011)	(0.0012)	(0.0036)	(0.0005)	(0.0012)	(0.0005)
urban area	0.0043**	0.0019	-0.0012	0.0017	0.0010**	0.0091**	0.0002
	(0.0019)	(0.0013)	(0.0014)	(0.0012)	(0.0004)	(0.0038)	(0.0002)
less than secondary education	0.0005	-0.0008	-0.0025	0.0113*	0.0020**	0.0013	0.0000
	(0.0009)	(0.0006)	(0.0025)	(0.0069)	(0.0008)	(0.0011)	(0.0004)
secondary education	0.0023***	-0.0000	-0.0000	0.0045	0.0016***	0.0016	-0.0006
	(0.0008)	(0.0002)	(0.0002)	(0.0032)	(0.0006)	(0.0013)	(0.0008)
tertiary education	-0.0003	-0.0011	-0.0032	0.0010	0.0000	-0.0002	-0.0003
	(0.0004)	(0.0007)	(0.0029)	(0.0010)	(0.0001)	(0.0006)	(0.0004)
houseowner	0.0086***	0.0062***	0.0038	0.0042	0.0004	-0.0000	0.0077***
	(0.0022)	(0.0019)	(0.0028)	(0.0030)	(0.0006)	(0.0003)	(0.0022)
single	0.0003	-0.0002	-0.0007	0.0111**	0.0006*	-0.0001	0.0001
	(0.0003)	(0.0002)	(0.0007)	(0.0050)	(0.0003)	(0.0002)	(0.0001)
child(ren) in household	0.0255***	0.0091***	0.0035	-0.0299***	-0.0096***	-0.0510***	0.0173***
	(0.0039)	(0.0030)	(0.0058)	(0.0076)	(0.0023)	(0.0034)	(0.0021)
less than three-person household	0.0118***	0.0018	-0.0173**	-0.0434***	-0.0231***	-0.0531***	-0.0012
	(0.0035)	(0.0034)	(0.0074)	(0.0139)	(0.0031)	(0.0046)	(0.0007)
three-person household	-0.0008	-0.0002	0.0001	-0.0055***	-0.0014***	-0.0010	-0.0001
	(0.0006)	(0.0002)	(0.0003)	(0.0021)	(0.0005)	(0.0006)	(0.0002)
at least four-person household	0.0122***	0.0039	-0.0222***	-0.0178***	-0.0098***	-0.0387***	-0.0024***
	(0.0026)	(0.0027)	(0.0068)	(0.0062)	(0.0026)	(0.0034)	(0.0008)
unexplained							
age	-0.2817**	-0.0330	-0.2084	0.0059	-0.0095	-0.5092	0.2182
	(0.1235)	(0.1014)	(0.4727)	(0.0362)	(0.0833)	(0.4843)	(0.2067)
age^2	0.1642**	0.0251	0.0570	-0.0021	0.0045	0.3143	-0.0805
	(0.0652)	(0.0576)	(0.2509)	(0.0140)	(0.0400)	(0.3122)	(0.1000)
gross household income	-0.1023	-0.2468	7.1370	0.4008	0.0559	0.3571	0.4734
	(0.9735)	(0.6959)	(7.6568)	(2.2942)	(0.4825)	(0.7675)	(0.3710)
gross household income^2	0.0600	0.0703	-3.7781	-0.2408	-0.0364	-0.2670	-0.4086*
	(0.5311)	(0.3475)	(3.7714)	(1.3744)	(0.3120)	(0.4242)	(0.2324)
social contacts	0.0117*	-0.0040	-0.0187	-0.0000	-0.0008	0.0012	0.0029
	(0.0070)	(0.0047)	(0.0296)	(0.0005)	(0.0064)	(0.0122)	(0.0101)
leisure activities	-0.0077**	0.0015	0.0056	0.0004	0.0006	-0.0025	-0.0089
	(0.0039)	(0.0029)	(0.0143)	(0.0025)	(0.0053)	(0.0050)	(0.0062)
urban area	-0.0066	-0.0039	0.0170	0.0001	-0.0001	-0.0197	0.0097*
	(0.0052)	(0.0055)	(0.0147)	(0.0004)	(0.0008)	(0.0150)	(0.0051)
less than secondary education	0.0018	0.0039	-0.0072	0.0007	-0.0005	-0.0086	0.0012
	(0.0030)	(0.0036)	(0.0097)	(0.0042)	(0.0039)	(0.0077)	(0.0057)
secondary education	0.0042	0.0022	0.0039	0.0004	0.0006	0.0065	-0.0042
	(0.0042)	(0.0024)	(0.0105)	(0.0025)	(0.0055)	(0.0076)	(0.0050)
tertiary education	-0.0045	-0.0060	0.0074	-0.0003	0.0005	0.0052	0.0023
	(0.0033)	(0.0045)	(0.0154)	(0.0016)	(0.0038)	(0.0064)	(0.0039)
houseowner	0.0000	0.0063	0.0215**	-0.0005	-0.0003	-0.0003	0.0088*
	(0.0017)	(0.0044)	(0.0101)	(0.0027)	(0.0026)	(0.0157)	(0.0046)
single	0.0060	0.0062	0.0122	0.0005	-0.0003	0.0035	-0.0001
	(0.0048)	(0.0049)	(0.0112)	(0.0028)	(0.0025)	(0.0088)	(0.0047)
hhchild15_newd== 0.0000	0.0038	0.0064	0.0542**	-0.0014	0.0012	0.0498	-0.0035
	(0.0076)	(0.0062)	(0.0243)	(0.0083)	(0.0102)	(0.0326)	(0.0071)
child(ren) in household	-0.0022	-0.0031	-0.0242**	0.0002	-0.0002	-0.0053	0.0039
	(0.0043)	(0.0030)	(0.0111)	(0.0011)	(0.0021)	(0.0036)	(0.0080)
less than three-person household	0.0201**	0.0225	0.0023	0.0006	0.0012	0.0033	0.0044
	(0.0098)	(0.0148)	(0.0252)	(0.0038)	(0.0104)	(0.0169)	(0.0077)
three-person household	-0.0027	-0.0003	-0.0000	0.0003	-0.0001	0.0015	-0.0026
	(0.0020)	(0.0013)	(0.0062)	(0.0017)	(0.0010)	(0.0027)	(0.0038)
at least four-person household	-0.0033	-0.0080	-0.0009	-0.0002	-0.0000	-0.0013	-0.0005
	(0.0043)	(0.0053)	(0.0089)	(0.0010)	(0.0003)	(0.0026)	(0.0068)
Observations	5408	4984	2631	9493	11760	4305	11231

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 35: Oaxaca decompositions for total benefits and exclusively migrant households (participation equation)

	FR	GR	IE	IT	LT	LU	LV
overall							
group_1	0.5823***	0.2749***	0.6529***	0.3278***	0.1721***	0.6105***	0.2266***
	(0.0167)	(0.0266)	(0.0206)	(0.0213)	(0.0305)	(0.0081)	(0.0163)
group_2	0.4193***	0.2016***	0.6869***	0.3020***	0.2835***	0.3648***	0.4055***
	(0.0047)	(0.0053)	(0.0075)	(0.0042)	(0.0057)	(0.0090)	(0.0067)
difference	0.1630***	0.0734***	-0.0340	0.0258	-0.1114***	0.2457***	-0.1789***
	(0.0173)	(0.0272)	(0.0220)	(0.0217)	(0.0311)	(0.0121)	(0.0176)
explained	0.1256***	0.0449***	0.0103	0.0787***	-0.1435***	0.2685***	-0.1844***
	(0.0131)	(0.0134)	(0.0213)	(0.0199)	(0.0094)	(0.0117)	(0.0100)
unexplained	0.0374***	0.0285	-0.0443**	-0.0529***	0.0321	-0.0228**	0.0054
	(0.0131)	(0.0243)	(0.0183)	(0.0152)	(0.0284)	(0.0112)	(0.0168)
explained							
age	0.0055	0.0065	0.0253	0.0778**	-0.0007	-0.2231***	-0.0019
	(0.0037)	(0.0300)	(0.0472)	(0.0364)	(0.0247)	(0.0357)	(0.0316)
age^2	-0.0120***	-0.0367	-0.0362	-0.0935**	-0.0025	0.2526***	-0.0078
	(0.0047)	(0.0297)	(0.0674)	(0.0383)	(0.0258)	(0.0373)	(0.0326)
gross household income	-0.0798***	-0.1384**	0.0000	-0.9016***	-0.0511**	0.1143	-0.0617***
	(0.0164)	(0.0631)	(0.0022)	(0.3265)	(0.0246)	(0.0970)	(0.0223)
gross household income^2	0.1294***	0.1431**	0.0002	0.9048***	0.0494**	-0.0823	0.0776***
	(0.0186)	(0.0598)	(0.0021)	(0.2952)	(0.0208)	(0.0939)	(0.0240)
social contacts	0.0016***	-0.0017**	0.0001	0.0020*	0.0018*	0.0039**	0.0022
	(0.0005)	(0.0008)	(0.0001)	(0.0011)	(0.0010)	(0.0016)	(0.0015)
leisure activities	0.0018***	0.0023**	-0.0000	0.0043***	-0.0009	0.0013	0.0017
	(0.0007)	(0.0010)	(0.0001)	(0.0016)	(0.0009)	(0.0013)	(0.0019)
urban area	0.0010	-0.0031**	0.0000	-0.0006	-0.0064***	0.0040**	-0.0003
	(0.0010)	(0.0014)	(0.0001)	(0.0006)	(0.0020)	(0.0017)	(0.0023)
less than secondary education	0.0003	-0.0037**	-0.0006	-0.0052**	0.0000	0.0005	-0.0017*
	(0.0014)	(0.0016)	(0.0010)	(0.0021)	(0.0002)	(0.0008)	(0.0010)
secondary education	0.0034***	-0.0029**	-0.0000	-0.0008	0.0002	0.0010	0.0002
	(0.0009)	(0.0013)	(0.0000)	(0.0010)	(0.0007)	(0.0022)	(0.0005)
tertiary education	-0.0012**	0.0015*	-0.0004	0.0017*	-0.0002	-0.0003	-0.0006
	(0.0005)	(0.0009)	(0.0007)	(0.0010)	(0.0006)	(0.0019)	(0.0006)
houseowner	0.0221***	0.0085**	0.0022	0.0117**	0.0008	0.0067	-0.0002
	(0.0022)	(0.0041)	(0.0042)	(0.0047)	(0.0012)	(0.0047)	(0.0005)
single	-0.0000	-0.0028**	-0.0000	-0.0057*	0.0057***	-0.0003	0.0007
	(0.0003)	(0.0013)	(0.0001)	(0.0031)	(0.0022)	(0.0009)	(0.0009)
child(ren) in household	0.0049**	0.0163***	0.0072	0.0316***	-0.0447***	0.0530***	-0.0623***
	(0.0022)	(0.0028)	(0.0140)	(0.0081)	(0.0039)	(0.0047)	(0.0034)
less than three-person household	0.0044*	0.0217***	0.0019	0.0056	-0.0315***	0.0392***	-0.0435***
	(0.0023)	(0.0036)	(0.0036)	(0.0040)	(0.0047)	(0.0038)	(0.0041)
three-person household	0.0015**	-0.0006	-0.0000	-0.0037*	-0.0016	0.0008	-0.0007
	(0.0008)	(0.0007)	(0.0001)	(0.0021)	(0.0010)	(0.0006)	(0.0011)
at least four-person household	0.0113***	0.0155***	0.0012	0.0067***	-0.0181***	0.0286***	-0.0280***
	(0.0032)	(0.0033)	(0.0024)	(0.0023)	(0.0028)	(0.0037)	(0.0030)
unexplained							
age	0.3211	2.1164	0.2402	0.6205	0.2622	0.0004	-0.0017
	(0.3332)	(9.7820)	(0.1512)	(0.3926)	(1.4758)	(0.0658)	(0.1086)
age^2	-0.1386	-1.0681	-0.1171	-0.2881	-0.1367	0.0128	0.0121
	(0.1798)	(4.9290)	(0.0714)	(0.1857)	(0.8233)	(0.0315)	(0.0797)
gross household income	-17.9972***	-11.4752	-0.8596	-1.6572	-5.3118	-0.3591	-0.9805
	(6.8193)	(41.3736)	(2.8728)	(4.5350)	(14.8100)	(1.5686)	(3.9051)
gross household income^2	8.6938**	5.9537	0.3262	1.1388	3.0264	0.2408	0.5343
	(3.3809)	(21.6226)	(1.4402)	(2.4622)	(8.6085)	(0.7834)	(2.1262)
social contacts	0.0233	-0.0372	-0.0032	-0.0116	-0.0477	-0.0007	-0.0011
	(0.0176)	(0.2060)	(0.0052)	(0.0127)	(0.1739)	(0.0044)	(0.0051)
leisure activities	-0.0065	-0.0486	0.0007	-0.0025	0.0096	0.0038	0.0015
	(0.0079)	(0.2257)	(0.0075)	(0.0065)	(0.0373)	(0.0034)	(0.0061)
urban area	-0.0041	-0.0333	0.0021	-0.0065	0.0609	-0.0024	-0.0013
	(0.0125)	(0.1590)	(0.0033)	(0.0074)	(0.2228)	(0.0024)	(0.0065)
less than secondary education	0.0038	0.0556	0.0022	-0.0290*	-0.0075	0.0019	-0.0042
	(0.0134)	(0.2572)	(0.0024)	(0.0171)	(0.0325)	(0.0024)	(0.0169)
secondary education	0.0109	-0.0353	-0.0011	0.0032	0.0080	0.0003	0.0006
	(0.0071)	(0.1658)	(0.0027)	(0.0108)	(0.0314)	(0.0011)	(0.0034)
tertiary education	-0.0101*	-0.0125	-0.0052	0.0088	-0.0087	-0.0024	0.0032
	(0.0059)	(0.0616)	(0.0070)	(0.0061)	(0.0453)	(0.0026)	(0.0130)
houseowner	-0.0212**	-0.0467	0.0075*	0.0107	-0.0618	0.0032	-0.0086
	(0.0092)	(0.2164)	(0.0043)	(0.0069)	(0.2439)	(0.0026)	(0.0347)
single	0.0122	0.0296	0.0034	0.0170	-0.0342	0.0017	-0.0141
	(0.0104)	(0.1407)	(0.0050)	(0.0123)	(0.1282)	(0.0018)	(0.0561)
child(ren) in household	0.0114	0.0564	-0.0114*	0.0154	-0.0005	-0.0031	0.0016
	(0.0080)	(0.2626)	(0.0060)	(0.0128)	(0.0053)	(0.0030)	(0.0063)
less than three-person household	0.0473*	0.1357	-0.0007	0.0174	-0.1212	0.0030	0.0124
	(0.0259)	(0.6230)	(0.0061)	(0.0208)	(0.4552)	(0.0027)	(0.0498)
three-person household	-0.0030	-0.0362	0.0042	-0.0137	-0.0087	0.0005	0.0017
	(0.0039)	(0.1678)	(0.0035)	(0.0086)	(0.0344)	(0.0012)	(0.0067)
at least four-person household	-0.0140	-0.0716	-0.0061	0.0113	0.0114	-0.0035	-0.0012
	(0.0122)	(0.3300)	(0.0057)	(0.0094)	(0.0426)	(0.0028)	(0.0047)
Observations	9751	6553	4587	19089	4713	3642	4962

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 36: Oaxaca decompositions for total benefits and exclusively migrant households (participation equation)

	NL	PT	SE	SI	UK
overall					
group_1	0.5331***	0.3823***	0.5172***	0.5272***	0.4548***
	(0.0334)	(0.0446)	(0.0301)	(0.0191)	(0.0196)
group_2	0.4119***	0.3063***	0.3493***	0.4709***	0.3836***
	(0.0042)	(0.0064)	(0.0056)	(0.0051)	(0.0049)
difference	0.1213***	0.0759*	0.1679***	0.0564***	0.0712***
	(0.0337)	(0.0451)	(0.0306)	(0.0198)	(0.0202)
explained	0.0439*	0.1242***	0.1310***	0.0321**	0.1551***
	(0.0248)	(0.0261)	(0.0221)	(0.0136)	(0.0162)
unexplained	0.0774***	-0.0482	0.0369**	0.0243	-0.0839***
	(0.0211)	(0.0318)	(0.0178)	(0.0153)	(0.0162)
explained					
age	-0.0048	-0.1441***	0.0057	-0.0013	-0.0682***
	(0.0033)	(0.0317)	(0.0098)	(0.0021)	(0.0130)
age^2	0.0042	0.2136***	-0.0054	0.0091*	0.0644***
	(0.0029)	(0.0366)	(0.0097)	(0.0048)	(0.0123)
gross household income	-0.0578**	0.0024	-0.5785**	-0.2797***	-0.0701***
	(0.0264)	(0.0151)	(0.2338)	(0.0488)	(0.0256)
gross household income^2	0.0826**	-0.0047	0.5443***	0.3201***	0.0589***
	(0.0333)	(0.0178)	(0.1975)	(0.0523)	(0.0206)
social contacts	0.0004	-0.0021	-0.0003	0.0005	0.0007*
	(0.0004)	(0.0013)	(0.0004)	(0.0005)	(0.0004)
leisure activities	0.0008*	0.0009	0.0122***	0.0000	0.0010**
	(0.0004)	(0.0010)	(0.0033)	(0.0005)	(0.0005)
less than secondary education	0.0005	-0.0036	0.0025*	0.0001	-0.0005
	(0.0004)	(0.0029)	(0.0014)	(0.0011)	(0.0004)
secondary education	0.0002	0.0018	0.0023	0.0005	0.0021**
	(0.0003)	(0.0018)	(0.0015)	(0.0004)	(0.0011)
tertiary education	0.0000	-0.0031	-0.0007	-0.0007	-0.0015
	(0.0001)	(0.0021)	(0.0007)	(0.0007)	(0.0013)
houseowner	0.0126***	-0.0048*	0.0133***	0.0028***	0.0359***
	(0.0039)	(0.0026)	(0.0037)	(0.0009)	(0.0030)
single	0.0052***	-0.0072**	0.0012	0.0001	0.0001
	(0.0015)	(0.0028)	(0.0010)	(0.0003)	(0.0002)
child(ren) in household	-0.0024	0.0322***	0.0250***	-0.0037	0.0296***
	(0.0033)	(0.0061)	(0.0064)	(0.0023)	(0.0049)
less than three-person household	-0.0064***	0.0103*	0.0337***	-0.0102***	0.0205***
	(0.0022)	(0.0059)	(0.0079)	(0.0035)	(0.0033)
three-person household	0.0002	0.0006	0.0002	-0.0004	0.0009
	(0.0003)	(0.0012)	(0.0004)	(0.0003)	(0.0006)
at least four-person household	-0.0079***	0.0058	0.0282***	-0.0050	0.0128***
	(0.0018)	(0.0046)	(0.0068)	(0.0032)	(0.0025)
urban area		0.0034*	-0.0021		0.0006
		(0.0021)	(0.0019)		(0.0008)
unexplained					
age	-0.4886	0.3209	0.5357	-0.2290	0.3162**
	(0.5735)	(0.3493)	(1.6441)	(8.1943)	(0.1427)
age^2	0.2038	-0.2312	-0.2241	1.0137	-0.1513**
	(0.2769)	(0.2063)	(0.7200)	(20.6276)	(0.0743)
gross household income	46.3746	-0.9804	0.9331	-432.0033	-0.7132
	(30.1837)	(1.4896)	(13.7166)	(8898.5574)	(0.5950)
gross household income^2	-23.8281	0.4171	-0.6214	222.3739	0.4023
	(15.4331)	(0.7995)	(7.4518)	(4580.3323)	(0.3215)
social contacts	-0.0490	0.0124	-0.0887	-0.0977	0.0010
	(0.0411)	(0.0124)	(0.2600)	(2.0553)	(0.0055)
leisure activities	-0.0186	-0.0108	0.0510	0.0595	-0.0048
	(0.0247)	(0.0074)	(0.1509)	(1.2407)	(0.0042)
less than secondary education	-0.0180	-0.0018	-0.0007	0.3475	0.0020
	(0.0182)	(0.0090)	(0.0176)	(7.1652)	(0.0030)
secondary education	-0.0009	0.0030	0.0337	0.4560	0.0038
	(0.0140)	(0.0046)	(0.0982)	(9.4265)	(0.0026)
tertiary education	0.0175	-0.0022	-0.0245	-0.1624	-0.0141**
	(0.0174)	(0.0048)	(0.0710)	(3.3535)	(0.0061)
houseowner	0.0135	0.0077	-0.0357	-0.4234	0.0131***
	(0.0176)	(0.0077)	(0.1031)	(8.7183)	(0.0041)
single	-0.0140	0.0025	-0.0075	-0.0817	0.0069
	(0.0378)	(0.0070)	(0.0370)	(1.7014)	(0.0051)
child(ren) in household	-0.0079	-0.0049	0.0118	0.4306	-0.0263***
	(0.0283)	(0.0069)	(0.0370)	(8.8431)	(0.0047)
less than three-person household	0.0103	-0.0236*	0.1338	0.1815	0.0170**
	(0.0647)	(0.0140)	(0.3885)	(3.7343)	(0.0085)
three-person household	-0.0137	0.0055	-0.0104	-0.1882	-0.0005
	(0.0124)	(0.0041)	(0.0303)	(3.8686)	(0.0021)
at least four-person household	0.0143	0.0104	-0.0494	0.2010	-0.0076*
	(0.0189)	(0.0075)	(0.1480)	(4.1427)	(0.0041)
urban area		-0.0079	-0.0117		-0.0084
		(0.0091)	(0.0360)		(0.0138)
Observations	9007	4171	5189	7960	7663

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 37: Oaxaca decompositions for total benefits and mixed households (participation equation)

	AT	BE	CY	CZ	DE	EE	ES
overall							
group_1	0.8536***	0.8778***	0.8735***	0.8235***	0.8818***	0.8887***	0.4721***
	(0.0168)	(0.0134)	(0.0149)	(0.0204)	(0.0089)	(0.0129)	(0.0241)
group_2	0.7864***	0.7890***	0.8495***	0.7494***	0.7397***	0.8777***	0.5627***
	(0.0058)	(0.0059)	(0.0069)	(0.0054)	(0.0038)	(0.0051)	(0.0055)
difference	0.0673***	0.0888***	0.0240	0.0741***	0.1421***	0.0110	-0.0906***
	(0.0178)	(0.0146)	(0.0164)	(0.0211)	(0.0097)	(0.0139)	(0.0247)
explained	0.0389***	0.0682***	-0.0578***	0.0096	0.1063***	0.0291***	-0.0965***
	(0.0106)	(0.0088)	(0.0130)	(0.0173)	(0.0060)	(0.0060)	(0.0125)
unexplained	0.0283*	0.0207	0.0818***	0.0645***	0.0357***	-0.0180	0.0059
	(0.0157)	(0.0130)	(0.0181)	(0.0189)	(0.0086)	(0.0135)	(0.0211)
explained							
age	0.1089***	0.0595***	0.2545***	0.0215	-0.1885***	0.0505**	0.2297***
	(0.0394)	(0.0157)	(0.0388)	(0.0887)	(0.0172)	(0.0250)	(0.0261)
age^2	-0.1715***	-0.1079***	-0.4050***	-0.0115	0.3095***	-0.0927**	-0.3125***
	(0.0598)	(0.0225)	(0.0494)	(0.0708)	(0.0238)	(0.0399)	(0.0321)
gross household income	0.0131	0.0028	0.0126	-0.0065	0.0223*	0.0197*	0.0063
	(0.0142)	(0.0219)	(0.0112)	(0.0178)	(0.0124)	(0.0107)	(0.0250)
gross household income^2	-0.0163	0.0014	-0.0154	0.0088	-0.0209	-0.0226*	-0.0019
	(0.0177)	(0.0247)	(0.0121)	(0.0238)	(0.0155)	(0.0118)	(0.0232)
social contacts	-0.0003	-0.0002	-0.0003	0.0000	0.0005	-0.0006	-0.0002
	(0.0004)	(0.0003)	(0.0004)	(0.0001)	(0.0003)	(0.0008)	(0.0003)
leisure activities	0.0003	0.0001	-0.0017*	-0.0011	0.0003	0.0004	-0.0012**
	(0.0003)	(0.0001)	(0.0010)	(0.0035)	(0.0002)	(0.0006)	(0.0006)
urban area	0.0004	0.0002	-0.0004	0.0000	0.0001	0.0049*	-0.0006
	(0.0006)	(0.0002)	(0.0006)	(0.0002)	(0.0001)	(0.0028)	(0.0004)
less than secondary education	-0.0014	-0.0003	0.0017	-0.0012	-0.0000	-0.0033*	-0.0051***
	(0.0009)	(0.0003)	(0.0031)	(0.0038)	(0.0002)	(0.0019)	(0.0012)
secondary education	0.0002	0.0000	0.0002	-0.0008	0.0009*	-0.0003	-0.0002
	(0.0004)	(0.0001)	(0.0003)	(0.0024)	(0.0005)	(0.0006)	(0.0003)
tertiary education	-0.0011	-0.0002	-0.0000	0.0004	-0.0004	-0.0016	-0.0028***
	(0.0008)	(0.0003)	(0.0028)	(0.0012)	(0.0005)	(0.0013)	(0.0009)
houseowner	0.0001	0.0000	0.0002	0.0003	0.0016***	0.0002	-0.0019***
	(0.0002)	(0.0002)	(0.0003)	(0.0011)	(0.0005)	(0.0010)	(0.0007)
single	0.0029	0.0010	-0.0032**	0.0032	0.0028*	-0.0015	-0.0057***
	(0.0021)	(0.0012)	(0.0014)	(0.0097)	(0.0015)	(0.0018)	(0.0017)
child(ren) in household	0.0272***	0.0231***	0.0233***	-0.0003	-0.0112***		-0.0012
	(0.0050)	(0.0032)	(0.0062)	(0.0011)	(0.0029)		(0.0008)
less than three person household	0.0300***	0.0395***	0.0386***	-0.0038	-0.0023	0.0465***	0.0085***
	(0.0063)	(0.0042)	(0.0075)	(0.0112)	(0.0023)	(0.0112)	(0.0015)
three person household	0.0028**	0.0024**	0.0026	-0.0009	-0.0023	0.0027*	0.0013
	(0.0014)	(0.0011)	(0.0017)	(0.0027)	(0.0023)	(0.0015)	(0.0008)
at least four-person household	0.0134***	0.0225***	0.0166***	-0.0010		0.0234***	0.0018**
	(0.0036)	(0.0033)	(0.0051)	(0.0029)		(0.0062)	(0.0008)
unexplained							
age	0.3883	3.4277	1.0367*	0.4747	0.6514	0.2075	-1.4525
	(1.1196)	(15.9807)	(0.6007)	(1.0489)	(1.9411)	(0.1463)	(15.0289)
age^2	-0.0813	-1.9652	-0.6069*	-0.5182	-0.2777	-0.1301	0.7185
	(0.4598)	(9.1904)	(0.3247)	(0.7921)	(1.0965)	(0.0858)	(7.4334)
gross household income	5.7399	12.1630	-22.5160**	-15.3251	18.5910	0.1175	-5.7431
	(15.2558)	(54.0899)	(10.2980)	(15.6362)	(30.2061)	(0.3545)	(58.3353)
gross household income^2	-3.0848	-7.0155	10.5673**	6.7302	-8.1245	-0.0880	3.1474
	(7.8821)	(31.1316)	(5.0282)	(7.4827)	(13.6168)	(0.1948)	(32.0027)
social contacts	0.0151	-0.0343	-0.0230	-0.0023	0.0125	0.0019	-0.0375
	(0.0527)	(0.1669)	(0.0331)	(0.0456)	(0.0319)	(0.0064)	(0.3920)
leisure activities	0.0129	-0.0271	0.0142	-0.0068	-0.0014	0.0000	0.0308
	(0.0310)	(0.1307)	(0.0148)	(0.0136)	(0.0250)	(0.0027)	(0.3214)
urban area	-0.0018	0.0153	-0.0035	-0.0012	0.0097	-0.0071	0.0228
	(0.0117)	(0.0750)	(0.0151)	(0.0082)	(0.0224)	(0.0052)	(0.2380)
less than secondary education	0.0114	0.0106	0.0034	-0.0115	0.0015	-0.0003	-0.0062
	(0.0220)	(0.0529)	(0.0088)	(0.0118)	(0.0074)	(0.0018)	(0.0680)
secondary education	-0.0497	0.0124	0.0007	0.0383	-0.0076	0.0048	0.0182
	(0.0948)	(0.0600)	(0.0111)	(0.0344)	(0.0246)	(0.0048)	(0.1884)
tertiary education	0.0031	-0.0301	-0.0073	0.0032	0.0005	-0.0020	-0.0321
	(0.0152)	(0.1382)	(0.0148)	(0.0085)	(0.0313)	(0.0029)	(0.3330)
houseowner	-0.0500	0.1062	-0.0002	0.0051	0.0008	-0.0136	0.0059
	(0.0953)	(0.4839)	(0.0178)	(0.0216)	(0.0244)	(0.0140)	(0.0703)
single	-0.0126	0.0000	0.0123*	0.0024	0.0216	0.0001	-0.0216
	(0.0245)	(0.0169)	(0.0067)	(0.0080)	(0.0320)	(0.0023)	(0.2244)
child(ren) in household	0.0214	0.0605	-0.0117	0.0060	-0.0278		0.0064
	(0.0379)	(0.2548)	(0.0185)	(0.0091)	(0.0469)		(0.0702)
less than three person household	-0.0421	0.0255	0.0033	0.0419	0.0238	0.0097*	-0.0234
	(0.0786)	(0.1242)	(0.0104)	(0.0369)	(0.0588)	(0.0051)	(0.2437)
three person household	0.0140	-0.0272	-0.0080	0.0053	-0.0090	-0.0003	0.0344
	(0.0294)	(0.1231)	(0.0081)	(0.0080)	(0.0222)	(0.0020)	(0.3561)
at least four-person household	0.0059	0.0158	0.0094	-0.0262		-0.0107*	-0.0208
	(0.0192)	(0.0736)	(0.0172)	(0.0201)		(0.0058)	(0.2173)
Observations	5153	4916	2880	9627	12079	4366	11064

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 38: Oaxaca decompositions for total benefits and mixed households (participation equation)

	FR	GR	IE	IT	LT	LU	LV
overall							
group_1	0.8267***	0.5410***	0.8797***	0.7319***	0.8879***	0.8381***	0.8620***
	(0.0139)	(0.0319)	(0.0130)	(0.0155)	(0.0173)	(0.0135)	(0.0134)
group_2	0.8254***	0.6305***	0.8744***	0.7591***	0.8667***	0.7777***	0.8378***
	(0.0044)	(0.0083)	(0.0050)	(0.0038)	(0.0055)	(0.0092)	(0.0056)
difference	0.0013	-0.0895***	0.0052	-0.0272*	0.0213	0.0604***	0.0242*
	(0.0146)	(0.0330)	(0.0139)	(0.0160)	(0.0181)	(0.0164)	(0.0145)
explained	-0.0109	-0.1147***	-0.0216**	-0.0393***	-0.0263**	0.0304***	-0.0136
	(0.0086)	(0.0176)	(0.0087)	(0.0087)	(0.0110)	(0.0113)	(0.0099)
unexplained	0.0122	0.0252	0.0268**	0.0121	0.0476***	0.0300**	0.0378***
	(0.0128)	(0.0286)	(0.0132)	(0.0148)	(0.0170)	(0.0150)	(0.0140)
explained							
age	0.0187	0.1965***	0.1424***	0.1291***	0.0497**	-0.6250	0.0272*
	(0.0142)	(0.0313)	(0.0322)	(0.0228)	(0.0203)	(0.8847)	(0.0145)
age^2	-0.0340	-0.3393***	-0.2264***	-0.1851***	-0.0775**	0.8864	-0.0498*
	(0.0246)	(0.0458)	(0.0479)	(0.0323)	(0.0301)	(1.2500)	(0.0256)
gross household income	0.0046	0.0380	0.1772***	-0.0027	0.0211**	-0.0160	0.0201*
	(0.0038)	(0.0443)	(0.0571)	(0.0077)	(0.0085)	(0.0423)	(0.0106)
gross household income^2	-0.0063	-0.0040	-0.1960***	0.0091	-0.0189**	0.0084	-0.0205*
	(0.0052)	(0.0435)	(0.0618)	(0.0073)	(0.0079)	(0.0299)	(0.0109)
social contacts	-0.0001	-0.0014	-0.0008	-0.0001	-0.0000	0.0010	-0.0001
	(0.0001)	(0.0010)	(0.0006)	(0.0001)	(0.0001)	(0.0017)	(0.0001)
leisure activities	-0.0000	-0.0014	-0.0032***	-0.0002	-0.0001	0.0000	0.0001
	(0.0000)	(0.0008)	(0.0012)	(0.0001)	(0.0001)	(0.0004)	(0.0001)
urban area	-0.0003	-0.0002	-0.0001	0.0002*	-0.0014**	0.0004	-0.0015
	(0.0002)	(0.0006)	(0.0002)	(0.0001)	(0.0006)	(0.0009)	(0.0010)
less than secondary education	-0.0002	-0.0034**	-0.0014	-0.0030***		0.0037	0.0000
	(0.0002)	(0.0014)	(0.0022)	(0.0007)		(0.0056)	(0.0003)
secondary education	0.0000	-0.0004	-0.0001	-0.0005**		0.0003	-0.0000
	(0.0000)	(0.0006)	(0.0002)	(0.0002)		(0.0008)	(0.0001)
tertiary education	-0.0003	-0.0008	-0.0031	-0.0004		0.0017	0.0000
	(0.0002)	(0.0009)	(0.0022)	(0.0003)		(0.0029)	(0.0001)
at least tertiary education					-0.0006*		
					(0.0003)		
houseowner	-0.0002	-0.0016	0.0001	-0.0006***	-0.0000	0.0014	0.0000
	(0.0001)	(0.0015)	(0.0008)	(0.0002)	(0.0001)	(0.0023)	(0.0002)
single	-0.0004	-0.0169***	-0.0014	-0.0030***	-0.0014**	0.0004	-0.0004
	(0.0004)	(0.0028)	(0.0021)	(0.0006)	(0.0006)	(0.0035)	(0.0006)
child(ren) in household	0.0012	-0.0026		0.0006*	-0.0008		-0.0007
	(0.0007)	(0.0016)		(0.0004)	(0.0009)		(0.0013)
less than three person household	0.0033	0.0298***	0.0540***	0.0136***	0.0052***	-0.1566	0.0100**
	(0.0021)	(0.0042)	(0.0162)	(0.0021)	(0.0016)	(0.2353)	(0.0043)
three person household	-0.0007	0.0030**	-0.0002	0.0023***	0.0008*	-0.0135	0.0009
	(0.0005)	(0.0012)	(0.0008)	(0.0005)	(0.0004)	(0.0206)	(0.0006)
at least four-person household	0.0034*	0.0138***	0.0428***	0.0044***	0.0019***	-0.0655	0.0038**
	(0.0021)	(0.0029)	(0.0143)	(0.0008)	(0.0007)	(0.1008)	(0.0016)
unexplained							
age	0.0413	-0.5335	0.1007	-1.9139	1.3405	6.9541	-1.0886
	(0.7116)	(0.4390)	(0.1086)	(9.1595)	(1.5155)	(60.1022)	(3.2056)
age^2	-0.0529	0.2357	-0.0354	1.2084	-0.7931	-3.8612	0.9225
	(0.4547)	(0.2366)	(0.0560)	(5.7780)	(0.9139)	(33.4364)	(2.5664)
gross household income	-7.3167	-6.0469	0.8104	1.7983	5.8725	162.8548	-12.0514
	(14.4677)	(6.3409)	(0.7157)	(10.6383)	(5.5451)	(1377.3778)	(35.1064)
gross household income^2	3.6594	2.8051	-0.3390	-0.7251	-3.0278	-75.9503	5.8771
	(7.2415)	(3.1119)	(0.3526)	(4.7515)	(2.8597)	(642.0341)	(17.1861)
social contacts	0.0149	-0.0128	0.0083	-0.0395	0.0136	0.5568	0.0237
	(0.0426)	(0.0417)	(0.0053)	(0.1974)	(0.0237)	(4.6915)	(0.0930)
leisure activities	0.0012	0.0126	-0.0081	0.0242	0.0011	-0.3418	-0.0315
	(0.0138)	(0.0132)	(0.0080)	(0.1207)	(0.0092)	(2.8646)	(0.0944)
urban area	0.0032	0.0071	-0.0023	0.0014	0.0194	-0.0658	-0.0584
	(0.0129)	(0.0088)	(0.0020)	(0.0164)	(0.0213)	(0.5593)	(0.1735)
less than secondary education	-0.0076	0.0095	0.0029	0.0339		-0.1589	-0.0052
	(0.0162)	(0.0111)	(0.0028)	(0.1661)		(1.3403)	(0.0288)
secondary education	0.0159	-0.0053	-0.0006	0.0046		-0.0289	-0.0340
	(0.0297)	(0.0091)	(0.0016)	(0.0335)		(0.2627)	(0.1090)
tertiary education	-0.0034	-0.0049	-0.0047	-0.0188		0.2042	0.0312
	(0.0114)	(0.0112)	(0.0043)	(0.0924)		(1.7159)	(0.0969)
at least tertiary education					-0.0056		
					(0.0189)		
houseowner	0.0062	0.0045	0.0046	0.0071	-0.0289	-0.4283	0.0699
	(0.0209)	(0.0179)	(0.0059)	(0.0482)	(0.0630)	(3.6210)	(0.2269)
single	0.0081	-0.0053	-0.0017	0.0185	0.0237	0.0615	-0.0796
	(0.0152)	(0.0068)	(0.0016)	(0.0912)	(0.0172)	(0.5247)	(0.2328)
child(ren) in household	-0.0129	-0.0058		0.0108	0.0073		0.0404
	(0.0276)	(0.0122)		(0.0572)	(0.0096)		(0.1031)
less than three person household	-0.0093	0.0145	-0.0090**	-0.0425	0.0330	-0.0024	-0.1356
	(0.0193)	(0.0135)	(0.0035)	(0.2076)	(0.0287)	(0.0990)	(0.3814)
three person household	-0.0039	-0.0083	0.0014	0.0363	-0.0101	0.1581	0.0689
	(0.0080)	(0.0098)	(0.0022)	(0.1773)	(0.0131)	(1.3435)	(0.2017)
at least four-person household	0.0140	-0.0092	0.0082*	0.0135	-0.0149	-0.1786	0.0350
	(0.0224)	(0.0135)	(0.0046)	(0.0706)	(0.0183)	(1.5764)	(0.0994)
Observations	9777	6375	4610	19142	4891	2344	4991

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 39: Oaxaca decompositions for total benefits and mixed households (participation equation)

	NL	PT	SE	SI	UK
overall					
group_1	0.6795***	0.6923***	0.7116***	0.8291***	0.7341***
	(0.0182)	(0.0290)	(0.0215)	(0.0118)	(0.0188)
group_2	0.6839***	0.7563***	0.6817***	0.8142***	0.7977***
	(0.0045)	(0.0070)	(0.0067)	(0.0046)	(0.0045)
difference	-0.0044	-0.0640**	0.0299	0.0149	-0.0636***
	(0.0188)	(0.0298)	(0.0225)	(0.0127)	(0.0194)
explained	0.0057	-0.0187	0.0349**	0.0095	-0.0582***
	(0.0129)	(0.0132)	(0.0140)	(0.0076)	(0.0132)
unexplained	-0.0101	-0.0453	-0.0050	0.0054	-0.0055
	(0.0146)	(0.0286)	(0.0181)	(0.0111)	(0.0150)
explained					
age	-0.0982	0.1174**	0.0538**	2.8008	0.1630***
	(0.4469)	(0.0567)	(0.0270)	(313.5607)	(0.0226)
age^2	0.1556	-0.1662**	-0.1031***	-2.3511	-0.2548***
	(0.7076)	(0.0804)	(0.0392)	(264.1290)	(0.0329)
gross household income	-0.0369	0.0670*	0.0744***	-4.1580	0.0525***
	(0.1672)	(0.0367)	(0.0281)	(461.8560)	(0.0129)
gross household income^2	0.0470	-0.0696*	-0.0740***	3.7559	-0.0720***
	(0.2127)	(0.0382)	(0.0287)	(416.8642)	(0.0151)
social contacts	-0.0000	-0.0005	0.0002	-0.0150	-0.0008**
	(0.0001)	(0.0004)	(0.0002)	(1.6762)	(0.0004)
leisure activities	0.0003	-0.0007	0.0014	-0.0084	-0.0006
	(0.0013)	(0.0005)	(0.0010)	(0.9448)	(0.0003)
less than secondary education	0.0010	0.0003	0.0002	0.0140	-0.0014*
	(0.0044)	(0.0011)	(0.0003)	(1.5640)	(0.0008)
secondary education	0.0005	0.0001	0.0001	-0.0046	0.0010**
	(0.0024)	(0.0008)	(0.0005)	(0.5168)	(0.0005)
tertiary education	-0.0002	0.0001	-0.0004	0.0903	0.0004
	(0.0009)	(0.0005)	(0.0004)	(10.0608)	(0.0010)
houseowner	0.0016	0.0002	-0.0007	0.0429	-0.0015***
	(0.0072)	(0.0002)	(0.0005)	(4.7824)	(0.0005)
single	0.0062	-0.0007	0.0007	-0.1702	-0.0002
	(0.0283)	(0.0005)	(0.0011)	(18.9822)	(0.0011)
child(ren) in household	-0.0273	0.0080**	0.0282***	0.3981	0.0174***
	(0.1287)	(0.0033)	(0.0052)	(44.2980)	(0.0037)
less than three person household	-0.0163	0.0123**	0.0147***	-0.4762	0.0154***
	(0.0756)	(0.0052)	(0.0029)	(53.0660)	(0.0020)
three person household	0.0020	0.0007	-0.0019*	0.0613	0.0017***
	(0.0091)	(0.0006)	(0.0010)	(6.8287)	(0.0007)
at least four-person household	-0.0103	0.0058**	0.0113***	-0.2175	0.0067***
	(0.0484)	(0.0025)	(0.0028)	(24.2587)	(0.0015)
urban area		0.0005	0.0001		0.0003
		(0.0003)	(0.0005)		(0.0003)
unexplained					
age	-0.0265	0.1304	-0.1385	-0.1512	0.0306
	(0.1122)	(0.4837)	(1.0445)	(0.4217)	(0.0980)
age^2	0.0139	-0.2041	0.0917	0.1104	-0.0197
	(0.0650)	(0.2391)	(0.6867)	(0.3060)	(0.0599)
gross household income	-3.5828	-1.0312	4.1859	-3.5159	0.4581
	(5.3853)	(5.7213)	(29.9572)	(10.1539)	(1.2571)
gross household income^2	1.7534	0.5038	-2.1542	1.6973	-0.2178
	(2.6427)	(2.8774)	(15.4285)	(4.9108)	(0.6098)
social contacts	0.0078	-0.0229	0.0171	-0.0058	-0.0011
	(0.0109)	(0.0297)	(0.1216)	(0.0172)	(0.0042)
leisure activities	0.0053	0.0006	-0.0402	0.0035	0.0018
	(0.0076)	(0.0116)	(0.2845)	(0.0101)	(0.0048)
less than secondary education	-0.0002	0.0185	0.0006	0.0005	0.0010
	(0.0013)	(0.0199)	(0.0069)	(0.0023)	(0.0026)
secondary education	0.0018	-0.0095	0.0056	0.0024	-0.0020
	(0.0034)	(0.0098)	(0.0402)	(0.0075)	(0.0051)
tertiary education	-0.0013	0.0004	-0.0065	-0.0010	-0.0003
	(0.0034)	(0.0088)	(0.0462)	(0.0031)	(0.0025)
houseowner	0.0083	0.0386	-0.0097	-0.0040	0.0075
	(0.0103)	(0.0275)	(0.0700)	(0.0125)	(0.0181)
single	-0.0011	-0.0123	0.0030	-0.0001	0.0010
	(0.0023)	(0.0095)	(0.0217)	(0.0021)	(0.0026)
child(ren) in household	-0.0016	-0.0033	-0.0109	-0.0004	-0.0011
	(0.0033)	(0.0130)	(0.0739)	(0.0021)	(0.0027)
less than three person household	0.0037	0.0084	-0.0077	-0.0054	0.0006
	(0.0057)	(0.0087)	(0.0562)	(0.0154)	(0.0022)
three person household	0.0023	0.0038	0.0012	0.0006	-0.0001
	(0.0029)	(0.0121)	(0.0093)	(0.0023)	(0.0010)
at least four-person household	-0.0065	-0.0223	0.0030	0.0076	-0.0003
	(0.0077)	(0.0162)	(0.0247)	(0.0216)	(0.0016)
urban area		0.0084	0.0048		-0.0036
		(0.0103)	(0.0343)		(0.0090)
Observations	9187	4303	5091	8458	7575

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

2.1.2 Level

Tabelle: 40: Oaxaca decompositions for total benefits and migrant households (level equation)

	AT	BE	CY	CZ	DE	EE	ES
Differential							
Prediction_1	9.2036***	8.8328***	8.0900***	8.4167***	9.5114***	7.7979***	8.5405***
	(0.0367)	(0.0362)	(0.0636)	(0.0414)	(0.0263)	(0.0366)	(0.0489)
Prediction_2	9.3593***	8.9490***	8.3892***	8.2014***	9.0252***	7.5066***	8.9964***
	(0.0174)	(0.0183)	(0.0307)	(0.0127)	(0.0118)	(0.0218)	(0.0128)
Difference	-0.1557***	-0.1162***	-0.2992***	0.2154***	0.4861***	0.2913***	-0.4559***
	(0.0406)	(0.0406)	(0.0706)	(0.0433)	(0.0288)	(0.0426)	(0.0505)
Adjusted	-0.0689	-0.1456**	-0.9665***	-0.0008	0.4860***	0.3997***	-0.7524*
	(0.0671)	(0.0703)	(0.2236)	(0.0705)	(0.0378)	(0.0713)	(0.4224)
Explained							
age	0.1194***	0.0538	0.0746	-0.0489**	-0.3434***	-0.1231***	-0.4866***
	(0.0329)	(0.0372)	(0.1056)	(0.0191)	(0.0349)	(0.0365)	(0.0632)
age^2	-0.1311***	-0.1052***	-0.1982	0.0343**	0.4597***	0.1834***	0.5585***
	(0.0346)	(0.0391)	(0.1250)	(0.0175)	(0.0422)	(0.0443)	(0.0722)
gross household income	-0.5936***	-0.4159***	0.0037	-0.2396***	-0.0045	-0.1547***	0.1008**
	(0.1147)	(0.1170)	(0.0243)	(0.0761)	(0.0484)	(0.0580)	(0.0488)
gross household income^2	0.4830***	0.3912***	-0.0011	0.2147***	0.0121	0.1642***	-0.1769***
	(0.1056)	(0.1138)	(0.0351)	(0.0706)	(0.0446)	(0.0587)	(0.0570)
urban area	-0.0023	0.0009	0.0004	0.0010	0.0004	-0.0418***	0.0016*
	(0.0042)	(0.0024)	(0.0012)	(0.0010)	(0.0004)	(0.0092)	(0.0009)
less than secondary education	-0.0021	0.0000	-0.0156	-0.0122***	0.0017**	0.0000	0.0350***
	(0.0014)	(0.0001)	(0.0100)	(0.0037)	(0.0008)	(0.0004)	(0.0057)
secondary education	-0.0018	-0.0000	0.0000	0.0008	0.0012	-0.0021	0.0061***
	(0.0011)	(0.0002)	(0.0004)	(0.0019)	(0.0010)	(0.0015)	(0.0022)
tertiary education	0.0000	-0.0001	-0.0156	-0.0022	-0.0025**	-0.0017	0.0113***
	(0.0001)	(0.0003)	(0.0101)	(0.0014)	(0.0010)	(0.0015)	(0.0033)
houseowner	-0.0156***	-0.0076**	-0.0007	-0.0029*	-0.0001	0.0049***	-0.0131***
	(0.0040)	(0.0032)	(0.0022)	(0.0016)	(0.0002)	(0.0018)	(0.0048)
single	-0.0024	0.0021	-0.0089**	0.0029	0.0058***	-0.0006	0.0111***
	(0.0023)	(0.0019)	(0.0039)	(0.0025)	(0.0015)	(0.0015)	(0.0030)
child(ren) in household	-0.0752***	-0.0540***	-0.0275***	0.0104**	0.0209***	0.0202***	-0.0646***
	(0.0095)	(0.0084)	(0.0083)	(0.0049)	(0.0030)	(0.0048)	(0.0072)
less than three-person household	-0.0501***	-0.0659***	-0.1037***	0.0091**	0.0538***	0.0119**	0.0104**
	(0.0087)	(0.0103)	(0.0194)	(0.0042)	(0.0070)	(0.0048)	(0.0046)
three-person household	-0.0047	-0.0107**	-0.0270***	0.0004	0.0128***	-0.0004	-0.0014
	(0.0045)	(0.0052)	(0.0076)	(0.0007)	(0.0042)	(0.0026)	(0.0014)
at least four-person household	-0.0089**	-0.0087*	-0.0243**	0.0056**	0.0066***	0.0012	0.0227***
	(0.0040)	(0.0049)	(0.0096)	(0.0027)	(0.0018)	(0.0027)	(0.0047)
Total	-0.3810***	-0.2788***	-0.3807***	-0.0152	0.2515***	0.0445*	-0.0503
	(0.0345)	(0.0293)	(0.0457)	(0.0170)	(0.0203)	(0.0268)	(0.0331)
Unexplained							
age	0.9521	-0.9362	-2.5464*	1.9166**	1.4538**	1.2626	-0.9532
	(0.6971)	(0.7050)	(1.3443)	(0.9621)	(0.6509)	(0.8286)	(1.2470)
age^2	-0.5485	0.4420	1.8031**	-0.7348	-1.5081***	-0.9991**	0.6852
	(0.4159)	(0.3927)	(0.7601)	(0.5637)	(0.3909)	(0.5050)	(0.7542)
gross household income	-14.1421*	-4.5574	20.4486	-0.8693	-0.7450	-1.9883	1.0141
	(8.2105)	(10.6970)	(21.1031)	(13.8001)	(6.7134)	(12.3484)	(10.1209)
gross household income^2	6.0250	1.8338	-12.7624	0.6208	1.0967	1.9018	-0.9831
	(4.1861)	(5.4616)	(10.5684)	(6.9499)	(3.4385)	(6.2079)	(5.3664)
urban area	0.0240	-0.0033	-0.0828**	-0.0132	-0.0181	0.1182***	-0.0207
	(0.0192)	(0.0246)	(0.0383)	(0.0130)	(0.0117)	(0.0262)	(0.0254)
less than secondary education	0.0159	-0.0048	0.0398	-0.0247	-0.0096*	0.0274*	0.0881***
	(0.0140)	(0.0200)	(0.0247)	(0.0210)	(0.0057)	(0.0153)	(0.0286)
secondary education	-0.0290	0.0157	0.0288	0.0105	-0.0128	-0.0446*	-0.0283
	(0.0215)	(0.0154)	(0.0297)	(0.0352)	(0.0130)	(0.0254)	(0.0185)
tertiary education	-0.0018	-0.0133	-0.1067***	0.0066	0.0526***	-0.0095	-0.0264
	(0.0149)	(0.0177)	(0.0413)	(0.0091)	(0.0161)	(0.0188)	(0.0219)
houseowner	-0.0230	0.0196	0.0135	-0.0410	0.0154	0.0294	0.0184
	(0.0149)	(0.0267)	(0.0584)	(0.0281)	(0.0129)	(0.0576)	(0.0321)
single	-0.0259*	0.0214	0.0472**	0.0111	0.0042	0.0076	0.0716***
	(0.0147)	(0.0146)	(0.0201)	(0.0192)	(0.0073)	(0.0218)	(0.0272)
child(ren) in household	0.0073	0.0290	-0.0052	-0.0229*	-0.0181*	-0.0364**	-0.0440
	(0.0361)	(0.0322)	(0.0437)	(0.0138)	(0.0099)	(0.0176)	(0.0350)
less than three-person household	-0.0497	-0.0317	-0.2772***	-0.1981***	0.1345***	-0.0314	-0.0145
	(0.0433)	(0.0389)	(0.0790)	(0.0626)	(0.0487)	(0.0465)	(0.0298)
three-person household	-0.0113	-0.0076	0.0528**	-0.0231*	-0.0016	0.0125	-0.0085
	(0.0119)	(0.0149)	(0.0266)	(0.0118)	(0.0069)	(0.0143)	(0.0192)
at least four-person household	0.0569**	0.0468	0.3407***	0.0690***	-0.0230***	-0.0002	0.0338
	(0.0249)	(0.0303)	(0.1021)	(0.0157)	(0.0078)	(0.0205)	(0.0332)
Total	0.3121***	0.1332**	-0.5858***	0.0144	0.2346***	0.3553***	-0.7022*
	(0.0638)	(0.0666)	(0.2271)	(0.0681)	(0.0331)	(0.0723)	(0.4248)
Observations	4553	4288	2582	7419	9662	4304	6447

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 41: Oaxaca decompositions for total benefits and migrant households (level equation)

	FR	GR	IE	IT	LT	LU	LV
Differential							
Prediction_1	9.1433***	8.2830***	9.2064***	8.2046***	7.7873***	9.4844***	7.5773***
	(0.0331)	(0.0709)	(0.0421)	(0.0436)	(0.0483)	(0.0219)	(0.0299)
Prediction_2	9.0568***	9.0351***	9.4563***	9.0233***	7.5999***	10.0013***	7.3908***
	(0.0149)	(0.0163)	(0.0160)	(0.0118)	(0.0192)	(0.0296)	(0.0197)
Difference	0.0865**	-0.7521***	-0.2499***	-0.8186***	0.1875***	-0.5169***	0.1865***
	(0.0363)	(0.0727)	(0.0450)	(0.0452)	(0.0520)	(0.0368)	(0.0358)
Adjusted	-0.1477**	-0.2564	-0.2090***	-0.9241***	0.2020**	-0.6779***	0.1985***
	(0.0612)	(0.4391)	(0.0653)	(0.2865)	(0.0942)	(0.0564)	(0.0659)
Explained							
age	-0.0183	-0.1614**	0.1545**	-0.2259***	-0.0025	0.2123*	-0.1095***
	(0.0144)	(0.0705)	(0.0721)	(0.0487)	(0.0079)	(0.1216)	(0.0331)
age^2	0.0156*	0.4068***	-0.2561***	0.3753***	0.0012	-0.1637	0.1601***
	(0.0093)	(0.0805)	(0.0759)	(0.0552)	(0.0107)	(0.1290)	(0.0396)
gross household income	0.1506***	0.1276*	0.7240***	0.1549***	0.0319	-0.3899	-0.0450
	(0.0519)	(0.0704)	(0.1469)	(0.0383)	(0.0262)	(0.2734)	(0.0305)
gross household income^2	-0.2111***	-0.2116***	-0.7248***	-0.2494***	-0.0226	0.2859	0.0442*
	(0.0558)	(0.0811)	(0.1479)	(0.0461)	(0.0240)	(0.2652)	(0.0262)
urban area	0.0060**	0.0117***	0.0018	-0.0014*	0.0190***	-0.0023	-0.0061
	(0.0028)	(0.0031)	(0.0012)	(0.0008)	(0.0043)	(0.0034)	(0.0057)
less than secondary education	0.0032*	0.0276***	-0.0039	0.0217***	0.0022	-0.0020	-0.0002
	(0.0017)	(0.0059)	(0.0068)	(0.0033)	(0.0026)	(0.0017)	(0.0009)
secondary education	-0.0001	0.0038	0.0000	-0.0008	-0.0006	0.0019	-0.0000
	(0.0014)	(0.0026)	(0.0004)	(0.0017)	(0.0009)	(0.0041)	(0.0002)
tertiary education	-0.0003	0.0087**	-0.0046	0.0035*	0.0045**	0.0063	-0.0001
	(0.0006)	(0.0034)	(0.0068)	(0.0018)	(0.0023)	(0.0039)	(0.0008)
houseowner	-0.0077***	0.0008	0.0170***	-0.0038	-0.0000	0.0030	0.0022**
	(0.0019)	(0.0054)	(0.0047)	(0.0029)	(0.0003)	(0.0115)	(0.0011)
single	0.0128***	0.0222***	0.0026	-0.0021	0.0010	0.0013	-0.0008
	(0.0023)	(0.0050)	(0.0036)	(0.0013)	(0.0012)	(0.0035)	(0.0009)
child(ren) in household	-0.0162***	-0.0928***	-0.0295***	-0.1427***	0.0375***	-0.0912***	0.0441***
	(0.0044)	(0.0117)	(0.0090)	(0.0094)	(0.0085)	(0.0131)	(0.0065)
less than three-person household	-0.0190***	-0.0733***	-0.0037	-0.0749***	-0.0027	-0.1899***	-0.0005
	(0.0044)	(0.0117)	(0.0111)	(0.0071)	(0.0022)	(0.0249)	(0.0032)
three-person household	0.0027*	0.0006	0.0019	-0.0080***	-0.0059	-0.0351***	0.0023
	(0.0016)	(0.0018)	(0.0028)	(0.0024)	(0.0040)	(0.0072)	(0.0032)
at least four-person household	-0.0320***	-0.0581***	-0.0071	-0.0300***	0.0010	-0.0465***	-0.0159***
	(0.0053)	(0.0100)	(0.0074)	(0.0042)	(0.0026)	(0.0142)	(0.0041)
Total	-0.1191***	-0.0454	-0.1360***	-0.3334***	0.1213***	-0.4993***	0.1142***
	(0.0242)	(0.0476)	(0.0203)	(0.0303)	(0.0218)	(0.0398)	(0.0195)
Unexplained							
age	-4.0889***	1.7717	-0.8415	-0.9811	1.6051	-2.3191***	-0.1175
	(0.7575)	(1.7783)	(0.7699)	(1.1008)	(1.2140)	(0.6270)	(0.8373)
age^2	2.2286***	-0.8102	0.6721*	1.0886*	-0.8060	1.5139***	-0.1500
	(0.4472)	(1.1416)	(0.4028)	(0.6482)	(0.7299)	(0.3217)	(0.5353)
gross household income	8.7409	-30.8281*	-5.6931	-9.9772	-9.3718	-15.5521	-3.3319
	(10.2381)	(18.2440)	(11.0643)	(11.4379)	(12.3475)	(15.5930)	(6.9569)
gross household income^2	-6.1023	14.1438	1.6752	4.7356	4.5262	5.9383	1.4665
	(5.0923)	(9.1847)	(5.6330)	(5.9808)	(6.2360)	(7.6940)	(3.5049)
urban area	-0.0262	-0.0736**	-0.0062	-0.0081	0.0329	-0.0084	0.0179
	(0.0217)	(0.0295)	(0.0156)	(0.0148)	(0.0293)	(0.0171)	(0.0239)
less than secondary education	0.0145	0.0668**	0.0128	0.0961***	0.0028	0.0085	-0.0022
	(0.0213)	(0.0338)	(0.0170)	(0.0269)	(0.0179)	(0.0200)	(0.0147)
secondary education	0.0187	-0.0512*	-0.0016	-0.0453*	-0.0092	0.0165	-0.0073
	(0.0163)	(0.0304)	(0.0145)	(0.0237)	(0.0188)	(0.0122)	(0.0202)
tertiary education	-0.0219	-0.0080	-0.0263	-0.0189	0.0123	-0.0243	0.0070
	(0.0139)	(0.0281)	(0.0348)	(0.0119)	(0.0387)	(0.0163)	(0.0149)
houseowner	-0.0251	-0.0190	0.0565*	0.0582*	0.0115	0.0431*	-0.0153
	(0.0214)	(0.0656)	(0.0311)	(0.0302)	(0.0934)	(0.0243)	(0.0449)
single	0.0195	0.0459*	0.0761***	0.0167	0.0279	0.0166	-0.0039
	(0.0148)	(0.0278)	(0.0177)	(0.0159)	(0.0215)	(0.0111)	(0.0205)
child(ren) in household	0.0513**	0.0515	0.0514	0.1283***	-0.0000	0.0505*	-0.0232*
	(0.0206)	(0.0385)	(0.0434)	(0.0257)	(0.0152)	(0.0294)	(0.0123)
less than three-person household	-0.0437	0.1213*	-0.0614*	-0.0922*	-0.1010**	-0.1266***	0.0004
	(0.0357)	(0.0659)	(0.0355)	(0.0500)	(0.0482)	(0.0313)	(0.0483)
three-person household	-0.0342***	-0.0813***	-0.0207	0.0021	0.0096	0.0147	0.0090
	(0.0102)	(0.0266)	(0.0174)	(0.0208)	(0.0172)	(0.0178)	(0.0112)
at least four-person household	0.1112***	-0.0270	0.1238***	0.1069**	0.0326	0.1964***	-0.0097
	(0.0271)	(0.0768)	(0.0359)	(0.0416)	(0.0216)	(0.0390)	(0.0163)
Total	-0.0286	-0.2109	-0.0730	-0.5907**	0.0807	-0.1786***	0.0843
	(0.0607)	(0.4423)	(0.0660)	(0.2875)	(0.0949)	(0.0614)	(0.0669)
Observations	8704	4178	4341	15023	4430	3239	4824

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 42: Oaxaca decompositions for total benefits and migrant households (level equation)

	NL	PT	SE	SI	UK
Differential					
Prediction_1	8.4066***	7.6234***	8.6878***	7.8663***	8.6398***
	(0.0581)	(0.0988)	(0.0480)	(0.0338)	(0.0450)
Prediction_2	8.6320***	8.1187***	8.7821***	7.8988***	8.9491***
	(0.0173)	(0.0262)	(0.0224)	(0.0158)	(0.0150)
Difference	-0.2254***	-0.4953***	-0.0943*	-0.0325	-0.3093***
	(0.0606)	(0.1022)	(0.0530)	(0.0374)	(0.0474)
Adjusted	-0.2740***	-1.1562**	-0.2410**	-0.0703	-0.2932***
	(0.0846)	(0.4570)	(0.0969)	(0.0695)	(0.0753)
Explained					
age	-0.2029***	-0.0941	-0.1063***	-0.0092	0.3065***
	(0.0420)	(0.0970)	(0.0357)	(0.0115)	(0.0474)
age^2	0.0967***	0.2421**	0.0636	-0.0016	-0.3592***
	(0.0282)	(0.1191)	(0.0388)	(0.0040)	(0.0511)
gross household income	0.0003	-0.4725**	-0.0737	0.0402	0.0935
	(0.0082)	(0.2084)	(0.1067)	(0.0298)	(0.1063)
gross household income^2	0.0004	0.5489**	0.0481	-0.0444	-0.1258
	(0.0107)	(0.2305)	(0.1036)	(0.0317)	(0.1036)
less than secondary education	0.0052***	0.0095	-0.0017	-0.0038**	0.0056***
	(0.0020)	(0.0085)	(0.0015)	(0.0016)	(0.0020)
secondary education	0.0016	0.0002	-0.0008	0.0008	-0.0038
	(0.0013)	(0.0061)	(0.0016)	(0.0008)	(0.0023)
tertiary education	0.0004	0.0037	0.0008	-0.0042***	0.0117***
	(0.0010)	(0.0045)	(0.0010)	(0.0016)	(0.0038)
houseowner	-0.0011	0.0009	-0.0035	-0.0009	0.0158***
	(0.0011)	(0.0032)	(0.0032)	(0.0006)	(0.0039)
single	0.0014	-0.0012	0.0017	0.0004	0.0031
	(0.0025)	(0.0019)	(0.0013)	(0.0007)	(0.0022)
child(ren) in household	-0.0323***	-0.2168***	-0.0036	-0.0011	-0.0483***
	(0.0094)	(0.0299)	(0.0063)	(0.0009)	(0.0079)
less than three-person household	-0.0470***	-0.1388***	-0.0914***	-0.0052	-0.0690***
	(0.0110)	(0.0194)	(0.0159)	(0.0042)	(0.0090)
three-person household	-0.0306***	-0.0241***	-0.0078**	-0.0016	-0.0084***
	(0.0074)	(0.0077)	(0.0036)	(0.0013)	(0.0027)
at least four-person household	-0.0017	-0.0470***	-0.0459***	-0.0003	-0.0277***
	(0.0017)	(0.0121)	(0.0106)	(0.0030)	(0.0057)
Total	-0.2414***	-0.4115***	-0.2336***	-0.0326*	-0.2271***
	(0.0459)	(0.0742)	(0.0330)	(0.0176)	(0.0274)
urban area		-0.0026	-0.0039		0.0041**
		(0.0029)	(0.0026)		(0.0018)
Unexplained					
age	-1.8844**	-2.3375	-0.2718	-0.0025	-0.5059
	(0.8754)	(2.7552)	(0.8006)	(0.5541)	(0.8837)
age^2	1.2915**	2.1179	0.2454	0.2493	0.2867
	(0.5357)	(1.5686)	(0.5158)	(0.3394)	(0.5051)
gross household income	-16.8747	40.4018***	14.4630	8.1069	-3.6929
	(17.8738)	(13.9088)	(9.8655)	(17.4163)	(6.6538)
gross household income^2	7.2249	-22.9814***	-8.9304*	-4.2435	0.9188
	(9.0396)	(7.2327)	(5.1582)	(8.9389)	(3.4650)
less than secondary education	0.0348*	-0.0843	0.0277	-0.0128	0.0257
	(0.0184)	(0.0813)	(0.0213)	(0.0158)	(0.0173)
secondary education	-0.0161	-0.0436	-0.0064	0.0335	-0.0048
	(0.0235)	(0.0355)	(0.0238)	(0.0233)	(0.0160)
tertiary education	-0.0365	0.0642**	-0.0256	-0.0026	-0.0407
	(0.0255)	(0.0313)	(0.0225)	(0.0085)	(0.0286)
houseowner	-0.0548	0.0946	-0.0535*	-0.0784**	0.0218
	(0.0353)	(0.1073)	(0.0312)	(0.0312)	(0.0312)
single	-0.0316	0.0920***	-0.0129	0.0181	0.0147
	(0.0229)	(0.0356)	(0.0244)	(0.0146)	(0.0170)
child(ren) in household	0.1033	0.1922	0.0267	0.0020	0.0423
	(0.0686)	(0.1185)	(0.0651)	(0.0167)	(0.0407)
less than three-person household	-0.1059**	-0.0872*	-0.0513	-0.0059	0.0072
	(0.0521)	(0.0519)	(0.0465)	(0.0184)	(0.0402)
three-person household	0.0210	-0.0422	-0.0293*	-0.0329***	-0.0311**
	(0.0175)	(0.0455)	(0.0151)	(0.0109)	(0.0154)
at least four-person household	0.0547	0.2686***	0.1074***	0.0744***	0.0480
	(0.0344)	(0.0976)	(0.0348)	(0.0228)	(0.0299)
Total	-0.0326	-0.7447	-0.0074	-0.0377	-0.0661
	(0.0757)	(0.4568)	(0.0940)	(0.0672)	(0.0722)
urban area		0.0308	0.0202		-0.0005
		(0.0420)	(0.0144)		(0.0541)
Observations	6479	3303	3834	7337	6389

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 43: Oaxaca decompositions for total benefits and exclusively migrant households (level equation)

	AT	BE	CY	CZ	DE	EE	ES
Differential							
Prediction_1	9.0807***	8.8666***	8.0315***	8.3575***	9.4776***	7.8185***	8.2188***
	(0.0454)	(0.0472)	(0.1435)	(0.0525)	(0.0423)	(0.0502)	(0.0672)
Prediction_2	9.3593***	8.9490***	8.3892***	8.2014***	9.0252***	7.5066***	8.9964***
	(0.0174)	(0.0183)	(0.0307)	(0.0127)	(0.0118)	(0.0218)	(0.0128)
Difference	-0.2786***	-0.0824	-0.3576**	0.1561***	0.4524***	0.3118***	-0.7776***
	(0.0487)	(0.0506)	(0.1468)	(0.0540)	(0.0439)	(0.0547)	(0.0684)
Adjusted	-0.2028***	-0.1293	0.2743	-0.2543***	0.4348***	0.2130***	-0.9775*
	(0.0773)	(0.0864)	(0.4029)	(0.0621)	(0.0514)	(0.0692)	(0.5386)
Explained							
age	0.1231***	0.0431	0.0213	-0.1655***	-0.5425***	-0.3415***	-0.5270***
	(0.0357)	(0.0306)	(0.0326)	(0.0520)	(0.0552)	(0.0904)	(0.0750)
age^2	-0.1314***	-0.0811**	-0.0567	0.1212**	0.7561***	0.5374***	0.5908***
	(0.0370)	(0.0329)	(0.0483)	(0.0549)	(0.0680)	(0.1069)	(0.0836)
gross household income	-1.1287***	-1.0241***	0.1996	-0.8554***	-0.5314***	-0.5237***	0.1950**
	(0.1902)	(0.2522)	(0.3167)	(0.1694)	(0.1028)	(0.1228)	(0.0899)
gross household income^2	0.9245***	0.9742***	-0.2862	0.7676***	0.4937***	0.5233***	-0.3471***
	(0.1815)	(0.2483)	(0.3075)	(0.1638)	(0.0958)	(0.1253)	(0.0983)
urban area	-0.0032	0.0016	-0.0002	0.0024	0.0012	-0.0472***	0.0006
	(0.0059)	(0.0041)	(0.0007)	(0.0016)	(0.0010)	(0.0105)	(0.0009)
less than secondary	-0.0058*	0.0000	-0.0135	-0.0290***	0.0054***	0.0001	0.0368***
	(0.0035)	(0.0016)	(0.0090)	(0.0084)	(0.0020)	(0.0026)	(0.0072)
secondary education	-0.0033*	-0.0002	-0.0001	0.0018	0.0012	-0.0054	0.0116***
	(0.0018)	(0.0004)	(0.0007)	(0.0042)	(0.0010)	(0.0036)	(0.0039)
tertiary education	-0.0003	-0.0009	-0.0155	-0.0074***	0.0007	-0.0025	0.0019
	(0.0010)	(0.0021)	(0.0105)	(0.0024)	(0.0012)	(0.0022)	(0.0036)
houseowner	-0.0270***	-0.0146**	-0.0024	-0.0063*	-0.0025	0.0018	-0.0203***
	(0.0068)	(0.0061)	(0.0079)	(0.0033)	(0.0018)	(0.0017)	(0.0073)
single	-0.0008	-0.0003	0.0023	-0.0353***	-0.0080***	0.0003	0.0164***
	(0.0009)	(0.0006)	(0.0071)	(0.0051)	(0.0021)	(0.0008)	(0.0041)
child(ren) in household	-0.0832***	-0.0460***	-0.0036	0.0371***	0.0340***	0.0404***	-0.0863***
	(0.0117)	(0.0105)	(0.0099)	(0.0063)	(0.0043)	(0.0085)	(0.0097)
less than three-person household	-0.0435***	-0.0197*	0.0351	0.0478***	0.1333***	0.0571***	0.0106**
	(0.0101)	(0.0104)	(0.0298)	(0.0075)	(0.0100)	(0.0161)	(0.0048)
three-person household	0.0052	0.0027	-0.0062	0.0032	0.0227***	0.0114***	-0.0006
	(0.0053)	(0.0065)	(0.0101)	(0.0020)	(0.0056)	(0.0039)	(0.0019)
at least four-person household	-0.0101**	-0.0038	0.0262*	0.0256***	0.0235***	0.0043	0.0246***
	(0.0045)	(0.0026)	(0.0158)	(0.0045)	(0.0044)	(0.0096)	(0.0056)
Total	-0.4987***	-0.2284***	-0.1037	-0.0941***	0.4122***	0.2511***	-0.1826***
	(0.0447)	(0.0418)	(0.0872)	(0.0266)	(0.0294)	(0.0347)	(0.0406)
Unexplained							
age	0.7713	-0.8892	2.2722	2.4790	3.9704***	1.0404	0.4196
	(0.7719)	(0.7976)	(3.0610)	(1.5648)	(0.9775)	(1.1566)	(1.8306)
age^2	-0.3699	0.4826	-1.6997	-0.8923	-2.7872***	-0.5847	0.0669
	(0.4627)	(0.4335)	(1.8498)	(0.8767)	(0.5998)	(0.7425)	(1.1218)
gross household income	-19.9310**	1.8150	32.3487	8.2705	-3.6420	-24.3308	-5.6931
	(8.8568)	(12.7343)	(35.9861)	(15.9351)	(7.3538)	(16.7718)	(11.4895)
gross household income^2	8.7969*	-1.7890	-16.2960	-4.5730	2.9160	11.7634	2.6252
	(4.5560)	(6.4519)	(18.3541)	(7.6736)	(3.8032)	(8.2982)	(6.0608)
urban area	0.0300	0.0245	-0.0094	-0.0091	-0.0291	0.1438***	-0.0589*
	(0.0275)	(0.0402)	(0.0681)	(0.0160)	(0.0196)	(0.0341)	(0.0315)
less than secondary education	0.0030	-0.0072	0.0242	0.0623	-0.0205**	0.0397*	0.1090***
	(0.0205)	(0.0294)	(0.0529)	(0.0462)	(0.0105)	(0.0226)	(0.0387)
secondary education	-0.0078	0.0149	-0.0210	0.0646	-0.0103	-0.0339	-0.0520*
	(0.0238)	(0.0201)	(0.0573)	(0.0421)	(0.0186)	(0.0254)	(0.0302)
tertiary education	0.0019	-0.0080	-0.0094	-0.0113	0.0587***	-0.0179	-0.0221
	(0.0154)	(0.0188)	(0.0775)	(0.0077)	(0.0196)	(0.0236)	(0.0252)
houseowner	-0.0137	0.0399	-0.0812	-0.0402*	0.0030	-0.0371	-0.0249
	(0.0100)	(0.0260)	(0.0759)	(0.0239)	(0.0139)	(0.0618)	(0.0289)
single	-0.0729***	0.0371	0.0066	-0.1424***	-0.0004	-0.0930***	0.0630**
	(0.0241)	(0.0245)	(0.0452)	(0.0494)	(0.0199)	(0.0348)	(0.0274)
child(ren) in household	0.0903*	0.0341	0.1244*	0.0009	0.0023	0.0003	0.0433
	(0.0476)	(0.0511)	(0.0731)	(0.0115)	(0.0087)	(0.0105)	(0.0888)
less than three-person household	0.0020	-0.1835***	0.2678	-0.2899*	-0.1834***	-0.0152	0.0632
	(0.0543)	(0.0605)	(0.2311)	(0.1529)	(0.0491)	(0.0871)	(0.0424)
three-person household	-0.0141	0.0290*	-0.0257	0.0016	-0.0216*	0.0429***	-0.0376
	(0.0126)	(0.0148)	(0.0388)	(0.0106)	(0.0110)	(0.0148)	(0.0278)
at least four-person household	0.0315	0.0641**	-0.1185	0.0063	0.0000	-0.0261**	-0.0199
	(0.0305)	(0.0321)	(0.1266)	(0.0058)	(0.0000)	(0.0125)	(0.0489)
Total	0.2959***	0.0992	0.3781	-0.1602***	0.0226	-0.0380	-0.7950
	(0.0759)	(0.0849)	(0.4002)	(0.0584)	(0.0464)	(0.0704)	(0.5409)
Observations	4219	3875	2183	7111	8697	3800	6201

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 44: Oaxaca decompositions for total benefits and exclusively migrant households (level equation)

	FR	GR	IE	IT	LT	LU	LV
Differential							
Prediction_1	9.1640***	7.9631***	9.1498***	7.8040***	7.8461***	9.4046***	7.6440***
	(0.0441)	(0.0877)	(0.0613)	(0.0581)	(0.0703)	(0.0235)	(0.0344)
Prediction_2	9.0568***	9.0351***	9.4563***	9.0233***	7.5999***	10.3087***	7.3908***
	(0.0149)	(0.0163)	(0.0160)	(0.0118)	(0.0192)	(0.0341)	(0.0197)
Difference	0.1072**	-1.0720***	-0.3065***	-1.2193***	0.2462***	-0.9042***	0.2532***
	(0.0465)	(0.0892)	(0.0633)	(0.0593)	(0.0729)	(0.0414)	(0.0396)
Adjusted	-0.1149*	-0.3068	-0.3642***	-1.8744***	0.0559	-1.2753***	0.1974***
	(0.0637)	(0.6633)	(0.1139)	(0.3760)	(0.0780)	(0.0568)	(0.0546)
Explained							
age	0.0506**	-0.1819**	0.1930**	-0.2700***	-0.0918	0.5549**	-0.3451***
	(0.0221)	(0.0800)	(0.0902)	(0.0586)	(0.0696)	(0.2234)	(0.0944)
age^2	-0.0241*	0.4457***	-0.3073***	0.4342***	0.1347*	-0.3634	0.5385***
	(0.0139)	(0.0909)	(0.0915)	(0.0649)	(0.0808)	(0.2228)	(0.1111)
gross household income	0.3704***	0.2243*	-0.0002	0.3161***	-0.0370	-1.2768***	-0.3719***
	(0.1194)	(0.1177)	(0.1632)	(0.0720)	(0.0333)	(0.4868)	(0.0830)
gross household $income^2$	-0.5206***	-0.3732***	0.0306	-0.5096***	0.0294	1.0181**	0.3098***
	(0.1213)	(0.1277)	(0.1618)	(0.0807)	(0.0324)	(0.4693)	(0.0846)
urban area	0.0081**	0.0182***	0.0028	-0.0001	0.0244***	-0.0061	-0.0070
	(0.0039)	(0.0044)	(0.0018)	(0.0012)	(0.0058)	(0.0052)	(0.0065)
less than secondary education	0.0091**	0.0285***	-0.0047	0.0193***	-0.0001	-0.0018	0.0047*
	(0.0045)	(0.0069)	(0.0081)	(0.0040)	(0.0009)	(0.0020)	(0.0026)
secondary education	-0.0003	0.0056	0.0001	-0.0009	0.0020	0.0094	0.0005
	(0.0027)	(0.0038)	(0.0011)	(0.0018)	(0.0018)	(0.0064)	(0.0013)
tertiary education	0.0025*	0.0034	-0.0050	-0.0001	0.0032	0.0186**	0.0011
	(0.0014)	(0.0036)	(0.0074)	(0.0024)	(0.0028)	(0.0073)	(0.0012)
houseowner	-0.0182***	0.0014	0.0381***	-0.0071	-0.0000	0.0427**	0.0010
	(0.0039)	(0.0090)	(0.0102)	(0.0056)	(0.0004)	(0.0197)	(0.0011)
single	-0.0006	0.0173***	0.0004	-0.0002	-0.0104**	0.0188***	0.0021
	(0.0020)	(0.0062)	(0.0007)	(0.0004)	(0.0045)	(0.0065)	(0.0023)
child(ren) in household	-0.0104*	-0.1116***	-0.0324***	-0.1670***	0.0873***	0.0000	0.0822***
	(0.0057)	(0.0152)	(0.0100)	(0.0135)	(0.0106)	(0.0000)	(0.0099)
less than three-person household	-0.0049	-0.0765***	-0.0030	-0.0457***	0.0186**	-0.3110***	-0.0024
	(0.0031)	(0.0131)	(0.0091)	(0.0081)	(0.0091)	(0.0386)	(0.0145)
three-person household	-0.0036*	0.0005	0.0021	0.0002	0.0142**	-0.0180**	0.0249***
	(0.0019)	(0.0015)	(0.0031)	(0.0030)	(0.0056)	(0.0077)	(0.0047)
at least four-person household	-0.0170***	-0.0637***	-0.0049	-0.0236***	-0.0239***	-0.1778***	-0.0563***
	(0.0056)	(0.0122)	(0.0052)	(0.0045)	(0.0067)	(0.0349)	(0.0089)
Total	-0.1799***	-0.1366**	-0.0815***	-0.4289***	0.2520***	-0.4370***	0.2604***
	(0.0328)	(0.0583)	(0.0273)	(0.0460)	(0.0275)	(0.0761)	(0.0261)
Unexplained							
age	-3.5296***	3.3777	1.2334	-2.6740**	1.6304	-1.4806**	-0.4460
	(0.9367)	(2.6671)	(0.9174)	(1.1598)	(1.5536)	(0.7035)	(0.9720)
age^2	2.1177***	-1.7010	-0.2432	2.0557***	-0.6873	1.5452***	0.0455
	(0.5612)	(1.6839)	(0.4478)	(0.6492)	(0.9717)	(0.3317)	(0.6401)
gross household income	6.3836	-46.9266**	18.2569	3.5614	-18.4453	-35.6937*	3.3358
	(12.1205)	(23.3951)	(22.9937)	(15.2131)	(13.2243)	(19.1893)	(7.2625)
gross household $income^2$	-4.1803	22.1983*	-11.3233	-1.7407	9.2047	13.0192	-1.9196
	(6.0331)	(11.7629)	(11.6429)	(7.8542)	(6.5650)	(9.4098)	(3.5944)
urban area	-0.0361	-0.0463	0.0138	-0.0229	0.0464	0.0247	0.0358
	(0.0327)	(0.0421)	(0.0228)	(0.0220)	(0.0387)	(0.0219)	(0.0274)
less than secondary education	0.0054	0.0989**	0.0057	0.1430***	0.0052	0.0182	-0.0237
	(0.0360)	(0.0465)	(0.0200)	(0.0347)	(0.0269)	(0.0257)	(0.0185)
secondary education	0.0148	-0.0517	0.0008	-0.0752**	0.0146	0.0187	0.0225
	(0.0175)	(0.0436)	(0.0224)	(0.0346)	(0.0171)	(0.0122)	(0.0184)
tertiary education	-0.0119	-0.0321	-0.0205	-0.0204	-0.0506	-0.0370*	0.0030
	(0.0142)	(0.0311)	(0.0503)	(0.0142)	(0.0407)	(0.0199)	(0.0140)
houseowner	-0.0182	-0.0649	0.0262	0.0037	0.0754	0.0840***	0.0004
	(0.0206)	(0.0629)	(0.0244)	(0.0282)	(0.1068)	(0.0251)	(0.0441)
single	0.0370	0.0135	0.1211***	-0.0018	-0.0862**	0.0381***	-0.0736**
	(0.0256)	(0.0418)	(0.0354)	(0.0279)	(0.0399)	(0.0129)	(0.0289)
child(ren) in household	0.0715***	0.1098**	0.2450***	0.3160***	0.0017	-0.0429	-0.0079
	(0.0263)	(0.0542)	(0.0858)	(0.0460)	(0.0072)	(0.0296)	(0.0060)
less than three-person household	-0.1716***	0.2347**	-0.0274	-0.1189	-0.1786*	-0.2100***	0.1609*
	(0.0583)	(0.1045)	(0.0529)	(0.0887)	(0.1061)	(0.0266)	(0.0860)
three-person household	-0.0225**	-0.1402***	-0.0554**	-0.0193	0.0209	-0.0049	0.0257***
	(0.0104)	(0.0377)	(0.0242)	(0.0227)	(0.0167)	(0.0189)	(0.0088)
at least four-person household	0.1507***	-0.0919	0.1169***	0.1338**	0.0020	0.3967***	-0.0187***
	(0.0296)	(0.1261)	(0.0407)	(0.0567)	(0.0091)	(0.0465)	(0.0063)
Total	0.0650	-0.1703	-0.2828**	-1.4455***	-0.1961***	-0.8383***	-0.0631
	(0.0638)	(0.6661)	(0.1160)	(0.3784)	(0.0738)	(0.0960)	(0.0547)
Observations	8082	4032	3984	14369	4081	2354	4174

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 45: Oaxaca decompositions for total benefits and exclusively migrant households (level equation)

	NL	PT	SE	SI	UK
Differential					
Prediction_1	8.7173***	7.5489***	8.7774***	7.7476***	8.7393***
	(0.0961)	(0.1850)	(0.0643)	(0.0564)	(0.0585)
Prediction_2	8.6320***	8.1187***	8.7821***	7.8988***	8.9491***
	(0.0173)	(0.0262)	(0.0224)	(0.0158)	(0.0150)
Difference	0.0853	-0.5697***	-0.0047	-0.1512***	-0.2098***
	(0.0977)	(0.1868)	(0.0680)	(0.0585)	(0.0604)
Adjusted	0.0511	-0.8094	-0.1960*	-0.3344***	-0.0587
	(0.1205)	(0.5216)	(0.1134)	(0.1288)	(0.0922)
Explained					
age	-0.1650**	-0.0855	-0.1088***	-0.0556**	0.2739***
	(0.0653)	(0.0897)	(0.0397)	(0.0226)	(0.0562)
age^2	0.0656**	0.2191*	0.0623	-0.0060	-0.3109***
	(0.0333)	(0.1158)	(0.0391)	(0.0148)	(0.0616)
gross household income	0.0830	0.4369	-0.1522	0.2104	-0.6455***
	(0.1106)	(0.4086)	(0.2197)	(0.1318)	(0.1509)
gross household income^2	-0.1073	-0.4331	0.1006	-0.2207	0.5985***
	(0.1101)	(0.4291)	(0.2165)	(0.1348)	(0.1437)
less than secondary	-0.0035	0.0077	-0.0032	-0.0115***	-0.0004
	(0.0023)	(0.0073)	(0.0026)	(0.0040)	(0.0023)
secondary education	-0.0014	0.0002	-0.0008	0.0034**	-0.0045
	(0.0018)	(0.0053)	(0.0016)	(0.0017)	(0.0028)
tertiary education	-0.0002	0.0026	-0.0003	-0.0101***	0.0092***
	(0.0006)	(0.0037)	(0.0008)	(0.0027)	(0.0033)
houseowner	-0.0046	0.0256***	-0.0073	-0.0045*	0.0476***
	(0.0046)	(0.0090)	(0.0066)	(0.0025)	(0.0064)
single	0.0358***	0.0067	-0.0008	-0.0008	-0.0003
	(0.0055)	(0.0046)	(0.0010)	(0.0013)	(0.0006)
child(ren) in household	0.0209	-0.2805***	-0.0025	-0.0014	-0.0464***
	(0.0137)	(0.0524)	(0.0045)	(0.0012)	(0.0094)
less than three-person household	0.0372**	-0.0956***	-0.0551***	0.0115	-0.0489***
	(0.0163)	(0.0284)	(0.0190)	(0.0071)	(0.0093)
three-person household	-0.0130	-0.0047	-0.0006	0.0019	-0.0031
	(0.0102)	(0.0111)	(0.0039)	(0.0019)	(0.0028)
at least four-person household	0.0083**	-0.0472***	-0.0373***	0.0039	-0.0231***
	(0.0037)	(0.0183)	(0.0129)	(0.0048)	(0.0057)
Total	0.0077	-0.5060***	-0.2271***	-0.0861***	-0.1408***
	(0.0745)	(0.1497)	(0.0434)	(0.0300)	(0.0370)
urban area		-0.0050	-0.0052		0.0061**
		(0.0055)	(0.0035)		(0.0026)
Unexplained					
age	-0.6231	3.2402	0.2847	-1.5844*	0.9530
	(1.2517)	(4.1640)	(0.9799)	(0.8679)	(1.0667)
age^2	0.7987	-1.2799	0.0871	1.0066*	-0.8318
	(0.7438)	(2.4713)	(0.6082)	(0.5542)	(0.6084)
gross household income	-77.1192*	61.4181***	-1.0050	70.1499**	3.1773
	(44.1116)	(18.6269)	(12.7160)	(29.2175)	(7.2883)
gross household income^2	37.5299*	-32.8716***	-0.8400	-36.9870**	-2.9598
	(22.1932)	(9.8172)	(6.6742)	(15.1747)	(3.8080)
less than secondary education	0.0799*	-0.2458*	0.0663**	-0.0802**	0.0055
	(0.0435)	(0.1378)	(0.0308)	(0.0349)	(0.0251)
secondary education	-0.0162	-0.0745	0.0033	-0.0608	-0.0101
	(0.0354)	(0.0606)	(0.0313)	(0.0386)	(0.0187)
tertiary education	-0.0437	0.1245*	-0.0608**	0.0266**	0.0122
	(0.0342)	(0.0638)	(0.0271)	(0.0115)	(0.0342)
houseowner	-0.0258	0.0153	-0.0446	-0.0552	0.0500*
	(0.0366)	(0.0968)	(0.0302)	(0.0392)	(0.0291)
single	0.1115	-0.0762	0.0149	-0.0216	0.0432
	(0.0767)	(0.0900)	(0.0384)	(0.0297)	(0.0333)
child(ren) in household	0.0809	0.1442	0.0521	0.0370	0.0360
	(0.0655)	(0.2629)	(0.0693)	(0.0233)	(0.0479)
less than three-person household	-0.4014***	0.1069	-0.1766***	0.0195	0.0036
	(0.1256)	(0.1569)	(0.0648)	(0.0440)	(0.0631)
three-person household	0.0446*	-0.0825	-0.0054	-0.0595***	-0.0281
	(0.0257)	(0.0700)	(0.0165)	(0.0162)	(0.0172)
at least four-person household	0.0899**	-0.0146	0.1447***	0.1144**	0.0532
	(0.0413)	(0.2083)	(0.0436)	(0.0463)	(0.0380)
Total	0.0434	-0.3035	0.0311	-0.2483**	0.0821
	(0.1133)	(0.5103)	(0.1130)	(0.1259)	(0.0897)
urban area		0.0447	0.0096		0.0207
		(0.0979)	(0.0203)		(0.0921)
Observations	6164	3128	3556	6474	6047

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 46: Oaxaca decompositions for total benefits and mixed households (level equation)

	AT	BE	CY	CZ	DE	EE	ES
Differential							
Prediction_1	9.3784***	8.8027***	8.1080***	8.4527***	9.6099***	7.7790***	8.8935***
	(0.0605)	(0.0546)	(0.0713)	(0.0590)	(0.0348)	(0.0535)	(0.0655)
Prediction_2	9.3593***	8.9490***	8.3892***	8.2014***	9.0252***	7.5066***	8.9964***
	(0.0174)	(0.0183)	(0.0307)	(0.0127)	(0.0118)	(0.0218)	(0.0128)
Difference	0.0191	-0.1463**	-0.2812***	0.2513***	0.5847***	0.2723***	-0.1028
	(0.0629)	(0.0575)	(0.0777)	(0.0603)	(0.0367)	(0.0578)	(0.0667)
Adjusted	-0.0796	-0.2534***	-0.8480***	-0.1082	0.6268***	0.0803	-0.6428
	(0.0949)	(0.0832)	(0.1281)	(0.1101)	(0.0500)	(0.1630)	(0.4397)
Explained							
age	0.1141***	0.0632	0.0911	0.0218	-0.3267***	0.0448*	-0.4423***
	(0.0349)	(0.0438)	(0.1288)	(0.0165)	(0.0375)	(0.0238)	(0.0686)
age^2	-0.1309***	-0.1266***	-0.2418	-0.0185	0.4234***	-0.0772**	0.5230***
	(0.0380)	(0.0470)	(0.1522)	(0.0133)	(0.0454)	(0.0324)	(0.0780)
gross household income	0.1674	0.1245	-0.0567	0.1342*	0.3316***	0.1413**	-0.0025
	(0.1050)	(0.0879)	(0.0926)	(0.0814)	(0.0631)	(0.0601)	(0.0286)
gross household income^2	-0.1448	-0.1269	0.0867	-0.1210	-0.2931***	-0.1178**	0.0100
	(0.0891)	(0.0862)	(0.0989)	(0.0741)	(0.0600)	(0.0552)	(0.0516)
urban area	-0.0009	0.0004	0.0005	0.0001	-0.0002	-0.0406***	0.0027*
	(0.0017)	(0.0009)	(0.0017)	(0.0011)	(0.0003)	(0.0083)	(0.0014)
less than secondary education	0.0031	-0.0000	-0.0163	-0.0020	-0.0010	0.0028	0.0331***
	(0.0020)	(0.0012)	(0.0104)	(0.0020)	(0.0007)	(0.0020)	(0.0073)
secondary education	0.0004	0.0001	0.0001	0.0002	0.0012	0.0013	0.0001
	(0.0011)	(0.0003)	(0.0007)	(0.0006)	(0.0010)	(0.0014)	(0.0017)
tertiary education	0.0004	0.0006	-0.0156	0.0009	-0.0045***	0.0002	0.0215***
	(0.0014)	(0.0014)	(0.0101)	(0.0019)	(0.0016)	(0.0007)	(0.0053)
houseowner	0.0006	-0.0014	-0.0001	-0.0008	0.0009	0.0082***	-0.0053**
	(0.0018)	(0.0012)	(0.0005)	(0.0008)	(0.0009)	(0.0025)	(0.0023)
single	-0.0046	0.0042	-0.0123***	0.0260***	0.0126***	-0.0018	0.0052
	(0.0043)	(0.0038)	(0.0045)	(0.0041)	(0.0031)	(0.0035)	(0.0037)
child(ren) in household	-0.0639***	-0.0611***	-0.0349***	-0.0057	0.0216***	-0.0002	-0.0408***
	(0.0129)	(0.0106)	(0.0101)	(0.0067)	(0.0034)	(0.0006)	(0.0076)
less than three-person household	-0.0594***	-0.1069***	-0.1465***	-0.0143**	0.0389***	-0.0902***	0.0101**
	(0.0121)	(0.0148)	(0.0236)	(0.0057)	(0.0085)	(0.0171)	(0.0046)
three-person household	-0.0188**	-0.0226***	-0.0334***	-0.0012	0.0008	-0.0163***	-0.0023
	(0.0074)	(0.0073)	(0.0090)	(0.0011)	(0.0056)	(0.0058)	(0.0021)
at least four-person household	-0.0072**	-0.0131*	-0.0399***	-0.0065*	0.0065***	-0.0297***	0.0205***
	(0.0036)	(0.0073)	(0.0121)	(0.0038)	(0.0019)	(0.0092)	(0.0052)
Total	-0.2136***	-0.3236***	-0.4660***	0.0327	0.2471***	-0.2096***	0.0949**
	(0.0464)	(0.0344)	(0.0456)	(0.0226)	(0.0252)	(0.0307)	(0.0393)
Unexplained							
age	0.0997	-1.3214	-1.4615	1.6404	1.2849	-1.7535*	-3.6875***
	(1.2396)	(1.2463)	(1.3236)	(1.2720)	(0.8885)	(1.0537)	(1.3521)
age^2	0.3928	0.7620	1.1130*	0.1513	-1.4433***	1.4090**	2.0371**
	(0.7206)	(0.7029)	(0.6520)	(0.7195)	(0.5131)	(0.5946)	(0.8138)
gross household income	22.5366	-1.6657	-48.6074*	-0.9559	-44.7194***	3.1871	12.0982
	(18.7393)	(14.3477)	(28.5595)	(20.8001)	(16.3492)	(17.8084)	(17.9029)
gross household income^2	-12.8455	0.4974	20.4435	-0.4812	22.7057***	-1.9343	-6.8351
	(9.4898)	(7.3610)	(14.0229)	(10.8926)	(8.2125)	(9.1663)	(9.5100)
urban area	0.0143	-0.0196	-0.0750*	-0.0322*	-0.0145	0.0876**	0.0257
	(0.0213)	(0.0277)	(0.0418)	(0.0169)	(0.0134)	(0.0358)	(0.0395)
less than secondary education	0.0376**	0.0004	0.0220	-0.0137	-0.0049	0.0157	0.0469
	(0.0149)	(0.0242)	(0.0257)	(0.0177)	(0.0056)	(0.0184)	(0.0498)
secondary education	-0.1035**	0.0156	0.0564*	0.0113	-0.0139	-0.0485	0.0155
	(0.0417)	(0.0213)	(0.0322)	(0.0521)	(0.0177)	(0.0423)	(0.0217)
tertiary education	-0.0333	-0.0222	-0.1095**	0.0082	0.0481**	-0.0024	-0.0769**
	(0.0278)	(0.0295)	(0.0444)	(0.0146)	(0.0236)	(0.0322)	(0.0363)
houseowner	-0.0385	0.0138	-0.1907***	0.0013	0.0134	0.0459	0.0127
	(0.0392)	(0.0443)	(0.0574)	(0.0448)	(0.0189)	(0.0994)	(0.0531)
single	0.0250	0.0320**	0.0876***	0.0834***	0.0243***	0.1114***	0.0469
	(0.0161)	(0.0160)	(0.0235)	(0.0191)	(0.0065)	(0.0251)	(0.0697)
child(ren) in household	0.0270	0.0377	0.0779	-0.0101	-0.0226*	0.0103	-0.0499
	(0.0474)	(0.0393)	(0.0543)	(0.0236)	(0.0127)	(0.0237)	(0.0355)
less than three-person household	-0.1601**	0.0151	-0.1985***	-0.2191***	0.2091***	-0.1157**	-0.0680*
	(0.0629)	(0.0450)	(0.0448)	(0.0664)	(0.0620)	(0.0564)	(0.0368)
three-person household	0.0017	-0.0444*	0.0379	-0.0163	-0.0168	0.0313	0.0202
	(0.0205)	(0.0267)	(0.0274)	(0.0186)	(0.0102)	(0.0250)	(0.0248)
at least four-person household	0.1127***	0.0533	0.3797***	0.1109***	-0.0263**	0.1039*	0.0544
	(0.0377)	(0.0518)	(0.0834)	(0.0301)	(0.0103)	(0.0582)	(0.0475)
Total	0.1340	0.0701	-0.3820***	-0.1409	0.3796***	0.2899*	-0.7377*
	(0.0896)	(0.0764)	(0.1350)	(0.1094)	(0.0447)	(0.1620)	(0.4417)
Observations	4078	3921	2459	7232	9073	3838	6177

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 47: Oaxaca decompositions for total benefits and mixed households (level equation)

	FR	GR	IE	IT	LT	LU	LV
Differential							
Prediction_1	9.1220***	8.6862***	9.2553***	8.5207***	7.7564***	9.7179***	7.5129***
	(0.0500)	(0.1098)	(0.0585)	(0.0608)	(0.0642)	(0.0506)	(0.0486)
Prediction_2	9.0568***	9.0351***	9.4563***	9.0233***	7.5999***	10.0013***	7.3908***
	(0.0149)	(0.0163)	(0.0160)	(0.0118)	(0.0192)	(0.0296)	(0.0197)
Difference	0.0652	-0.3489***	-0.2010***	-0.5025***	0.1565**	-0.2835***	0.1221**
	(0.0521)	(0.1110)	(0.0606)	(0.0619)	(0.0670)	(0.0586)	(0.0524)
Adjusted	-0.1368	0.3651	-0.3234***	-0.3478	0.3584**	-0.2844***	0.2340*
	(0.1007)	(0.4741)	(0.0741)	(0.3430)	(0.1595)	(0.0908)	(0.1212)
Explained							
age	-0.0889***	-0.1354**	0.0641	-0.1911***	0.0348	0.1916*	0.1178***
	(0.0237)	(0.0608)	(0.0566)	(0.0421)	(0.0342)	(0.1104)	(0.0363)
age^2	0.0563**	0.3579***	-0.0838	0.3288***	-0.0552	-0.1449	-0.2048***
	(0.0234)	(0.0781)	(0.0637)	(0.0500)	(0.0421)	(0.1145)	(0.0482)
gross household income	-0.0748**	0.0056	1.0452***	0.0277	0.0736	0.0228	0.2702***
	(0.0365)	(0.0461)	(0.1848)	(0.0277)	(0.0519)	(0.0485)	(0.0659)
gross household income^2	0.1063**	-0.0079	-1.0300***	-0.0441	-0.0549	-0.0149	-0.2120***
	(0.0470)	(0.0774)	(0.1859)	(0.0434)	(0.0503)	(0.0374)	(0.0624)
urban area	0.0037**	0.0034	0.0008	-0.0025**	0.0166***	0.0003	-0.0053
	(0.0018)	(0.0037)	(0.0013)	(0.0011)	(0.0041)	(0.0007)	(0.0049)
less than secondary education	-0.0029*	0.0265***	-0.0031	0.0236***	-0.0024	0.0062	-0.0048*
	(0.0016)	(0.0072)	(0.0057)	(0.0040)	(0.0039)	(0.0043)	(0.0026)
secondary education	-0.0000	0.0015	0.0001	-0.0008	-0.0039	-0.0003	-0.0005
	(0.0001)	(0.0016)	(0.0003)	(0.0016)	(0.0024)	(0.0008)	(0.0013)
tertiary education	-0.0031*	0.0154***	-0.0019	0.0063**	0.0048*	0.0063	-0.0013
	(0.0017)	(0.0056)	(0.0062)	(0.0025)	(0.0026)	(0.0041)	(0.0012)
houseowner	0.0030*	0.0001	-0.0007	-0.0011	-0.0000	0.0004	0.0033**
	(0.0016)	(0.0008)	(0.0011)	(0.0009)	(0.0003)	(0.0016)	(0.0015)
single	0.0266***	0.0283***	0.0038	-0.0036*	0.0070**	0.0012	-0.0035
	(0.0041)	(0.0069)	(0.0061)	(0.0022)	(0.0031)	(0.0032)	(0.0039)
child(ren) in household	-0.0223***	-0.0691***	-0.0106*	-0.1234***	0.0112	-0.0517***	0.0074
	(0.0062)	(0.0146)	(0.0064)	(0.0118)	(0.0107)	(0.0101)	(0.0064)
less than three-person household	-0.0334***	-0.0693***	-0.0825***	-0.0979***	-0.0136*	-0.1902***	0.0013
	(0.0073)	(0.0133)	(0.0186)	(0.0090)	(0.0070)	(0.0272)	(0.0076)
three-person household	0.0091***	0.0007	0.0005	-0.0145***	-0.0166***	-0.0634***	-0.0194***
	(0.0028)	(0.0021)	(0.0025)	(0.0034)	(0.0057)	(0.0122)	(0.0053)
at least four-person household	-0.0475***	-0.0511***	-0.0647***	-0.0350***	0.0142***	-0.0320***	0.0231***
	(0.0076)	(0.0121)	(0.0142)	(0.0052)	(0.0051)	(0.0109)	(0.0061)
Total	-0.0568*	0.0694	-0.1695***	-0.2581***	0.0503*	-0.3184***	-0.0269
	(0.0326)	(0.0590)	(0.0226)	(0.0354)	(0.0292)	(0.0387)	(0.0239)
Unexplained							
age	-4.5436***	-0.4831	-3.7457***	-0.0456	0.5010	-2.2015**	-0.8929
	(1.1887)	(2.3185)	(1.1946)	(1.6490)	(1.3770)	(1.0691)	(1.1496)
age^2	2.3841***	0.1208	2.4766***	0.5262	0.0106	1.0699*	0.5497
	(0.7049)	(1.4435)	(0.6504)	(0.9811)	(0.8306)	(0.6066)	(0.6672)
gross household income	-4.5939	-31.3250	7.0233	-22.9902	-16.8092	-79.2907**	-24.0358**
	(18.8703)	(26.6538)	(12.8494)	(14.7075)	(16.2432)	(32.3973)	(11.9677)
gross household income^2	-0.4273	14.3301	-4.8121	11.2182	7.8066	38.7928**	11.7575*
	(9.3653)	(13.3992)	(6.5850)	(7.7922)	(8.2875)	(16.2104)	(6.1082)
urban area	-0.0070	-0.0725**	-0.0367*	-0.0053	0.0427	-0.0243	0.0251
	(0.0259)	(0.0353)	(0.0201)	(0.0188)	(0.0344)	(0.0189)	(0.0322)
less than secondary education	0.0084	-0.0099	0.0185	0.0296	0.0169	0.0347	0.0094
	(0.0202)	(0.0569)	(0.0259)	(0.0399)	(0.0178)	(0.0217)	(0.0170)
secondary education	0.0077	-0.0302	0.0070	0.0124	-0.0631**	0.0257	-0.0473
	(0.0270)	(0.0414)	(0.0173)	(0.0330)	(0.0280)	(0.0270)	(0.0337)
tertiary education	-0.0152	0.0465	-0.0574	-0.0173	0.0635	-0.0565**	0.0136
	(0.0234)	(0.0476)	(0.0450)	(0.0176)	(0.0506)	(0.0247)	(0.0241)
houseowner	-0.0223	-0.0747	0.0318	0.1118**	-0.0088	0.0999*	-0.0208
	(0.0380)	(0.1227)	(0.0642)	(0.0463)	(0.1146)	(0.0565)	(0.0721)
single	0.0451***	0.0301	0.0595***	0.0376**	0.0560*	0.0188	0.0554**
	(0.0155)	(0.0445)	(0.0174)	(0.0188)	(0.0321)	(0.0186)	(0.0248)
child(ren) in household	0.0354	0.0219	0.0076	0.0985***	-0.0110	-0.0437	-0.0340
	(0.0291)	(0.0511)	(0.0406)	(0.0314)	(0.0308)	(0.0321)	(0.0292)
less than three-person household	0.0570	0.0069	-0.1254***	-0.0477	-0.0953**	0.0135	0.0018
	(0.0399)	(0.0625)	(0.0471)	(0.0425)	(0.0407)	(0.0504)	(0.0370)
three-person household	-0.0544***	-0.0005	-0.0024	0.0053	0.0136	-0.0749**	0.0036
	(0.0174)	(0.0379)	(0.0223)	(0.0283)	(0.0236)	(0.0356)	(0.0211)
at least four-person household	0.0533	-0.0078	0.2300***	0.0696	0.0621*	0.0680	-0.0064
	(0.0460)	(0.0763)	(0.0619)	(0.0500)	(0.0336)	(0.0493)	(0.0373)
Total	-0.0800	0.2957	-0.1539**	-0.0897	0.3081*	0.0340	0.2608**
	(0.1006)	(0.4752)	(0.0757)	(0.3430)	(0.1602)	(0.0853)	(0.1222)
Observations	8066	3994	4033	14507	4246	1863	4197

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 48: Oaxaca decompositions for total benefits and mixed households (level equation)

	NL	PT	SE	SI	UK
Differential					
Prediction_1	8.2014***	7.6515***	8.5711***	7.9281***	8.5300***
	(0.0711)	(0.1194)	(0.0728)	(0.0423)	(0.0694)
Prediction_2	8.6320***	8.1187***	8.7821***	7.8988***	8.9491***
	(0.0173)	(0.0262)	(0.0224)	(0.0158)	(0.0150)
Difference	-0.4306***	-0.4672***	-0.2109***	0.0293	-0.4191***
	(0.0732)	(0.1223)	(0.0762)	(0.0452)	(0.0710)
Adjusted	-0.5266***	-0.8828*	-0.3247**	0.0559	-0.5348***
	(0.1007)	(0.5313)	(0.1359)	(0.0787)	(0.0994)
Explained					
age	-0.2278***	-0.0973	-0.1031***	0.0149	0.3424***
	(0.0489)	(0.1005)	(0.0394)	(0.0137)	(0.0589)
age^2	0.1172***	0.2508**	0.0653	0.0008	-0.4124***
	(0.0336)	(0.1238)	(0.0411)	(0.0023)	(0.0644)
gross household income	-0.0543	-0.8155***	0.0286	-0.0484	0.9082***
	(0.0727)	(0.2461)	(0.0440)	(0.0353)	(0.1538)
gross household income^2	0.0715	0.9192***	-0.0203	0.0473	-0.9241***
	(0.0739)	(0.2742)	(0.0448)	(0.0347)	(0.1547)
less than secondary education	0.0110***	0.0102	0.0003	0.0002	0.0122***
	(0.0036)	(0.0091)	(0.0012)	(0.0012)	(0.0034)
secondary education	0.0037*	0.0002	-0.0009	-0.0006	-0.0029
	(0.0019)	(0.0064)	(0.0017)	(0.0009)	(0.0019)
tertiary education	0.0007	0.0041	0.0023	-0.0011	0.0143***
	(0.0021)	(0.0050)	(0.0024)	(0.0016)	(0.0048)
houseowner	0.0013	-0.0084**	0.0014	0.0009	-0.0193***
	(0.0013)	(0.0037)	(0.0014)	(0.0006)	(0.0045)
single	-0.0212***	-0.0042	0.0051	0.0011	0.0068
	(0.0038)	(0.0027)	(0.0034)	(0.0017)	(0.0048)
child(ren) in household	-0.0673***	-0.1928***	-0.0049	-0.0010	-0.0504***
	(0.0125)	(0.0339)	(0.0087)	(0.0009)	(0.0100)
less than three-person household	-0.1027***	-0.1551***	-0.1387***	-0.0139***	-0.0911***
	(0.0145)	(0.0214)	(0.0227)	(0.0051)	(0.0121)
three-person household	-0.0422***	-0.0314***	-0.0171***	-0.0034**	-0.0142***
	(0.0099)	(0.0094)	(0.0061)	(0.0017)	(0.0042)
at least four-person household	-0.0083**	-0.0469***	-0.0570***	-0.0024	-0.0327***
	(0.0036)	(0.0131)	(0.0152)	(0.0036)	(0.0072)
Total	-0.4058***	-0.3758***	-0.2421***	-0.0048	-0.3222***
	(0.0548)	(0.0831)	(0.0447)	(0.0205)	(0.0365)
urban area		-0.0017	-0.0022		0.0020*
		(0.0020)	(0.0018)		(0.0011)
Unexplained					
age	-2.9567**	-2.0575	-0.4252	1.0434	-2.7487*
	(1.2079)	(2.9353)	(1.2563)	(0.6669)	(1.4194)
age^2	1.6417**	2.0114	0.1421	-0.2755	1.9255**
	(0.7524)	(1.5751)	(0.8079)	(0.3995)	(0.8060)
gross household income	12.1421	27.5531	35.1722***	-27.7376	-24.9226*
	(19.7885)	(29.8378)	(11.4889)	(24.1954)	(13.9493)
gross household income^2	-7.2549	-16.1316	-20.2343***	14.0837	12.3951*
	(9.9859)	(15.2388)	(6.1607)	(12.3270)	(7.1928)
less than secondary education	0.0040	-0.0355	-0.0107	-0.0007	0.0474**
	(0.0155)	(0.1038)	(0.0258)	(0.0156)	(0.0209)
secondary education	-0.0002	-0.0482	-0.0172	0.0606**	-0.0125
	(0.0313)	(0.0458)	(0.0333)	(0.0284)	(0.0268)
tertiary education	-0.0112	0.0537	0.0333	-0.0161	-0.1161**
	(0.0359)	(0.0372)	(0.0354)	(0.0113)	(0.0462)
houseowner	-0.0278	-0.0274	-0.0299	-0.0921**	0.0308
	(0.0551)	(0.1524)	(0.0670)	(0.0433)	(0.0662)
single	-0.0429**	0.1455***	0.0090	0.0411***	0.0295**
	(0.0170)	(0.0434)	(0.0281)	(0.0157)	(0.0149)
child(ren) in household	0.1603	0.1570	0.0262	-0.0252	0.1065*
	(0.1015)	(0.1232)	(0.1056)	(0.0208)	(0.0613)
less than three-person household	0.0261	-0.0627	0.0912	-0.0221	0.0154
	(0.0477)	(0.0426)	(0.0604)	(0.0197)	(0.0454)
three-person household	-0.0157	-0.0689	-0.0668**	-0.0198	-0.0416*
	(0.0239)	(0.0590)	(0.0263)	(0.0136)	(0.0251)
at least four-person household	-0.0089	0.2705***	0.0186	0.0717***	0.0475
	(0.0507)	(0.0929)	(0.0517)	(0.0263)	(0.0433)
Total	-0.1208	-0.5069	-0.0826	0.0607	-0.2126**
	(0.0873)	(0.5303)	(0.1281)	(0.0757)	(0.0935)
urban area		0.0081	0.0404**		-0.0173
		(0.0598)	(0.0182)		(0.0633)
Observations	6271	3237	3472	6888	6012

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

2.2 Net contributions

Tabelle: 49: Oaxaca decompositions for net contributions and migrant households

	AT	BE	CY	CZ	DE	EE	ES
Differential							
Prediction_1	-1993.62***	2236.63***	-2122.19***	-3037.48***	-8998.02***	-1746.54***	293.79
	(563.38)	(523.20)	(481.99)	(219.18)	(497.39)	(114.17)	(253.52)
Prediction_2	-1292.79***	2125.61***	-4578.27***	-1697.16***	764.33***	-737.11***	-2077.44***
	(313.70)	(281.87)	(274.75)	(55.85)	(186.69)	(64.70)	(106.91)
Difference	-700.82	111.03	2456.08***	-1340.32***	-9762.35***	-1009.43***	2371.22***
	(644.83)	(594.30)	(554.80)	(226.18)	(531.27)	(131.23)	(275.14)
Explained							
age	2148.61***	1510.71***	1956.94***	-320.95***	-3429.25***	-283.41***	1455.78***
	(291.76)	(167.19)	(238.25)	(64.87)	(217.39)	(42.45)	(93.80)
gross household income	-2746.20***	-1730.38***	5.24	-300.79**	-1530.21***	-321.55***	-860.17***
	(329.77)	(434.04)	(58.60)	(126.53)	(248.28)	(61.58)	(102.96)
urban area	-128.33*	-37.34	-6.71	-0.30	-9.88*	-1.09	-12.42*
	(71.27)	(33.73)	(14.88)	(1.76)	(5.95)	(22.15)	(6.38)
less than secondary education	101.34***	2.52	146.81*	2.94	-37.74***	-6.72	22.80
	(36.47)	(6.46)	(88.68)	(10.59)	(14.06)	(6.74)	(14.61)
secondary education	73.00**	0.61	-9.68	18.28**	-51.19***	-4.10	-32.94**
	(28.38)	(5.43)	(25.31)	(7.37)	(16.90)	(3.58)	(15.34)
tertiary education	-8.21	0.16	373.85***	-1.02	12.09	15.20**	5.09
	(13.57)	(1.51)	(96.71)	(2.03)	(8.69)	(7.01)	(8.24)
houseowner	113.98	272.15***	-31.81	34.19***	-4.99	-7.44*	287.22***
	(69.75)	(49.37)	(38.15)	(7.87)	(8.57)	(4.14)	(45.12)
single	71.09*	-6.02	57.55**	-12.18	-43.74	-13.76**	80.54***
	(37.46)	(20.12)	(26.92)	(8.39)	(26.73)	(5.48)	(25.09)
child(ren) in household	185.29***	-14.60	31.85	2.31	90.05***	22.49***	321.40***
	(59.14)	(36.53)	(42.19)	(2.79)	(21.13)	(7.62)	(35.31)
less than three-person household	278.83***	783.13***	234.84***	-55.77**	-236.19***	-8.65	40.05*
	(69.50)	(109.27)	(72.70)	(22.08)	(62.16)	(6.76)	(20.82)
three-person household	3.65	3.35	-52.40	4.03	-2.59	-2.13	-2.57
	(7.21)	(9.79)	(42.44)	(4.98)	(4.48)	(2.27)	(10.24)
at least four-person household	218.01***	617.10***	95.95*	-54.34**	-188.81***	-19.83**	136.93***
	(60.54)	(96.53)	(57.46)	(22.89)	(43.42)	(8.40)	(25.49)
Total	553.08	1615.56***	2853.32***	-659.60***	-5400.97***	-630.80***	2118.47***
	(500.65)	(519.34)	(300.89)	(173.08)	(377.18)	(101.79)	(180.90)
Unexplained							
age	3433.83*	2355.85	5214.73***	-2144.97***	-3640.85*	339.25	2281.58***
	(1843.10)	(1567.41)	(1883.60)	(740.78)	(1881.61)	(442.91)	(883.14)
gross household income	-3015.05***	-4643.26***	4988.77***	-1241.80***	-2596.36***	-239.23	98.92
	(870.72)	(709.22)	(819.39)	(283.91)	(658.24)	(181.06)	(393.55)
urban area	-22.22	528.68	526.47	83.54	591.44***	51.47	198.83
	(324.41)	(325.30)	(321.28)	(61.10)	(220.72)	(67.09)	(137.51)
less than secondary education	-519.04**	-636.45***	-217.83	-11.13	205.45**	-19.83	-37.16
	(203.22)	(225.83)	(196.17)	(76.29)	(99.91)	(37.14)	(141.00)
secondary education	220.38	107.70	125.45	-240.17*	-166.11	85.34	203.25*
	(335.82)	(190.55)	(243.29)	(144.69)	(232.71)	(66.39)	(106.30)
tertiary education	594.40**	539.04**	243.64	60.17	-643.60**	-26.16	-202.82
	(258.47)	(237.96)	(341.43)	(49.66)	(295.60)	(50.20)	(123.45)
houseowner	-482.95**	-71.56	137.33	11.63	-685.55***	-101.98	-98.39
	(205.44)	(280.92)	(347.48)	(112.54)	(219.54)	(155.40)	(144.14)
single	431.60*	-278.41	-226.81	-17.03	-54.23	-85.66	194.05*
	(261.65)	(208.94)	(166.14)	(80.68)	(138.32)	(55.90)	(113.71)
child(ren) in household	-972.77***	-177.81	566.15**	69.31	16.70	-3.18	-461.22***
	(366.72)	(267.62)	(285.38)	(54.89)	(139.59)	(32.30)	(167.85)
less than three-person household	-289.59	717.27	621.08*	627.38***	-157.16	-13.04	-125.73
	(706.73)	(442.62)	(347.96)	(231.58)	(739.15)	(102.78)	(148.34)
three-person household	223.64	0.03	-189.10	21.74	48.24	-20.29	201.29**
	(164.86)	(146.02)	(191.77)	(49.29)	(108.59)	(36.65)	(94.34)
at least four-person household	-234.98	-469.99*	-318.01	-183.01***	-19.55	29.88	-189.04
	(314.79)	(276.61)	(345.61)	(64.82)	(123.35)	(49.64)	(176.09)
Total	-1253.90**	-1504.53***	-397.24	-680.72***	-4361.37***	-378.62***	252.75
	(584.74)	(470.42)	(571.02)	(166.56)	(402.38)	(112.56)	(268.58)
Observations	5799	5454	3087	9867	12765	4872	11752

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 50: Oaxaca decompositions for net contributions and migrant households

	FR	GR	IE	IT	LT	LU	LV
Differential							
Prediction_1	-4592.88***	1685.43***	-2344.96**	2738.39***	-1517.72***	1746.85***	-600.48***
	(472.20)	(375.42)	(967.13)	(333.90)	(158.84)	(608.73)	(88.93)
Prediction_2	-4566.34***	-1070.54***	-8354.45***	-1591.85***	-1264.24***	-9806.30***	41.35
	(188.80)	(190.82)	(339.21)	(137.36)	(57.10)	(824.39)	(59.89)
Difference	-26.54	2755.96***	6009.49***	4330.25***	-253.48	11553.15***	-641.82***
	(508.55)	(421.13)	(1024.90)	(361.05)	(168.79)	(1024.78)	(107.22)
Explained							
age	-73.34	2044.35***	2301.52***	2701.96***	-58.38	8831.35***	-187.04***
	(212.29)	(159.68)	(270.38)	(124.91)	(59.95)	(626.69)	(24.71)
gross household income	-449.52***	-1994.72***	2062.49***	-1953.94***	22.28	-2410.54***	-242.35***
	(145.27)	(269.11)	(537.57)	(177.45)	(50.22)	(527.93)	(70.97)
urban area	-30.45	-34.99*	-45.38**	9.30	-10.55	-101.97	-16.41
	(33.12)	(18.34)	(22.01)	(7.25)	(9.19)	(97.93)	(11.57)
less than secondary education	25.47	-208.94***	-374.62***	3.47	26.62***	29.79	0.51
	(21.35)	(49.32)	(117.70)	(16.19)	(8.47)	(36.03)	(1.89)
secondary education	86.58***	-50.37**	-28.08	-69.33***	-0.10	58.79	-0.06
	(22.69)	(20.69)	(26.46)	(17.88)	(0.67)	(128.90)	(0.54)
tertiary education	5.71	-21.02	77.90	-2.41	24.60***	-58.50	0.36
	(8.42)	(30.00)	(110.92)	(7.00)	(8.85)	(126.32)	(2.48)
houseowner	-11.25	448.19***	-236.87***	337.77***	-0.28	887.79***	-6.41**
	(14.46)	(64.18)	(89.08)	(39.67)	(0.80)	(300.94)	(2.72)
single	-135.66***	79.68***	-11.02	62.38***	-0.48	-24.70	-8.27**
	(27.80)	(22.49)	(48.32)	(13.52)	(1.16)	(80.94)	(3.51)
child(ren) in household	-23.14	670.60***	273.56***	746.97***	8.63	937.12***	23.28***
	(16.41)	(77.20)	(104.51)	(57.74)	(5.75)	(269.74)	(7.05)
less than three-person household	614.00***	238.35***	164.28	177.66***	11.04	362.47	-16.77**
	(79.91)	(57.99)	(138.50)	(33.14)	(7.01)	(289.25)	(7.03)
three-person household	14.97	-103.03***	-125.45***	-62.72***	2.06	-43.47	0.18
	(9.84)	(30.42)	(46.08)	(21.90)	(2.57)	(71.49)	(0.72)
at least four-person household	430.87***	348.63***	440.79***	371.68***	2.44	388.10*	-20.04***
	(64.60)	(60.93)	(115.14)	(44.20)	(3.95)	(230.40)	(6.26)
Total	253.73	2580.23***	4479.42***	3479.19***	25.19	10554.46***	-480.85***
	(317.14)	(364.71)	(632.82)	(257.96)	(97.15)	(1064.32)	(87.22)
Unexplained							
age	7648.19***	136.98	-2211.21	2339.14**	1077.30	15841.92***	412.84
	(1751.29)	(1230.45)	(2475.06)	(1037.43)	(661.90)	(2604.21)	(327.89)
gross household income	3321.10***	-2473.97***	7997.69***	867.23**	852.98***	1598.92	-246.72**
	(550.96)	(437.76)	(1024.05)	(406.07)	(217.28)	(1298.51)	(100.75)
urban area	359.69	291.24*	536.08**	188.92*	-265.51***	591.11	-33.94
	(278.45)	(175.70)	(269.65)	(108.88)	(84.99)	(433.66)	(53.81)
less than secondary education	-173.10	-1103.44***	-248.42	-371.37**	-19.81	-555.86	-41.67
	(249.24)	(191.02)	(248.33)	(172.49)	(47.03)	(445.15)	(30.81)
secondary education	-159.38	339.72*	166.94	292.52	-3.74	-363.03	78.91*
	(199.12)	(178.35)	(236.66)	(179.73)	(55.10)	(283.20)	(46.58)
tertiary education	258.50	604.75***	214.46	45.18	69.09	1053.72**	-0.85
	(188.85)	(160.10)	(574.91)	(88.30)	(109.69)	(467.10)	(35.27)
houseowner	-182.24	337.30*	-450.81	-347.11**	-202.94	-400.01	-6.75
	(271.12)	(181.06)	(472.77)	(158.42)	(267.72)	(536.35)	(101.98)
single	-591.59***	-283.05**	-751.33**	54.11	49.71	-563.32*	-11.55
	(183.43)	(138.61)	(306.55)	(127.24)	(62.02)	(327.15)	(46.49)
child(ren) in household	246.37	-1276.27***	202.37	-995.10***	21.35	-952.01	49.69**
	(223.00)	(222.72)	(466.59)	(179.75)	(33.96)	(605.27)	(21.88)
less than three-person household	838.39*	-171.28	1247.88**	-20.95	17.93	979.49	87.23
	(434.16)	(228.66)	(554.54)	(220.48)	(136.98)	(667.76)	(92.09)
three-person household	277.35**	539.68***	-80.47	495.70***	-46.39	76.20	48.74*
	(129.70)	(149.01)	(235.61)	(118.41)	(50.06)	(301.61)	(26.40)
at least four-person household	-1026.77***	-569.02***	-1007.45**	-664.68***	41.45	-955.68*	-69.85**
	(265.74)	(219.00)	(471.94)	(172.09)	(61.90)	(570.18)	(30.09)
Total	-280.27	175.73	1530.07**	851.06***	-278.67**	998.68	-160.98**
	(447.07)	(399.20)	(757.49)	(314.98)	(137.42)	(1114.66)	(80.09)
Observations	10503	6823	4993	19983	5106	4204	5716

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 51: Oaxaca decompositions for net contributions and migrant households

	NL	PT	SE	SI	UK
Differential					
Prediction_1	15191.39***	2562.74***	5388.11***	3086.15***	3026.19***
	(907.17)	(551.95)	(507.16)	(247.80)	(593.61)
Prediction_2	12582.00***	-1570.42***	6547.09***	4142.64***	-2412.97***
	(265.03)	(168.92)	(225.23)	(131.47)	(208.28)
Difference	2609.39***	4133.16***	-1158.97**	-1056.49***	5439.16***
	(945.09)	(577.22)	(554.92)	(280.51)	(629.09)
Explained					
age	1851.22***	1603.81***	745.92***	12.02	2233.70***
	(337.34)	(178.15)	(180.82)	(67.15)	(197.11)
gross household income	-147.78	678.05***	-2365.61***	-1123.89***	1702.14***
	(546.56)	(215.84)	(373.83)	(212.31)	(406.76)
less than primary education	-81.21***	-264.32***	12.26	92.46***	-108.73***
	(25.10)	(68.12)	(11.05)	(20.66)	(26.45)
secondary education	-15.96	-11.83	13.67	0.36	54.66**
	(11.84)	(44.01)	(9.71)	(0.94)	(27.30)
tertiary education	-25.16*	-96.98**	0.01	78.08***	-231.59***
	(15.24)	(38.90)	(0.47)	(16.06)	(46.87)
houseowner	10.91	-9.60	24.12	9.09**	-195.82***
	(12.08)	(9.35)	(17.29)	(4.21)	(34.04)
single	-2.11	-12.94	52.24***	-3.67	-33.78
	(67.70)	(23.85)	(19.04)	(3.47)	(21.27)
child(ren) in household	-117.67***	194.05***	-251.44***	18.12**	-216.05***
	(36.96)	(49.85)	(49.71)	(8.81)	(41.40)
less than three-person household	725.36***	301.55***	745.39***	62.57**	703.50***
	(150.69)	(70.63)	(109.58)	(31.72)	(85.15)
three-person household	58.68**	-8.71	18.38	-2.15	-18.29
	(23.96)	(24.68)	(11.59)	(2.40)	(13.50)
at least four-person household	201.14*	178.21***	489.79***	16.30	575.18***
	(116.61)	(50.97)	(89.51)	(34.72)	(78.47)
Total	2348.54***	2639.69***	-720.63	-817.17***	3995.90***
	(717.91)	(275.56)	(443.47)	(244.91)	(484.06)
urban area		-41.55**	-15.15		-11.69
		(21.19)	(19.07)		(20.58)
Unexplained					
age	2601.63	1407.69	1736.61*	-1627.37***	2020.50
	(1691.34)	(1771.50)	(1019.13)	(547.43)	(1404.59)
gross household income	7179.66***	3081.83***	2084.36***	-758.57**	1435.87***
	(1016.16)	(686.17)	(634.18)	(296.49)	(526.03)
less than secondary education	-57.92	-214.71	-234.92*	108.63	-309.45**
	(181.14)	(396.34)	(130.89)	(74.99)	(136.54)
secondary education	259.36	209.98	181.07	333.17***	24.54
	(267.74)	(196.14)	(174.21)	(117.53)	(155.61)
tertiary education	-156.12	-97.55	156.52	-129.96***	797.46***
	(283.54)	(190.34)	(160.78)	(42.46)	(295.96)
houseowner	390.75	-255.48	433.15**	123.56	-370.65
	(382.60)	(390.02)	(213.32)	(157.93)	(274.47)
single	404.27	75.95	257.65	-185.40**	-248.55
	(268.15)	(213.91)	(190.32)	(73.43)	(169.44)
child(ren) in household	164.77	-178.99	99.57	24.96	393.30*
	(317.27)	(283.80)	(185.65)	(52.45)	(210.14)
less than three-person household	423.80	-451.56*	703.55**	6.31	345.84
	(617.86)	(246.22)	(354.18)	(86.95)	(384.25)
three-person household	-5.19	565.43**	118.33	122.55**	189.48
	(166.14)	(231.73)	(100.36)	(57.59)	(126.38)
at least four-person household	-208.82	-8.84	-612.88***	-222.40**	-511.18**
	(286.08)	(311.94)	(193.54)	(102.73)	(221.21)
Total	260.85	1493.47***	-438.34	-239.33	1443.26***
	(514.44)	(496.56)	(335.27)	(148.80)	(398.61)
urban area		-119.60	61.07		636.43
		(223.45)	(109.29)		(522.52)
Observations	9472	4424	5582	9001	8128

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 52: Oaxaca decompositions for net contributions and exclusively migrant households

	AT	BE	CY	CZ	DE	EE	ES
Differential							
Prediction_1	-1910.43***	809.81	-2070.78***	-2913.65***	-8119.05***	-2295.65***	414.48
	(573.68)	(626.93)	(728.60)	(284.71)	(659.77)	(141.69)	(263.94)
Prediction_2	-1292.79***	2125.61***	-4578.27***	-1697.16***	764.33***	-737.11***	-2077.44***
	(313.70)	(281.87)	(274.75)	(55.85)	(186.69)	(64.70)	(106.91)
Difference	-617.63	-1315.79*	2507.49***	-1216.49***	-8883.38***	-1558.54***	2491.91***
	(653.85)	(687.38)	(778.68)	(290.13)	(685.67)	(155.76)	(284.77)
Explained							
age	2346.03***	1566.04***	1425.16***	-733.37***	-3443.07***	-759.40***	1689.55***
	(356.93)	(217.49)	(297.70)	(107.02)	(337.59)	(67.00)	(116.73)
gross household income	-4720.15***	-3239.95***	354.20***	-892.02***	-3271.72***	-751.84***	-1636.28***
	(365.82)	(610.02)	(111.32)	(219.81)	(363.15)	(75.27)	(112.86)
urban area	-176.27*	-60.77	-4.03	-0.73	-38.38**	-1.24	-4.69
	(97.72)	(54.76)	(9.79)	(4.20)	(15.66)	(25.03)	(4.56)
less than secondary education	209.73***	11.73	136.44	6.36	-94.97***	-36.71***	18.31
	(60.20)	(12.24)	(84.63)	(22.90)	(31.42)	(11.83)	(12.22)
secondary education	106.45***	-0.32	17.46	34.84**	-55.04***	-9.92	-54.56**
	(37.83)	(7.10)	(41.30)	(13.68)	(20.72)	(8.21)	(25.04)
tertiary education	12.86	1.05	389.93***	-6.18	-4.46	19.66**	-41.79***
	(16.73)	(9.24)	(114.74)	(4.60)	(7.40)	(9.61)	(14.47)
houseowner	179.41	514.39***	-87.04	76.15***	84.97***	-3.52	432.07***
	(109.47)	(86.65)	(103.71)	(15.40)	(22.75)	(2.75)	(67.06)
single	16.65	1.93	-74.53*	116.61***	15.32	1.75	46.40
	(14.01)	(6.59)	(43.93)	(16.41)	(10.51)	(3.52)	(32.15)
child(ren) in household	175.25***	-8.14	5.76	6.50	86.54***	46.19***	380.59***
	(58.47)	(20.50)	(12.25)	(7.54)	(28.49)	(14.61)	(43.63)
less than three-person household	176.52***	63.69	-172.86**	-277.17***	-462.94***	-91.32***	34.56*
	(63.47)	(121.06)	(81.94)	(30.91)	(89.44)	(22.83)	(18.50)
three-person household	-5.68	-1.90	-16.71	26.78***	-21.76*	6.30	14.39
	(10.68)	(5.81)	(21.36)	(8.32)	(13.03)	(4.45)	(13.14)
at least four-person household	211.00***	146.56	-297.11***	-240.35***	-202.48***	-99.84***	141.38***
	(64.43)	(103.15)	(97.40)	(23.61)	(62.98)	(18.89)	(29.35)
Total	-1273.18**	-558.29	1516.86***	-1684.04***	-7259.54***	-1636.72***	1874.31***
	(594.79)	(710.94)	(474.59)	(283.10)	(541.96)	(128.49)	(236.92)
Unexplained							
age	5927.98***	3479.42**	170.92	-2280.76***	-1769.55	605.58	1414.80
	(1781.64)	(1580.64)	(2498.71)	(855.70)	(2265.07)	(560.06)	(907.34)
gross household income	-3418.57***	-5224.60***	5644.87***	-2413.68***	-5789.97***	-271.28	-1525.78***
	(854.98)	(691.93)	(1102.69)	(292.53)	(793.38)	(206.09)	(420.35)
urban area	31.27	458.95	287.64	89.61	813.86**	-26.43	258.00*
	(390.63)	(465.88)	(422.07)	(81.70)	(340.89)	(82.80)	(133.46)
less than secondary education	-657.01***	-528.67**	104.91	-377.41***	305.29*	34.60	-78.13
	(242.05)	(259.87)	(270.94)	(139.61)	(163.93)	(50.92)	(154.09)
secondary education	451.99	-123.92	560.27*	-249.71	-413.94	107.76*	257.62**
	(319.69)	(208.45)	(318.22)	(154.14)	(286.26)	(63.26)	(130.20)
tertiary education	401.02*	620.02**	-971.57**	146.12***	-318.37	-129.92**	-135.69
	(240.24)	(245.66)	(456.45)	(55.48)	(331.44)	(57.85)	(101.74)
houseowner	-97.36	-202.93	-199.07	137.21	-391.98*	101.61	18.97
	(125.45)	(214.18)	(293.77)	(96.51)	(215.96)	(153.44)	(103.53)
single	115.21	-185.39	324.47	215.83	148.83	285.95***	515.51***
	(351.61)	(293.82)	(310.45)	(195.45)	(309.02)	(80.50)	(125.75)
child(ren) in household	-1717.72***	-668.11**	-161.37	13.31	-507.48***	5.81	-1241.01***
	(385.68)	(307.74)	(324.77)	(52.25)	(194.03)	(22.48)	(195.44)
less than three-person household	-269.86	695.56	-55.63	668.96	-1755.71	-579.68***	-432.58**
	(830.41)	(739.06)	(809.46)	(533.25)	(1138.05)	(193.35)	(170.60)
three-person household	156.53	31.04	228.09	-63.92	154.93	-32.90	260.81***
	(143.07)	(135.91)	(218.86)	(47.20)	(117.65)	(34.90)	(94.59)
at least four-person household	-212.65	-309.43	-303.05	0.10	52.25	89.44***	33.54
	(328.35)	(258.25)	(307.21)	(32.38)	(161.98)	(30.51)	(186.05)
Total	655.54	-757.50	990.64	467.55**	-1623.83***	78.18	617.60**
	(647.70)	(553.52)	(779.89)	(227.25)	(548.63)	(133.29)	(311.31)
Observations	5408	4984	2631	9493	11760	4305	11231

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 53: Oaxaca decompositions for net contributions and exclusively migrant households

	FR	GR	IE	IT	LT	LU	LV
Differential							
Prediction_1	-7170.93***	1693.88***	-5451.35***	2663.76***	-1954.42***	3438.38***	-1360.42***
	(547.59)	(333.33)	(933.82)	(327.80)	(218.91)	(667.54)	(96.62)
Prediction_2	-4566.34***	-1070.54***	-8354.45***	-1591.85***	-1264.24***	-9806.30***	41.35
	(188.80)	(190.82)	(339.21)	(137.36)	(57.10)	(824.39)	(59.89)
Difference	-2604.59***	2764.42***	2903.09***	4255.61***	-690.18***	13244.67***	-1401.76***
	(579.22)	(384.09)	(993.52)	(355.41)	(226.23)	(1060.77)	(113.68)
Explained							
age	-1228.08***	2363.18***	2837.13***	3263.89***	-733.20***	9205.43***	-509.55***
	(310.79)	(192.30)	(338.12)	(163.99)	(98.61)	(650.00)	(43.59)
gross household income	-1550.26***	-3002.31***	-978.62*	-3377.39***	-196.05**	-2960.47***	-878.64***
	(179.04)	(295.31)	(542.08)	(207.23)	(81.50)	(593.73)	(80.17)
urban area	-41.70	-54.34*	-65.68**	-9.74	-13.53	-137.04	-18.74
	(45.35)	(27.93)	(31.21)	(10.22)	(11.83)	(131.32)	(13.22)
less than secondary education	68.88	-150.00***	-437.58***	2.57	-0.57	58.63	-9.84*
	(56.90)	(57.93)	(137.78)	(12.03)	(10.59)	(67.38)	(5.31)
secondary education	152.69***	-72.58**	-71.99*	-67.77***	0.70	78.34	1.62
	(36.97)	(28.55)	(41.52)	(19.62)	(4.26)	(171.70)	(2.58)
tertiary education	-39.47**	78.44**	83.89	-18.96*	19.64	-67.33	-4.02
	(18.77)	(36.21)	(119.54)	(10.58)	(12.87)	(145.35)	(3.55)
houseowner	-30.03	693.59***	-485.95***	609.38***	-0.47	1138.53***	-1.22
	(38.33)	(95.21)	(180.45)	(68.92)	(1.32)	(385.12)	(2.93)
single	-2.78	38.26**	-0.45	-35.24**	5.24	-21.36	13.17**
	(18.11)	(19.39)	(2.68)	(14.82)	(11.62)	(70.02)	(5.24)
child(ren) in household	-17.04	674.73***	276.01**	721.10***	19.98	1019.52***	44.93***
	(13.62)	(89.98)	(107.80)	(75.02)	(12.77)	(293.31)	(12.91)
less than three-person household	170.45*	192.81***	123.14	26.65	-69.77***	332.02	-121.58***
	(90.17)	(51.58)	(104.87)	(21.14)	(22.80)	(265.29)	(22.62)
three-person household	-14.93	-80.26**	-127.02**	59.59**	-5.98	-25.24	-1.67
	(10.58)	(33.50)	(53.62)	(27.46)	(6.56)	(42.21)	(6.36)
at least four-person household	258.61***	287.59***	285.31***	166.35***	-34.73**	402.15*	-79.12***
	(74.64)	(67.51)	(91.72)	(50.45)	(15.91)	(238.93)	(15.78)
Total	-2365.25***	2321.38***	1162.11*	2625.94***	-997.49***	11022.82***	-1526.51***
	(434.29)	(444.80)	(706.06)	(337.38)	(157.89)	(1217.46)	(102.08)
Unexplained							
age	8630.87***	1975.57*	-3895.70	5508.63***	250.57	16218.17***	-74.38
	(2003.63)	(1081.16)	(2519.84)	(960.29)	(856.63)	(2621.64)	(388.28)
gross household income	2173.51***	-3518.98***	1738.58	-592.22	156.51	1666.11	-392.63***
	(594.85)	(407.58)	(1216.11)	(412.63)	(218.59)	(1260.10)	(91.80)
urban area	3.54	117.86	388.83	338.65***	-399.70***	99.76	-140.31**
	(375.22)	(185.46)	(309.45)	(116.57)	(111.11)	(477.90)	(59.83)
less than secondary education	-296.13	-1084.43***	-63.49	-305.56*	36.01	-664.63	9.12
	(382.67)	(195.32)	(233.86)	(181.11)	(71.70)	(484.56)	(37.64)
secondary education	-179.92	198.65	313.34	359.60**	-13.37	-9.57	32.83
	(197.60)	(181.87)	(289.79)	(182.64)	(49.48)	(236.51)	(42.13)
tertiary education	260.27	517.34***	-591.04	-13.39	-34.39	645.84	-29.74
	(174.16)	(131.35)	(675.56)	(80.01)	(123.05)	(492.95)	(32.23)
houseowner	-174.76	347.49***	116.51	-56.49	-257.56	97.08	8.23
	(237.01)	(116.73)	(304.37)	(92.26)	(303.02)	(442.67)	(93.91)
single	-903.36***	-88.97	-1526.14***	184.94	595.49***	-307.38	258.69***
	(289.81)	(155.32)	(462.91)	(167.10)	(123.21)	(344.56)	(64.82)
child(ren) in household	50.90	-1642.05***	-1821.24***	-1786.53***	-0.41	-2262.73***	10.46
	(261.72)	(224.59)	(544.61)	(211.80)	(19.66)	(650.83)	(11.95)
less than three-person household	2597.91***	-196.20	537.08	-555.41*	-254.58	-12.80	-419.22**
	(659.92)	(249.10)	(748.67)	(331.30)	(311.39)	(722.11)	(177.67)
three-person household	120.12	600.77***	580.31**	474.79***	-140.84***	322.42	-36.32*
	(119.47)	(141.24)	(275.10)	(103.78)	(51.04)	(272.75)	(18.86)
at least four-person household	-1441.66***	-656.52***	-1278.08***	-414.84***	80.11**	-608.80	32.03***
	(299.40)	(200.59)	(448.33)	(154.63)	(36.23)	(588.21)	(11.88)
Total	-239.35	443.04	1740.98**	1629.68***	307.32*	2221.86*	124.75
	(545.71)	(451.85)	(878.00)	(365.79)	(175.66)	(1242.59)	(88.25)
Observations	9751	6553	4587	19089	4713	3642	4962

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 54: Oaxaca decompositions for net contributions and exclusively migrant households

	NL	PT	SE	SI	UK
Differential					
Prediction_1	3792.16***	1293.90*	1800.99***	1929.06***	582.03
	(1129.22)	(706.06)	(628.27)	(340.92)	(718.67)
Prediction_2	12582.00***	-1570.42***	6547.09***	4142.64***	-2412.97***
	(265.03)	(168.92)	(225.23)	(131.47)	(208.28)
Difference	-8789.84***	2864.31***	-4746.10***	-2213.58***	2995.00***
	(1159.90)	(725.98)	(667.42)	(365.39)	(748.24)
Explained					
age	1771.46***	1616.66***	930.18***	207.14*	2319.82***
	(579.88)	(269.31)	(240.90)	(107.69)	(260.85)
gross household income	-5492.51***	255.03	-5063.74***	-2992.12***	-507.56
	(711.55)	(377.47)	(451.88)	(302.71)	(487.76)
less than secondary education	67.41*	-238.20***	18.13	257.26***	-40.61
	(38.11)	(77.04)	(16.14)	(38.54)	(29.48)
secondary education	9.86	-9.81	11.23	3.26	73.94**
	(16.23)	(36.61)	(9.45)	(6.23)	(36.77)
tertiary education	25.25	-98.06*	-0.83	144.94***	-234.99***
	(21.39)	(51.97)	(6.01)	(23.27)	(50.08)
houseowner	45.62	-57.36	53.50	40.68***	-470.38***
	(49.15)	(46.84)	(37.72)	(14.39)	(59.61)
single	-1062.84***	-144.71***	-27.12	4.53	2.11
	(103.87)	(49.47)	(22.25)	(4.43)	(5.60)
child(ren) in household	30.44	197.00***	-211.55***	21.58	-225.26***
	(47.69)	(63.14)	(60.00)	(13.84)	(49.64)
less than three-person household	-421.17*	96.11	565.81***	-149.12***	519.02***
	(218.03)	(63.29)	(135.69)	(53.49)	(95.92)
three-person household	18.70	-1.86	4.86	3.17	-9.74
	(20.17)	(6.27)	(8.62)	(3.56)	(9.36)
at least four-person household	-511.30***	71.87	465.68***	-83.69	465.24***
	(158.47)	(61.51)	(113.64)	(55.13)	(92.68)
Total	-6505.86***	1513.01***	-3479.65***	-2475.58***	1165.64**
	(997.55)	(463.85)	(555.77)	(356.40)	(592.31)
urban area		-84.29**	-20.32		-16.21
		(41.72)	(25.58)		(28.53)
Unexplained					
age	1039.35	-2253.15	1413.11	115.59	3597.04**
	(2152.66)	(2124.03)	(1173.81)	(753.77)	(1692.61)
gross household income	-1893.65	-20.13	360.58	-1467.04***	238.75
	(1486.81)	(791.18)	(719.68)	(412.77)	(610.49)
less than secondary education	-584.44	201.43	-441.52**	277.04*	-290.72
	(369.05)	(523.88)	(175.54)	(144.42)	(193.95)
secondary education	421.34	88.41	39.51	723.31***	-186.65
	(360.34)	(234.08)	(219.96)	(166.82)	(166.51)
tertiary education	155.31	-162.15	453.58**	-195.64***	1129.15***
	(347.77)	(258.23)	(184.77)	(54.48)	(370.34)
houseowner	561.24	335.04	518.59***	75.70	-285.95
	(377.38)	(320.95)	(198.90)	(163.74)	(248.52)
single	-829.91	169.11	-32.74	-222.40*	-659.23**
	(758.52)	(380.95)	(279.44)	(121.80)	(298.04)
child(ren) in household	530.97	-287.23	131.06	73.85	162.33
	(400.39)	(414.76)	(209.45)	(73.99)	(275.76)
hless than three-person household	4151.60***	512.70	1414.38***	384.92**	748.94
	(1342.41)	(568.12)	(455.19)	(157.52)	(565.63)
three-person household	2.66	289.37	142.97	197.00***	201.66
	(211.60)	(245.52)	(111.48)	(70.71)	(146.41)
at least four-person household	-1041.16***	-729.37*	-1049.11***	-749.45***	-709.89***
	(339.28)	(387.23)	(241.90)	(142.69)	(273.47)
Total	-2283.98***	1351.30**	-1266.45***	262.00	1829.36***
	(755.78)	(635.42)	(433.52)	(222.63)	(496.39)
urban area		240.29	184.28		-133.23
		(380.41)	(148.31)		(884.69)
Observations	9007	4171	5189	7960	7663

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 55: Oaxaca decompositions for net contributions and mixed households

	AT	BE	CY	CZ	DE	EE	ES
Differential							
Prediction_1	-2131.06*	3869.89***	-2145.53***	-3116.94***	-9597.99***	-1256.50***	134.41
	(1163.33)	(861.26)	(621.66)	(311.23)	(706.36)	(173.33)	(476.66)
Prediction_2	-1292.79***	2125.61***	-4578.27***	-1697.16***	764.33***	-737.11***	-2077.44***
	(313.70)	(281.87)	(274.75)	(55.85)	(186.69)	(64.70)	(106.91)
Difference	-838.27	1744.28*	2432.74***	-1419.78***	-10362.32***	-519.39***	2211.85***
	(1204.89)	(906.22)	(679.67)	(316.20)	(730.62)	(185.01)	(488.50)
Explained							
age	1822.44***	1447.39***	2198.34***	-56.29	-3419.81***	141.37***	1147.07***
	(429.61)	(206.01)	(262.85)	(76.00)	(258.92)	(46.13)	(118.32)
gross household income	515.11	-2.42	-153.17*	78.61	-341.47	62.45	164.71
	(538.24)	(554.78)	(80.05)	(145.64)	(309.52)	(81.29)	(170.34)
urban area	-49.14	-10.53	-7.92	-0.03	9.58	-0.97	-22.62**
	(29.93)	(10.70)	(17.57)	(0.26)	(6.94)	(19.58)	(11.11)
less than secondary education	-77.73*	-8.03	151.52*	0.75	1.33	20.04**	28.73
	(40.57)	(10.46)	(91.79)	(2.72)	(9.94)	(8.55)	(18.57)
secondary education	17.73	1.68	-22.00	7.65	-48.56***	1.09	-4.39
	(32.61)	(7.62)	(30.22)	(4.77)	(17.88)	(1.97)	(6.59)
tertiary education	-43.01	-0.85	366.56***	2.29	23.39	11.22	67.00***
	(29.08)	(7.57)	(98.46)	(2.97)	(15.41)	(8.54)	(21.44)
houseowner	5.89	-5.14	-6.74	7.26	-66.39***	-10.93*	95.93***
	(11.83)	(31.55)	(10.04)	(6.61)	(18.24)	(5.94)	(22.12)
single	161.03*	-15.13	117.51***	-94.83***	-84.05	-27.60***	125.63***
	(83.29)	(50.48)	(40.74)	(13.68)	(51.13)	(10.24)	(36.76)
child(ren) in household	201.87***	-22.00	43.69	-0.39	92.45***	1.34	243.25***
	(68.91)	(55.03)	(57.72)	(1.31)	(24.98)	(4.58)	(39.87)
less than three-person household	447.85***	1606.66***	419.91***	86.30***	-81.42	65.12***	47.31*
	(110.23)	(168.33)	(116.04)	(29.78)	(79.19)	(17.31)	(24.87)
three-person household	19.06	9.35	-68.60	-10.57	10.50	-9.64	-24.97
	(34.12)	(27.08)	(55.30)	(7.22)	(8.11)	(6.42)	(16.32)
at least four-person household	229.61***	1155.72***	274.37***	65.02**	-179.49***	51.58***	131.04***
	(75.75)	(152.48)	(82.44)	(33.17)	(53.84)	(14.21)	(30.64)
Total	3570.37***	4103.93***	3460.01***	-2.21	-4132.34***	266.89**	2440.90***
	(718.34)	(650.28)	(303.77)	(207.00)	(483.76)	(117.95)	(230.29)
Unexplained							
age	-5266.68	-620.30	5917.13**	-5025.76***	-11155.72***	-1404.91**	2119.36
	(3861.12)	(2938.12)	(2356.03)	(1073.43)	(2860.76)	(600.04)	(1610.55)
gross household income	-1003.24	-3262.20**	4856.17***	464.80	-215.67	127.56	1751.07**
	(1756.12)	(1300.13)	(998.44)	(432.93)	(955.63)	(264.43)	(713.32)
urban area	-369.87	432.50	321.85	27.20	458.96*	22.08	136.91
	(424.91)	(394.46)	(397.04)	(72.17)	(262.75)	(84.71)	(262.79)
less than secondary education	-414.99	-663.23*	-371.74	58.55	86.99	-64.27	6.19
	(262.71)	(339.00)	(232.20)	(67.14)	(105.47)	(41.53)	(233.21)
secondary education	265.16	336.37	-17.15	-143.90	188.83	166.32	122.50
	(712.54)	(306.14)	(295.78)	(207.63)	(334.38)	(107.30)	(141.12)
tertiary education	941.76*	374.82	724.95*	-28.37	-799.93*	37.60	-271.04
	(549.81)	(406.28)	(405.47)	(71.79)	(446.87)	(70.21)	(266.65)
houseowner	-604.53	481.36	883.05*	-83.72	-571.83*	-162.69	101.09
	(636.96)	(632.35)	(505.73)	(180.44)	(340.83)	(260.59)	(379.25)
single	-422.13	-556.30**	-555.12***	-388.15***	-605.88***	-408.62***	-217.09
	(314.38)	(244.53)	(176.43)	(77.29)	(126.59)	(69.35)	(190.69)
child(ren) in household	-309.15	164.10	431.15	9.97	77.49	-58.01	104.96
	(671.60)	(441.23)	(368.78)	(80.12)	(189.15)	(57.97)	(257.88)
less than three-person household	-325.82	223.22	295.79	440.48*	258.76	-15.48	-8.97
	(1101.46)	(449.04)	(312.62)	(232.20)	(924.87)	(85.37)	(235.72)
three-person household	461.52	104.03	-179.36	32.51	141.14	-12.48	241.03
	(367.45)	(272.19)	(242.97)	(73.94)	(163.74)	(59.03)	(174.22)
at least four-person household	-396.11	-460.25	-155.46	-245.86**	-149.84	35.78	-361.01
	(558.68)	(508.58)	(478.23)	(109.97)	(166.90)	(95.25)	(299.70)
Total	-4408.63***	-2359.65***	-1027.27	-1417.58***	-6229.98***	-786.28***	-229.05
	(981.08)	(720.13)	(686.94)	(221.13)	(535.93)	(153.23)	(429.03)
Observations	5153	4916	2880	9627	12079	4366	11064

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 56: Oaxaca decompositions for net contributions and mixed households

	FR	GR	IE	IT	LT	LU	LV
Differential							
Prediction_1	-2103.97***	1671.39**	585.45	2808.60***	-1278.81***	-3851.43***	130.23
	(754.47)	(838.52)	(1652.88)	(571.35)	(214.57)	(1396.53)	(143.05)
Prediction_2	-4566.34***	-1070.54***	-8354.45***	-1591.85***	-1264.24***	-9806.30***	41.35
	(188.80)	(190.82)	(339.21)	(137.36)	(57.10)	(824.39)	(59.89)
Difference	2462.37***	2741.93***	8939.90***	4400.46***	-14.57	5954.86***	88.89
	(777.74)	(859.95)	(1687.33)	(587.63)	(222.04)	(1621.70)	(155.08)
Explained							
age	1041.47***	1515.34***	1796.26***	2173.34***	310.79***	7593.30***	123.06***
	(260.99)	(196.61)	(242.45)	(145.29)	(68.48)	(765.70)	(25.96)
gross household income	613.17***	-322.86	4931.32***	-614.88**	141.72**	-590.49	369.47***
	(214.17)	(467.69)	(848.31)	(262.14)	(59.54)	(719.96)	(98.06)
urban area	-19.58	-2.88	-26.23	27.22**	-8.92	14.10	-14.18
	(21.44)	(9.20)	(23.53)	(10.72)	(7.84)	(20.90)	(10.03)
less than secondary education	-16.44	-306.74***	-315.23***	4.31	41.49***	-65.68	10.46*
	(14.47)	(74.85)	(102.01)	(20.12)	(11.50)	(76.30)	(5.36)
secondary education	22.75	-13.52	13.34	-70.79***	-0.55	-5.93	-1.67
	(18.49)	(19.38)	(32.61)	(19.94)	(3.30)	(16.04)	(2.64)
tertiary education	49.33**	-186.04***	72.26	13.15	27.31***	-29.28	4.57
	(22.85)	(57.21)	(103.03)	(10.56)	(10.52)	(64.09)	(3.71)
houseowner	6.88	41.01	-1.90	82.25***	-0.18	57.94	-11.41***
	(9.12)	(37.76)	(20.23)	(20.69)	(0.68)	(53.35)	(3.99)
single	-263.93***	148.41***	-20.98	154.21***	-3.60	-35.75	-28.88***
	(50.43)	(38.54)	(92.01)	(26.40)	(7.99)	(117.18)	(10.59)
child(ren) in household	-29.03	663.73***	271.24**	771.31***	2.42	664.44***	2.46
	(20.80)	(108.24)	(105.84)	(74.24)	(2.89)	(206.74)	(3.85)
less than three-person household	1042.22***	313.90***	203.10	319.72***	55.25***	463.25	84.01***
	(116.97)	(77.96)	(171.30)	(56.65)	(18.58)	(370.26)	(17.17)
three-person household	43.83*	-140.82***	-123.97**	-177.78***	6.45	-103.80	1.96
	(24.59)	(47.20)	(52.18)	(34.85)	(7.07)	(170.13)	(7.45)
at least four-person household	597.18***	449.91***	587.46***	564.84***	22.77**	341.58*	36.77***
	(90.24)	(92.11)	(154.37)	(63.96)	(11.40)	(207.46)	(10.34)
Total	2782.15***	3009.73***	7608.79***	4281.86***	584.67***	9004.41***	524.60***
	(400.10)	(554.36)	(918.00)	(352.98)	(107.81)	(1112.92)	(112.03)
Unexplained							
age	845.27	-2472.71	-1044.92	-1440.98	-1845.04**	9413.57**	-408.38
	(2885.24)	(2809.49)	(4165.67)	(1847.31)	(889.53)	(4705.18)	(473.24)
gross household income	4879.51***	-873.62	11118.15***	2028.87***	1459.24***	3096.56	-193.54
	(890.64)	(937.47)	(1567.74)	(669.13)	(298.17)	(2440.85)	(168.69)
urban area	419.58	325.19	695.39*	38.64	-187.55*	1027.96**	49.25
	(363.81)	(273.09)	(393.47)	(163.04)	(100.90)	(507.31)	(74.49)
less than secondary education	-95.62	-1022.32***	-296.90	-253.11	-32.48	-309.67	-82.81**
	(258.72)	(328.52)	(431.91)	(261.93)	(48.41)	(551.26)	(36.73)
secondary education	21.50	564.64*	-81.88	219.49	65.82	-857.63	177.17**
	(349.27)	(300.05)	(323.61)	(281.74)	(78.03)	(745.94)	(77.39)
tertiary education	112.71	532.89	928.57	33.93	-2.95	977.95	37.54
	(337.96)	(372.01)	(827.19)	(151.85)	(143.70)	(648.19)	(57.81)
houseowner	-156.49	116.70	-281.95	-311.90	7.04	-842.56	56.85
	(518.65)	(606.37)	(1153.72)	(374.55)	(336.62)	(1480.11)	(173.83)
single	-899.44***	-642.94***	-652.33*	-287.85*	-357.43***	-1582.73***	-214.35***
	(212.32)	(219.78)	(350.10)	(155.18)	(70.58)	(502.06)	(52.85)
child(ren) in household	322.38	-951.32**	1209.58*	-717.67***	-21.79	438.47	50.28
	(330.44)	(407.68)	(687.23)	(269.63)	(52.06)	(771.07)	(44.71)
less than three-person household	-274.54	-630.93*	958.25	-185.59	-61.34	999.50	19.41
	(498.29)	(366.57)	(689.56)	(242.16)	(116.24)	(895.65)	(76.46)
three-person household	516.41**	728.76**	-332.30	698.31***	40.69	-67.99	127.33**
	(228.43)	(302.91)	(342.90)	(216.93)	(71.36)	(620.77)	(50.85)
at least four-person household	-610.80	-114.31	-468.36	-650.63**	1.79	-858.05	-154.05**
	(411.70)	(445.93)	(785.74)	(300.66)	(97.41)	(786.75)	(66.81)
Total	-319.78	-267.80	1331.11	118.60	-599.24***	-3049.54**	-435.71***
	(666.59)	(693.55)	(1133.05)	(474.23)	(183.05)	(1389.23)	(118.05)
Observations	9777	6375	4610	19142	4891	2344	4991

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 57: Oaxaca decompositions for net contributions and mixed households

	NL	PT	SE	SI	UK
Differential					
Prediction_1	22178.02***	3169.58***	9869.74***	3689.70***	5932.90***
	(1180.35)	(745.89)	(774.09)	(331.33)	(965.54)
Prediction_2	12582.00***	-1570.42***	6547.09***	4142.64***	-2412.97***
	(265.03)	(168.92)	(225.23)	(131.47)	(208.28)
Difference	9596.02***	4740.00***	3322.65***	-452.94	8345.87***
	(1209.74)	(764.78)	(806.20)	(356.46)	(987.75)
Explained					
age	1900.10***	1597.67***	515.72**	-89.75	2131.27***
	(396.13)	(201.81)	(244.20)	(80.06)	(258.85)
gross household income	3128.02***	880.36***	1005.34*	-149.40	4330.03***
	(702.39)	(255.84)	(525.19)	(257.15)	(627.76)
less than secondary education	-172.31***	-276.82***	4.91	6.50	-189.75***
	(38.54)	(73.84)	(6.95)	(22.19)	(38.97)
secondary education	-31.79*	-12.80	16.71	-1.15	31.74*
	(17.56)	(47.63)	(12.43)	(2.30)	(17.90)
tertiary education	-56.05**	-96.47**	1.06	43.21**	-227.55***
	(23.93)	(42.03)	(7.72)	(18.80)	(49.96)
houseowner	-10.37	13.25	-12.57	-7.39*	130.71***
	(11.61)	(11.93)	(10.03)	(3.97)	(35.87)
single	648.02***	50.08*	151.39***	-7.95	-76.46
	(83.02)	(28.95)	(33.90)	(7.22)	(47.52)
child(ren) in household	-208.46***	192.63***	-301.28***	16.32	-205.10***
	(52.54)	(52.81)	(69.89)	(10.40)	(50.63)
less than three-person household	1428.08***	399.81***	969.74***	172.99***	922.90***
	(195.17)	(90.36)	(156.09)	(37.29)	(118.03)
three-person household	83.18**	-11.99	35.28*	-4.93	-28.45
	(33.25)	(33.94)	(20.87)	(4.88)	(20.91)
at least four-person household	637.80***	229.07***	519.92***	68.46	705.93***
	(156.92)	(63.80)	(127.24)	(41.80)	(110.92)
Total	7775.42***	3178.54***	2726.38***	47.89	7361.78***
	(863.81)	(315.45)	(603.79)	(297.57)	(710.16)
urban area		-21.10	-8.69		-6.31
		(14.62)	(11.27)		(11.22)
Unexplained					
age	5464.87**	2170.05	1984.88	-2993.03***	-1834.98
	(2430.89)	(2400.11)	(1725.18)	(693.50)	(2308.12)
gross household income	10784.26***	4535.91***	4016.23***	-391.64	2825.25***
	(1333.83)	(939.48)	(1089.64)	(374.50)	(835.70)
less than secondary education	250.71	-323.73	-35.81	83.58	-274.19
	(176.78)	(501.29)	(174.00)	(76.51)	(169.03)
secondary education	-190.78	267.77	327.15	241.85	337.38
	(369.41)	(256.88)	(255.46)	(148.90)	(285.08)
tertiary education	-520.64	-92.00	-257.24	-119.05**	453.21
	(402.79)	(236.90)	(263.68)	(57.22)	(454.76)
houseowner	307.33	-967.58	-317.29	443.52*	-234.21
	(603.33)	(670.25)	(448.17)	(232.07)	(605.27)
single	670.37***	-65.99	241.04	-290.11***	-389.32**
	(234.46)	(240.24)	(232.60)	(84.55)	(170.47)
child(ren) in household	82.88	-226.55	-125.14	-4.84	399.82
	(431.76)	(352.30)	(304.72)	(63.88)	(297.18)
less than three-person household	-250.89	-603.37**	-256.57	-184.80**	-204.82
	(615.44)	(247.26)	(504.69)	(93.54)	(474.24)
three-person household	-80.62	819.68**	88.50	116.18	293.36
	(224.90)	(328.59)	(165.53)	(76.08)	(202.66)
at least four-person household	319.65	371.42	27.83	101.47	-312.90
	(412.77)	(430.95)	(289.81)	(129.10)	(330.38)
Total	1820.59***	1561.46**	596.28	-500.83***	984.09*
	(668.06)	(654.32)	(480.16)	(183.31)	(596.08)
urban area		-381.68	-71.89		719.95
		(258.82)	(141.79)		(625.61)
Observations	9187	4303	5091	8458	7575

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

2.3 Contributory benefits

2.3.1 Participation

Tabelle: 58: Oaxaca decompositions for contributory benefits and migrant households (participation equation)

	AT	BE	CY	CZ	DE	EE	ES
overall							
group_1	0.5307***	0.4573***	0.4210***	0.7081***	0.7104***	0.8090***	0.3796***
	(0.0183)	(0.0213)	(0.0188)	(0.0198)	(0.0109)	(0.0140)	(0.0193)
group_2	0.5529***	0.5348***	0.4967***	0.6574***	0.4967***	0.6771***	0.5282***
	(0.0081)	(0.0084)	(0.0105)	(0.0059)	(0.0048)	(0.0088)	(0.0059)
difference	-0.0221	-0.0775***	-0.0757***	0.0507**	0.2138***	0.1320***	-0.1487***
	(0.0200)	(0.0229)	(0.0215)	(0.0206)	(0.0119)	(0.0166)	(0.0202)
explained	-0.0586***	-0.0353**	-0.1675***	0.0490***	0.1722***	0.0645***	-0.1130***
	(0.0163)	(0.0171)	(0.0154)	(0.0161)	(0.0086)	(0.0133)	(0.0168)
unexplained	0.0365**	-0.0422**	0.0918***	0.0017	0.0416***	0.0675***	-0.0357**
	(0.0163)	(0.0169)	(0.0203)	(0.0148)	(0.0085)	(0.0142)	(0.0151)
explained							
age	0.1245***	0.0859***	0.3561***	-0.1109***	-0.2916***	-0.1273***	0.2120***
	(0.0283)	(0.0316)	(0.0385)	(0.0323)	(0.0181)	(0.0222)	(0.0190)
age^2	-0.1808***	-0.1232***	-0.5079***	0.1564***	0.4471***	0.1837***	-0.2867***
	(0.0412)	(0.0452)	(0.0474)	(0.0465)	(0.0241)	(0.0313)	(0.0238)
gross household income	-0.0952***	-0.0853**	-0.0056	-0.0547***	-0.0669***	-0.0351**	-0.1927***
	(0.0286)	(0.0340)	(0.0057)	(0.0194)	(0.0161)	(0.0154)	(0.0373)
gross household income^2	0.1015***	0.0883***	0.0052	0.0568***	0.0786***	0.0374***	0.1822***
	(0.0271)	(0.0311)	(0.0055)	(0.0203)	(0.0166)	(0.0145)	(0.0291)
social contacts	0.0007*	0.0005	0.0000	-0.0000	0.0009***	-0.0005	0.0006**
	(0.0004)	(0.0003)	(0.0004)	(0.0001)	(0.0003)	(0.0004)	(0.0003)
leisure activities	0.0015**	0.0004	-0.0007	0.0018***	0.0008***	0.0022***	0.0010***
	(0.0006)	(0.0004)	(0.0006)	(0.0005)	(0.0003)	(0.0007)	(0.0003)
urban area	-0.0034***	0.0004	-0.0004	-0.0005*	-0.0003*	-0.0011	-0.0005**
	(0.0013)	(0.0005)	(0.0005)	(0.0003)	(0.0002)	(0.0025)	(0.0002)
less than secondary education	0.0021***	0.0002	-0.0052**	0.0032***	0.0014***	0.0005	-0.0034***
	(0.0007)	(0.0004)	(0.0025)	(0.0011)	(0.0005)	(0.0006)	(0.0007)
secondary education	0.0003	0.0000	-0.0000	0.0012**	0.0010**	0.0003	-0.0012**
	(0.0003)	(0.0001)	(0.0001)	(0.0005)	(0.0004)	(0.0004)	(0.0005)
tertiary education	-0.0004	0.0001	-0.0047*	0.0001	-0.0010**	-0.0013**	-0.0002
	(0.0006)	(0.0004)	(0.0025)	(0.0002)	(0.0004)	(0.0006)	(0.0003)
houseowner	0.0002	-0.0009	0.0016	-0.0021***	0.0000	0.0008	-0.0061***
	(0.0011)	(0.0007)	(0.0012)	(0.0005)	(0.0001)	(0.0005)	(0.0017)
single	-0.0019***	0.0001	-0.0041**	-0.0004	-0.0009	-0.0012*	-0.0034***
	(0.0007)	(0.0003)	(0.0016)	(0.0003)	(0.0007)	(0.0006)	(0.0011)
child(ren) in household	-0.0055***	-0.0010*	-0.0032**	0.0010**	0.0003	0.0043***	-0.0079***
	(0.0013)	(0.0006)	(0.0013)	(0.0005)	(0.0003)	(0.0010)	(0.0012)
less than three person household	0.0041***	0.0009	0.0045***	-0.0018**	0.0005	-0.0014	0.0068***
	(0.0012)	(0.0007)	(0.0017)	(0.0009)	(0.0003)	(0.0011)	(0.0011)
three-person household	0.0003	0.0006	0.0042***	-0.0002	-0.0001	0.0002	0.0001
	(0.0003)	(0.0004)	(0.0013)	(0.0003)	(0.0002)	(0.0002)	(0.0004)
at least four-person household	0.0018**	-0.0017*	-0.0005	-0.0007*	0.0014***	-0.0018**	0.0030***
	(0.0008)	(0.0009)	(0.0005)	(0.0004)	(0.0004)	(0.0008)	(0.0008)
unexplained							
age	-0.5925	-0.1197	2.2799***	-0.0260	0.2369	0.0123	0.5053
	(0.8298)	(0.2870)	(0.7541)	(0.2515)	(0.5034)	(0.4732)	(0.4236)
age^2	0.0647	0.0216	-1.3296***	0.0188	-0.2034	-0.0767	-0.2579
	(0.5599)	(0.1577)	(0.4161)	(0.1819)	(0.3586)	(0.3390)	(0.2162)
gross household income	-0.9277	1.4850	1.3251	-0.7766	-0.4118	1.3693	-1.0799
	(9.5408)	(2.6024)	(2.7627)	(7.5087)	(2.8404)	(4.6831)	(4.0157)
gross household income^2	0.8344	-0.5618	-1.1501	0.3733	0.5783	-0.6129	0.6399
	(4.8479)	(1.3586)	(1.4539)	(3.6103)	(1.4675)	(2.3284)	(2.1248)
social contacts	0.0023	0.0094	0.0032	0.0007	0.0105	-0.0143	0.0118
	(0.0471)	(0.0115)	(0.0378)	(0.0074)	(0.0097)	(0.0218)	(0.0229)
leisure activities	-0.0098	0.0093	0.0034	-0.0002	-0.0016	-0.0002	0.0078
	(0.0246)	(0.0079)	(0.0166)	(0.0024)	(0.0086)	(0.0078)	(0.0136)
urban area	-0.0016	-0.0134	-0.0180	0.0007	0.0023	-0.0194	-0.0161
	(0.0245)	(0.0089)	(0.0175)	(0.0070)	(0.0076)	(0.0133)	(0.0131)
less than secondary education	-0.0007	-0.0047	0.0058	0.0001	-0.0043	-0.0037	-0.0161
	(0.0163)	(0.0058)	(0.0103)	(0.0012)	(0.0038)	(0.0079)	(0.0128)
secondary education	0.0375	0.0038	0.0110	-0.0012	0.0121	0.0090	0.0022
	(0.0533)	(0.0047)	(0.0127)	(0.0112)	(0.0094)	(0.0121)	(0.0072)
tertiary education	-0.0237	0.0003	-0.0249	0.0002	0.0025	-0.0003	0.0102
	(0.0348)	(0.0059)	(0.0190)	(0.0019)	(0.0100)	(0.0086)	(0.0095)
houseowner	0.0299	0.0193**	0.0143	-0.0005	0.0096	-0.0199	0.0081
	(0.0403)	(0.0087)	(0.0192)	(0.0051)	(0.0091)	(0.0302)	(0.0105)
single	-0.0067	0.0027	-0.0140	-0.0004	0.0151*	0.0190*	-0.0245
	(0.0220)	(0.0054)	(0.0090)	(0.0043)	(0.0080)	(0.0113)	(0.0163)
child(ren) in household	0.0420	-0.0060	-0.0565***	0.0002	-0.0000	0.0101*	0.0279
	(0.0539)	(0.0063)	(0.0190)	(0.0015)	(0.0036)	(0.0057)	(0.0203)
less than three person household	-0.0021	-0.0164	-0.0158	-0.0005	0.0156	0.0302	0.0071
	(0.0490)	(0.0116)	(0.0175)	(0.0046)	(0.0217)	(0.0202)	(0.0107)
three-person household	-0.0042	-0.0028	0.0035	-0.0001	-0.0004	-0.0046	-0.0029
	(0.0123)	(0.0035)	(0.0097)	(0.0006)	(0.0029)	(0.0055)	(0.0064)
at least four-person household	0.0080	0.0154**	0.0103	0.0002	-0.0020	-0.0086	-0.0041
	(0.0231)	(0.0078)	(0.0177)	(0.0017)	(0.0034)	(0.0078)	(0.0118)
Observations	5799	5454	3087	9867	12765	4872	11752

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 59: Oaxaca decompositions for contributory benefits and migrant households (participation equation)

	FR	GR	IE	IT	LT	LU	LV
overall							
group_1	0.6172***	0.2991***	0.5436***	0.4933***	0.8205***	0.3158***	0.7821***
	(0.0141)	(0.0173)	(0.0226)	(0.0143)	(0.0286)	(0.0095)	(0.0128)
group_2	0.5853***	0.5507***	0.6980***	0.6528***	0.7787***	0.5154***	0.6887***
	(0.0062)	(0.0104)	(0.0095)	(0.0042)	(0.0082)	(0.0133)	(0.0083)
difference	0.0319**	-0.2517***	-0.1545***	-0.1595***	0.0418	-0.1996***	0.0934***
	(0.0154)	(0.0202)	(0.0245)	(0.0149)	(0.0298)	(0.0164)	(0.0152)
explained	-0.0086	-0.2358***	-0.1458***	-0.1427***	0.0138	-0.2306***	0.0455***
	(0.0121)	(0.0268)	(0.0212)	(0.0104)	(0.0197)	(0.0166)	(0.0111)
unexplained	0.0405***	-0.0159	-0.0086	-0.0168	0.0280*	0.0311*	0.0479***
	(0.0125)	(0.0255)	(0.0192)	(0.0124)	(0.0170)	(0.0163)	(0.0121)
explained							
age	-0.0022	0.2712***	0.1819***	0.3507***	0.0227	0.5515***	-0.1509***
	(0.0047)	(0.0262)	(0.0314)	(0.0207)	(0.0745)	(0.0404)	(0.0240)
age^2	-0.0058	-0.4312***	-0.2908***	-0.4694***	-0.0217	-0.7496***	0.2075***
	(0.0145)	(0.0317)	(0.0338)	(0.0263)	(0.0805)	(0.0490)	(0.0342)
gross household income	-0.0373	-0.3508***	0.2976***	-0.0903***	-0.0105	-0.2210***	-0.0068
	(0.0390)	(0.0737)	(0.0666)	(0.0151)	(0.0493)	(0.0760)	(0.0079)
gross household income^2	0.0375	0.3625***	-0.2980***	0.0913***	0.0207	0.2293***	0.0112
	(0.0391)	(0.0598)	(0.0639)	(0.0128)	(0.0632)	(0.0738)	(0.0071)
social contacts	0.0002	-0.0010	-0.0005	0.0002	-0.0004	0.0007	0.0006
	(0.0002)	(0.0008)	(0.0005)	(0.0002)	(0.0012)	(0.0012)	(0.0005)
leisure activities	0.0004	0.0003	-0.0009*	0.0004**	-0.0004	0.0003	0.0009
	(0.0004)	(0.0003)	(0.0005)	(0.0002)	(0.0012)	(0.0009)	(0.0007)
urban area	-0.0010	-0.0022***	-0.0000	0.0002	0.0022	-0.0008	-0.0044***
	(0.0011)	(0.0008)	(0.0004)	(0.0001)	(0.0059)	(0.0011)	(0.0014)
less than secondary education	0.0010	-0.0019**	-0.0043	-0.0045***	0.0016	0.0014*	-0.0000
	(0.0010)	(0.0009)	(0.0029)	(0.0007)	(0.0040)	(0.0007)	(0.0001)
secondary education	-0.0001	-0.0014**	0.0001	-0.0012***	-0.0000	0.0018	-0.0000
	(0.0002)	(0.0007)	(0.0002)	(0.0003)	(0.0001)	(0.0015)	(0.0000)
tertiary education	-0.0001	-0.0000	-0.0055**	0.0001	0.0016	-0.0036**	-0.0000
	(0.0002)	(0.0001)	(0.0026)	(0.0003)	(0.0042)	(0.0015)	(0.0000)
houseowner	-0.0003	-0.0261***	0.0032	-0.0046***	0.0002	-0.0129***	0.0001
	(0.0003)	(0.0027)	(0.0022)	(0.0008)	(0.0005)	(0.0036)	(0.0002)
single	-0.0003	-0.0099***	-0.0020	-0.0034***	0.0006	-0.0037***	-0.0015***
	(0.0004)	(0.0018)	(0.0013)	(0.0006)	(0.0017)	(0.0011)	(0.0005)
child(ren) in household	-0.0003	-0.0158***	-0.0223***	-0.0119***	-0.0012	-0.0087***	0.0001
	(0.0004)	(0.0022)	(0.0031)	(0.0011)	(0.0032)	(0.0028)	(0.0007)
less than three person household	0.0011	0.0172***	0.0122***	0.0126***	-0.0020	0.0070**	-0.0034**
	(0.0012)	(0.0024)	(0.0032)	(0.0013)	(0.0051)	(0.0028)	(0.0014)
three-person household	0.0003	0.0034***	0.0015*	0.0014***	-0.0002	0.0012	0.0001
	(0.0003)	(0.0010)	(0.0009)	(0.0005)	(0.0006)	(0.0007)	(0.0002)
at least four-person household	-0.0003	0.0049***	0.0048**	0.0047***	-0.0005	0.0018	-0.0037***
	(0.0004)	(0.0014)	(0.0023)	(0.0007)	(0.0014)	(0.0023)	(0.0011)
unexplained							
age	0.4246	0.0518	-0.3999	0.3872**	-1.0355	1.8239**	-0.3722
	(7.4232)	(0.1662)	(2.1641)	(0.1975)	(1.2559)	(0.7268)	(0.4356)
age^2	-2.5447	-0.0060	0.1004	-0.2337**	0.4776	-1.0741***	-0.0020
	(18.7868)	(0.0629)	(0.6045)	(0.1141)	(0.4997)	(0.4120)	(0.3929)
gross household income	-102.2980	5.4394	4.5391	0.2413	7.4252	-9.3445	5.7091
	(668.8057)	(12.2644)	(23.7406)	(0.8483)	(14.4020)	(8.2525)	(4.8405)
gross household income^2	46.4916	-2.5789	-2.4939	-0.1234	-3.8034	5.0008	-3.0122
	(304.4895)	(5.8169)	(12.9877)	(0.4428)	(7.3519)	(4.0949)	(2.5083)
social contacts	0.2972	0.0064	-0.0090	0.0014	-0.0134	-0.0095	-0.0087
	(1.9428)	(0.0183)	(0.0499)	(0.0046)	(0.0276)	(0.0242)	(0.0164)
leisure activities	0.0541	-0.0046	0.0055	-0.0013	0.0092	-0.0035	0.0093
	(0.3712)	(0.0108)	(0.0378)	(0.0025)	(0.0172)	(0.0147)	(0.0094)
urban area	-0.0880	0.0019	0.0216	-0.0009	0.0196	0.0038	0.0377
	(0.5847)	(0.0052)	(0.1119)	(0.0020)	(0.0363)	(0.0088)	(0.0276)
less than secondary education	-0.1401	-0.0007	-0.0166	-0.0079*	0.0188	-0.0191**	0.0177
	(0.9180)	(0.0036)	(0.0859)	(0.0047)	(0.0326)	(0.0097)	(0.0153)
secondary education	0.1840	-0.0014	0.0091	0.0033	-0.0083	0.0115	-0.0070
	(1.1954)	(0.0043)	(0.0476)	(0.0035)	(0.0171)	(0.0070)	(0.0130)
tertiary education	-0.0530	0.0016	0.0201	0.0021	-0.0381	0.0027	-0.0169
	(0.3509)	(0.0045)	(0.1062)	(0.0018)	(0.0665)	(0.0094)	(0.0148)
houseowner	-0.2145	0.0009	-0.0088	0.0035	-0.0363	-0.0173*	0.0339
	(1.3931)	(0.0036)	(0.0504)	(0.0034)	(0.0774)	(0.0098)	(0.0330)
single	0.0295	0.0076	0.0033	-0.0080*	-0.0124	-0.0129*	-0.0074
	(0.2074)	(0.0174)	(0.0196)	(0.0043)	(0.0241)	(0.0070)	(0.0133)
child(ren) in household	-0.1670	-0.0065	0.0077	0.0041	-0.0000	-0.0102	-0.0108
	(1.0913)	(0.0152)	(0.0432)	(0.0038)	(0.0048)	(0.0122)	(0.0090)
less than three person household	-0.2279	-0.0069	0.0387	0.0050	0.0108	-0.0260*	0.0354
	(1.4732)	(0.0162)	(0.2003)	(0.0046)	(0.0290)	(0.0145)	(0.0338)
three-person household	-0.0281	0.0030	-0.0062	-0.0039	0.0052	0.0065	-0.0141
	(0.1895)	(0.0073)	(0.0326)	(0.0027)	(0.0113)	(0.0059)	(0.0113)
at least four-person household	0.1906	0.0032	-0.0243	0.0011	-0.0099	0.0110	0.0027
	(1.2302)	(0.0080)	(0.1263)	(0.0031)	(0.0196)	(0.0109)	(0.0068)
Observations	10503	6823	4993	19983	5106	4204	5716

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 60: Oaxaca decompositions for contributory benefits and migrant households (participation equation)

	NL	PT	SE	SI	UK
overall					
group_1	0.3098***	0.3293***	0.4706***	0.5086***	0.3838***
	(0.0158)	(0.0245)	(0.0197)	(0.0126)	(0.0162)
group_2	0.3496***	0.5236***	0.5185***	0.4975***	0.5670***
	(0.0046)	(0.0084)	(0.0080)	(0.0059)	(0.0062)
difference	-0.0397**	-0.1942***	-0.0479**	0.0111	-0.1832***
	(0.0165)	(0.0259)	(0.0213)	(0.0139)	(0.0173)
explained	-0.0678***	-0.1501***	-0.0105	0.0051	-0.1398***
	(0.0102)	(0.0167)	(0.0255)	(0.0095)	(0.0149)
unexplained	0.0281**	-0.0441*	-0.0374*	0.0061	-0.0434***
	(0.0127)	(0.0231)	(0.0202)	(0.0110)	(0.0117)
explained					
age	0.1229***	0.3368***	0.0068	-0.0011	0.2469***
	(0.0186)	(0.0401)	(0.0150)	(0.0034)	(0.0261)
age^2	-0.1933***	-0.4859***	-0.0142	0.0069	-0.3724***
	(0.0266)	(0.0524)	(0.0309)	(0.0110)	(0.0375)
gross household income	-0.0037	0.1075***	-0.0428	0.0719	0.0027
	(0.0165)	(0.0357)	(0.0950)	(0.2253)	(0.0115)
gross household income^2	0.0033	-0.1119***	0.0358	-0.0751	-0.0170
	(0.0172)	(0.0366)	(0.0776)	(0.2353)	(0.0114)
social contacts	-0.0002	-0.0006	0.0000	-0.0002	-0.0000
	(0.0003)	(0.0006)	(0.0000)	(0.0007)	(0.0001)
leisure activities	0.0008*	-0.0001	0.0006	-0.0006	-0.0000
	(0.0005)	(0.0004)	(0.0012)	(0.0019)	(0.0002)
less than secondary education	-0.0001	0.0016	-0.0001	0.0010	-0.0008
	(0.0004)	(0.0023)	(0.0003)	(0.0030)	(0.0005)
secondary education	0.0002	-0.0007	-0.0002	-0.0000	0.0011
	(0.0002)	(0.0016)	(0.0004)	(0.0001)	(0.0007)
tertiary education	-0.0003	0.0011	-0.0000	0.0010	-0.0005
	(0.0003)	(0.0012)	(0.0000)	(0.0031)	(0.0012)
houseowner	0.0006	-0.0002	0.0002	-0.0003	0.0019***
	(0.0004)	(0.0003)	(0.0003)	(0.0010)	(0.0006)
single	0.0000	0.0010	-0.0000	-0.0001	-0.0011*
	(0.0008)	(0.0018)	(0.0001)	(0.0003)	(0.0006)
child(ren) in household	0.0023***	-0.0102***	0.0025	0.0007	-0.0042***
	(0.0008)	(0.0022)	(0.0052)	(0.0024)	(0.0009)
less than three person household	-0.0033***	0.0122***	-0.0012	0.0011	0.0039***
	(0.0012)	(0.0026)	(0.0026)	(0.0031)	(0.0012)
three-person household	0.0004	0.0015	0.0000	0.0000	0.0009**
	(0.0006)	(0.0010)	(0.0001)	(0.0001)	(0.0004)
at least four-person household	-0.0012	0.0049***	-0.0009	0.0003	0.0003
	(0.0008)	(0.0016)	(0.0020)	(0.0008)	(0.0009)
urban area		0.0015*	-0.0001		0.0011**
		(0.0008)	(0.0002)		(0.0006)
unexplained					
age	0.3056	-0.0516	-12.6329	-0.2634	-0.2116
	(0.4933)	(0.4628)	(302.0057)	(0.8834)	(0.3666)
age^2	-0.2282	-0.0545	8.1473	0.1845	0.1053
	(0.3062)	(0.2401)	(194.7486)	(0.6157)	(0.2212)
gross household income	4.0186	0.1204	251.1936	-1.8631	1.0289
	(8.6032)	(5.0737)	(5909.8102)	(7.8360)	(1.6570)
gross household income^2	-2.3841	-0.1275	-128.8043	0.8739	-0.5251
	(4.3907)	(2.5540)	(3030.9045)	(3.7552)	(0.8758)
social contacts	-0.0004	0.0070	0.4023	0.0069	0.0102
	(0.0216)	(0.0228)	(9.5878)	(0.0264)	(0.0106)
leisure activities	-0.0010	0.0008	-0.5701	0.0024	0.0026
	(0.0159)	(0.0095)	(13.5920)	(0.0089)	(0.0077)
less than secondary education	0.0006	0.0122	-0.1080	0.0021	0.0040
	(0.0067)	(0.0171)	(2.5801)	(0.0086)	(0.0046)
secondary education	0.0123	-0.0116	0.2474	-0.0129	0.0024
	(0.0114)	(0.0087)	(5.8984)	(0.0449)	(0.0045)
tertiary education	-0.0133	0.0052	-0.0663	0.0022	-0.0158
	(0.0127)	(0.0081)	(1.6023)	(0.0080)	(0.0102)
houseowner	0.0054	0.0246	-0.1769	-0.0276	0.0279**
	(0.0144)	(0.0171)	(4.2490)	(0.0954)	(0.0116)
single	-0.0209	-0.0073	0.1743	-0.0037	0.0052
	(0.0130)	(0.0097)	(4.1610)	(0.0136)	(0.0056)
child(ren) in household	0.0135	0.0040	0.7661	0.0001	0.0008
	(0.0123)	(0.0124)	(18.2302)	(0.0031)	(0.0057)
less than three person household	0.0200	-0.0083	0.0531	-0.0020	-0.0015
	(0.0238)	(0.0102)	(1.3361)	(0.0088)	(0.0103)
three-person household	0.0068	0.0033	0.0118	0.0017	0.0015
	(0.0067)	(0.0097)	(0.3199)	(0.0069)	(0.0036)
at least four-person household	-0.0204	0.0080	-0.0513	-0.0004	-0.0015
	(0.0150)	(0.0131)	(1.2364)	(0.0062)	(0.0060)
urban area		0.0013	-0.0478		-0.0161
		(0.0096)	(1.1489)		(0.0165)
Observations	9472	4424	5582	9001	8128

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

2.3.2 Level

Tabelle: 61: Oaxaca decompositions for contributory benefits and migrant households (level equation)

	AT	BE	CY	CZ	DE	EE	ES
Differential							
Prediction_1	9.1679***	9.1735***	8.9342***	8.4980***	9.7561***	7.8152***	8.6531***
	(0.0561)	(0.0446)	(0.0668)	(0.0432)	(0.0264)	(0.0410)	(0.0483)
Prediction_2	9.6450***	9.3144***	9.2136***	8.2389***	9.3736***	7.5167***	9.0868***
	(0.0217)	(0.0212)	(0.0265)	(0.0141)	(0.0146)	(0.0276)	(0.0120)
Difference	-0.4771***	-0.1409***	-0.2794***	0.2591***	0.3825***	0.2985***	-0.4337***
	(0.0602)	(0.0494)	(0.0719)	(0.0455)	(0.0302)	(0.0495)	(0.0498)
Adjusted	-0.3922***	0.1754	0.3113	0.0321	0.0186	0.2135*	-0.0841
	(0.1310)	(0.1886)	(0.4558)	(0.0837)	(0.0512)	(0.1258)	(0.5216)
Explained							
age	-0.0061	-0.1515***	-0.3141**	-0.0201	0.0024	0.0359	-0.2599***
	(0.0433)	(0.0560)	(0.1345)	(0.0165)	(0.0245)	(0.0219)	(0.0504)
age^2	0.0313	0.2137***	0.3550**	0.0077	-0.0322	-0.0233	0.3334***
	(0.0436)	(0.0584)	(0.1437)	(0.0164)	(0.0280)	(0.0215)	(0.0592)
gross household income	-0.2225**	-0.0160	0.0879	-0.2584**	0.0920**	-0.0247	0.1459***
	(0.0887)	(0.0584)	(0.0874)	(0.1110)	(0.0372)	(0.0328)	(0.0555)
gross household $income^2$	0.1123	-0.0225	-0.1154	0.2567**	-0.0306	0.0309	-0.2060***
	(0.0792)	(0.0581)	(0.1111)	(0.1101)	(0.0320)	(0.0365)	(0.0693)
urban area	0.0152***	-0.0017	-0.0010	0.0008	0.0008	-0.0376***	0.0014
	(0.0049)	(0.0023)	(0.0023)	(0.0014)	(0.0009)	(0.0111)	(0.0011)
less than secondary education	-0.0033	0.0056	0.0569***	-0.0080**	0.0001	-0.0006	0.0383***
	(0.0025)	(0.0046)	(0.0134)	(0.0037)	(0.0007)	(0.0013)	(0.0060)
secondary education	0.0019	-0.0008	-0.0003	-0.0011	-0.0018	-0.0011	0.0049**
	(0.0014)	(0.0015)	(0.0047)	(0.0020)	(0.0014)	(0.0018)	(0.0021)
tertiary education	0.0025	0.0043	0.0323***	-0.0014	0.0038**	0.0029	0.0145***
	(0.0030)	(0.0053)	(0.0099)	(0.0010)	(0.0017)	(0.0023)	(0.0039)
houseowner	-0.0170***	-0.0075***	0.0002	-0.0027*	0.0013*	0.0058***	-0.0141***
	(0.0042)	(0.0028)	(0.0010)	(0.0015)	(0.0008)	(0.0022)	(0.0044)
single	0.0070***	-0.0010	0.0061	0.0027	0.0139***	-0.0001	0.0130***
	(0.0027)	(0.0024)	(0.0037)	(0.0021)	(0.0024)	(0.0018)	(0.0035)
child(ren) in household	-0.0216***	-0.0443***	-0.0001	0.0068**	0.0032***	0.0047*	0.0076
	(0.0077)	(0.0084)	(0.0042)	(0.0028)	(0.0012)	(0.0026)	(0.0062)
less than three-person household	0.0078	0.0198**	0.0169	0.0055**	-0.0012	-0.0005	-0.0012
	(0.0063)	(0.0090)	(0.0115)	(0.0026)	(0.0010)	(0.0010)	(0.0045)
three-person household	0.0028	-0.0013	0.0083	-0.0005	-0.0002	0.0000	-0.0007
	(0.0019)	(0.0023)	(0.0066)	(0.0007)	(0.0003)	(0.0006)	(0.0008)
at least four-person household	-0.0037	0.0184**	0.0011	0.0057**	-0.0004	-0.0011	0.0043
	(0.0057)	(0.0084)	(0.0056)	(0.0025)	(0.0008)	(0.0014)	(0.0039)
Total	-0.1097***	-0.0393	0.1391**	0.0013	0.0703***	-0.0359	0.0892***
	(0.0350)	(0.0329)	(0.0607)	(0.0127)	(0.0166)	(0.0254)	(0.0345)
Unexplained							
age	1.7275*	1.9020*	-3.0873**	2.7514**	1.8742**	0.6930	0.6442
	(0.9831)	(1.0057)	(1.4947)	(1.0746)	(0.7799)	(0.9528)	(1.2219)
age^2	-0.7068	-1.1127*	0.9888	-1.1507*	-0.6387	-0.5780	-0.3356
	(0.6024)	(0.6310)	(0.9475)	(0.6330)	(0.4750)	(0.5925)	(0.7974)
gross household income	0.9127	-37.2983**	-6.1983	-15.5512	5.2472	6.2680	-22.4343
	(16.0055)	(15.3473)	(19.1728)	(22.7891)	(7.9196)	(15.7350)	(15.4246)
gross household $income^2$	-1.3358	18.6037**	4.0449	7.9872	-2.8979	-2.7773	10.7685
	(8.0646)	(7.8921)	(9.6661)	(11.2274)	(4.0635)	(7.8469)	(8.0403)
urban area	0.0003	0.0570**	0.0579	-0.0021	-0.0235*	0.1369***	0.0155
	(0.0258)	(0.0289)	(0.0456)	(0.0135)	(0.0125)	(0.0290)	(0.0299)
less than secondary education	0.0043	0.0058	0.0322	-0.0179	0.0044	0.0303*	0.0668**
	(0.0222)	(0.0287)	(0.0371)	(0.0221)	(0.0060)	(0.0182)	(0.0288)
secondary education	-0.0227	0.0146	-0.0279	0.0075	-0.0290**	-0.0266	-0.0256
	(0.0300)	(0.0186)	(0.0367)	(0.0368)	(0.0140)	(0.0273)	(0.0178)
tertiary education	0.0072	-0.0155	-0.0077	0.0043	0.0162	-0.0206	-0.0142
	(0.0187)	(0.0187)	(0.0416)	(0.0087)	(0.0162)	(0.0208)	(0.0212)
houseowner	0.0063	-0.1049***	0.0309	-0.0318	0.0009	-0.0298	0.0197
	(0.0203)	(0.0343)	(0.0406)	(0.0314)	(0.0134)	(0.0627)	(0.0373)
single	0.0069	0.0070	-0.0206	-0.0079	-0.0140*	-0.0159	0.0505
	(0.0229)	(0.0187)	(0.0381)	(0.0211)	(0.0085)	(0.0265)	(0.0328)
child(ren) in household	-0.0190	0.0731***	0.0696*	-0.0107	0.0002	-0.0143	-0.0790***
	(0.0281)	(0.0231)	(0.0413)	(0.0094)	(0.0044)	(0.0135)	(0.0303)
less than three-person household	0.0775	0.1357***	0.2644***	-0.2617***	-0.1359**	-0.0700	0.0136
	(0.0727)	(0.0494)	(0.0793)	(0.0748)	(0.0631)	(0.0505)	(0.0352)
three-person household	-0.0187	-0.0001	-0.0392	-0.0259**	0.0041	0.0151	-0.0290
	(0.0135)	(0.0148)	(0.0380)	(0.0110)	(0.0054)	(0.0148)	(0.0189)
at least four-person household	0.0022	-0.0666***	-0.0843**	0.0560***	0.0046	0.0086	0.0316
	(0.0247)	(0.0250)	(0.0328)	(0.0139)	(0.0041)	(0.0204)	(0.0345)
Total	-0.2825**	0.2147	0.1722	0.0308	-0.0517	0.2494**	-0.1733
	(0.1353)	(0.1931)	(0.4614)	(0.0821)	(0.0468)	(0.1242)	(0.5238)
Observations	3174	2833	1481	6502	6675	3436	6029

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 62: Oaxaca decompositions for contributory benefits and migrant households (level equation)

	FR	GR	IE	IT	LT	LU	LV
Differential							
Prediction_1	9.2533***	8.7443***	9.1131***	8.4979***	7.7998***	9.7961***	7.6816***
	(0.0409)	(0.0741)	(0.0596)	(0.0523)	(0.0516)	(0.0390)	(0.0286)
Prediction_2	9.3346***	9.2356***	9.4418***	9.3131***	7.6496***	10.5329***	7.4878***
	(0.0182)	(0.0131)	(0.0190)	(0.0110)	(0.0203)	(0.0237)	(0.0211)
Difference	-0.0813*	-0.4913***	-0.3288***	-0.8151***	0.1501***	-0.7367***	0.1939***
	(0.0448)	(0.0752)	(0.0625)	(0.0534)	(0.0554)	(0.0457)	(0.0356)
Adjusted	0.0508	0.4959	0.1455	-0.7550**	0.0290	-0.0642	0.1836**
	(0.1242)	(0.3836)	(0.3380)	(0.3700)	(0.1070)	(0.1784)	(0.0848)
Explained							
age	-0.0886***	-0.1706***	-0.0316	-0.4602***	0.0001	-0.1281	0.0470**
	(0.0248)	(0.0535)	(0.0827)	(0.0536)	(0.0061)	(0.1026)	(0.0220)
age^2	0.0982***	0.3239***	0.1774**	0.5009***	-0.0066	0.1526	-0.0362
	(0.0265)	(0.0634)	(0.0890)	(0.0579)	(0.0093)	(0.1032)	(0.0226)
gross household income	-0.1445*	0.1439*	-0.8414***	-0.0982***	0.0120	-1.3451***	-0.0332
	(0.0812)	(0.0779)	(0.2585)	(0.0304)	(0.0386)	(0.2684)	(0.0300)
gross household income^2	0.0575	-0.2122**	0.8962***	0.0235	-0.0098	1.2052***	0.0325
	(0.0767)	(0.0977)	(0.2751)	(0.0230)	(0.0368)	(0.2550)	(0.0258)
urban area	0.0136***	0.0107***	-0.0006	-0.0015	0.0144***	0.0005	0.0042
	(0.0032)	(0.0035)	(0.0010)	(0.0013)	(0.0044)	(0.0019)	(0.0062)
less than secondary education	-0.0022	0.0301***	0.0231***	0.0228***	0.0023	0.0045	0.0001
	(0.0014)	(0.0062)	(0.0077)	(0.0036)	(0.0029)	(0.0034)	(0.0004)
secondary education	0.0042**	0.0038*	-0.0009	0.0026	-0.0018	0.0000	-0.0001
	(0.0017)	(0.0022)	(0.0011)	(0.0018)	(0.0017)	(0.0011)	(0.0004)
tertiary education	0.0020	0.0113***	0.0277***	0.0035**	0.0071**	0.0101***	0.0002
	(0.0018)	(0.0040)	(0.0079)	(0.0017)	(0.0030)	(0.0037)	(0.0004)
houseowner	-0.0063***	0.0113***	-0.0190***	-0.0122***	-0.0002	-0.0085	0.0040**
	(0.0024)	(0.0042)	(0.0056)	(0.0028)	(0.0005)	(0.0076)	(0.0017)
single	0.0137***	0.0203***	0.0271***	0.0035***	0.0028	0.0105***	0.0039**
	(0.0028)	(0.0072)	(0.0052)	(0.0013)	(0.0020)	(0.0033)	(0.0017)
child(ren) in household	-0.0121***	0.0096	0.0471***	-0.0103**	0.0034*	-0.0517***	0.0398***
	(0.0033)	(0.0060)	(0.0139)	(0.0049)	(0.0020)	(0.0114)	(0.0059)
less than three-person household	-0.0066	-0.0122**	-0.0083	-0.0340***	-0.0010	0.0598***	-0.0022
	(0.0055)	(0.0055)	(0.0122)	(0.0051)	(0.0025)	(0.0143)	(0.0022)
three-person household	0.0007	0.0005	-0.0009	0.0009	-0.0023	0.0052	-0.0000
	(0.0011)	(0.0013)	(0.0030)	(0.0008)	(0.0018)	(0.0051)	(0.0002)
at least four-person household	-0.0081	-0.0101**	-0.0037	-0.0304***	0.0009	0.0290***	-0.0029
	(0.0051)	(0.0044)	(0.0095)	(0.0045)	(0.0012)	(0.0108)	(0.0023)
Total	-0.0695***	0.2124***	0.3469***	-0.1096***	0.0417***	-0.1056**	0.1087***
	(0.0225)	(0.0469)	(0.0582)	(0.0276)	(0.0142)	(0.0433)	(0.0184)
Unexplained							
age	-0.9579	1.5931	-3.7037***	0.2823	0.4566	0.0313	-1.5217*
	(0.9532)	(1.4754)	(1.1023)	(1.4357)	(1.3017)	(0.8809)	(0.8145)
age^2	0.2442	-0.9635	1.8026***	0.3345	-0.1690	-0.0550	0.7157
	(0.6076)	(0.9695)	(0.5970)	(0.8560)	(0.7843)	(0.5493)	(0.5297)
gross household income	16.3118	-19.1580	34.0354	-12.3877	14.7679	-71.3995***	-13.5699*
	(13.3210)	(16.0330)	(36.7226)	(11.7958)	(15.8912)	(19.9101)	(7.5275)
gross household income^2	-8.0704	9.7399	-19.9292	6.2441	-7.0303	34.9153***	6.5705*
	(6.5563)	(8.0379)	(18.6299)	(6.0684)	(7.9413)	(9.9053)	(3.7472)
urban area	0.0051	-0.0357	0.0804***	-0.0128	0.0387	-0.0185	-0.0089
	(0.0238)	(0.0292)	(0.0229)	(0.0169)	(0.0330)	(0.0190)	(0.0238)
less than secondary education	0.0023	-0.0148	-0.0631*	0.0710**	0.0004	0.0134	-0.0150
	(0.0273)	(0.0346)	(0.0341)	(0.0338)	(0.0202)	(0.0234)	(0.0153)
secondary education	-0.0324	0.0091	0.0470**	-0.0420	-0.0106	-0.0042	-0.0018
	(0.0201)	(0.0282)	(0.0205)	(0.0261)	(0.0205)	(0.0170)	(0.0194)
tertiary education	0.0181	0.0028	-0.0132	-0.0086	0.0212	-0.0043	0.0155
	(0.0149)	(0.0292)	(0.0457)	(0.0134)	(0.0415)	(0.0159)	(0.0143)
houseowner	0.0356	-0.0200	0.0586	0.1192***	-0.0444	0.0716**	-0.0661
	(0.0254)	(0.0677)	(0.0402)	(0.0347)	(0.1053)	(0.0305)	(0.0449)
single	0.0396**	0.0813***	0.0713***	0.0133	0.0452*	0.0274*	0.0162
	(0.0177)	(0.0294)	(0.0262)	(0.0217)	(0.0239)	(0.0162)	(0.0213)
child(ren) in household	0.0365**	0.0008	0.0686	-0.0118	-0.0013	0.0403	0.0175*
	(0.0174)	(0.0308)	(0.0588)	(0.0374)	(0.0115)	(0.0247)	(0.0090)
less than three-person household	0.0827*	-0.0156	0.0534	-0.0909*	-0.0280	0.0741*	-0.0001
	(0.0491)	(0.0544)	(0.0754)	(0.0538)	(0.0540)	(0.0417)	(0.0474)
three-person household	-0.0242**	-0.0088	-0.0188	-0.0013	-0.0109	-0.0106	0.0067
	(0.0116)	(0.0234)	(0.0205)	(0.0195)	(0.0188)	(0.0163)	(0.0104)
at least four-person household	0.0061	0.0217	-0.0059	0.0777**	0.0214	-0.0303	-0.0070
	(0.0207)	(0.0339)	(0.0470)	(0.0345)	(0.0219)	(0.0230)	(0.0147)
Total	0.1203	0.2835	-0.2014	-0.6455*	-0.0128	0.0414	0.0748
	(0.1267)	(0.3851)	(0.3511)	(0.3710)	(0.1073)	(0.1846)	(0.0842)
Observations	6183	3575	3356	12760	4000	1683	4069

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 63: Oaxaca decompositions for contributory benefits and migrant households (level equation)

	NL	PT	SE	SI	UK
Differential					
Prediction_1	9.1306***	8.7265***	8.4845***	8.1670***	8.9960***
	(0.0967)	(0.0911)	(0.0772)	(0.0439)	(0.0567)
Prediction_2	9.4982***	8.8735***	8.5983***	8.1405***	9.2132***
	(0.0211)	(0.0186)	(0.0338)	(0.0206)	(0.0152)
Difference	-0.3676***	-0.1470	-0.1138	0.0265	-0.2173***
	(0.0990)	(0.0929)	(0.0843)	(0.0485)	(0.0587)
Adjusted	-0.0243	0.0040	0.8658	-0.0932	-0.3263***
	(0.2859)	(0.5236)	(0.5304)	(0.1499)	(0.1098)
Explained					
age	-0.4841***	-0.0712	0.0461	-0.0223	0.2675***
	(0.1218)	(0.0662)	(0.0348)	(0.0149)	(0.0672)
age^2	0.3793***	0.1326*	0.0462	0.0278*	-0.2789***
	(0.0977)	(0.0732)	(0.0347)	(0.0147)	(0.0690)
gross household income	0.1173	0.0472	0.5851***	0.0046	0.1242
	(0.1366)	(0.0901)	(0.2058)	(0.0149)	(0.1730)
gross household income^2	-0.0977	0.0849	-0.5855***	-0.0022	-0.1465
	(0.1184)	(0.0942)	(0.2017)	(0.0110)	(0.1560)
less than secondary education	0.0292***	0.0418***	-0.0000	0.0001	0.0055**
	(0.0070)	(0.0110)	(0.0009)	(0.0026)	(0.0025)
secondary education	0.0044	0.0083*	0.0063*	0.0005	0.0018
	(0.0033)	(0.0048)	(0.0034)	(0.0006)	(0.0014)
tertiary education	0.0062	0.0127**	0.0039	-0.0025	0.0146***
	(0.0046)	(0.0060)	(0.0030)	(0.0018)	(0.0040)
houseowner	0.0000	-0.0008	-0.0012	-0.0007	-0.0017
	(0.0007)	(0.0012)	(0.0029)	(0.0013)	(0.0016)
single	-0.0067	-0.0030	0.0003	-0.0025*	0.0094***
	(0.0045)	(0.0046)	(0.0015)	(0.0013)	(0.0031)
child(ren) in household	0.0066	0.0091	-0.1042***	0.0014	0.0015
	(0.0059)	(0.0069)	(0.0375)	(0.0034)	(0.0020)
less than three-person household	0.0062	-0.0026	0.0243**	0.0007	-0.0125**
	(0.0085)	(0.0102)	(0.0103)	(0.0009)	(0.0058)
three-person household	-0.0038	0.0091*	0.0026	-0.0000	0.0034
	(0.0055)	(0.0050)	(0.0025)	(0.0001)	(0.0026)
at least four-person household	0.0031	-0.0119*	0.0106*	0.0007	-0.0110**
	(0.0031)	(0.0069)	(0.0058)	(0.0009)	(0.0047)
Total	-0.0403	0.2649***	-0.0600	0.0041	-0.0097
	(0.0393)	(0.0569)	(0.0607)	(0.0107)	(0.0293)
urban area		0.0017	0.0054		0.0019
		(0.0022)	(0.0042)		(0.0017)
Unexplained					
age	-4.0305*	2.9729	0.5527	1.7388	-0.0919
	(2.4046)	(2.4873)	(1.7896)	(1.1191)	(1.3705)
age^2	1.9433	-1.2257	-1.0026	-0.6109	0.3413
	(1.2823)	(1.6615)	(0.8307)	(0.4994)	(0.8063)
gross household income	-47.9932	-2.3389	30.2069	9.8588	-8.8123
	(53.3553)	(18.6888)	(19.3268)	(17.7738)	(8.7775)
gross household income^2	25.1821	-0.7569	-14.5702	-5.4722	3.3393
	(26.5855)	(9.4301)	(10.1297)	(8.9402)	(4.5449)
less than secondary education	0.0733**	-0.1093	0.0582**	-0.0078	0.0297
	(0.0370)	(0.0718)	(0.0291)	(0.0171)	(0.0280)
secondary education	-0.1234***	-0.0038	0.0486	-0.0559**	-0.0095
	(0.0473)	(0.0280)	(0.0354)	(0.0267)	(0.0216)
tertiary education	0.0193	0.0427	-0.1002***	0.0192*	-0.0215
	(0.0371)	(0.0321)	(0.0301)	(0.0104)	(0.0321)
houseowner	0.0104	0.0863	-0.0370	-0.1589***	0.0179
	(0.0521)	(0.0869)	(0.0428)	(0.0436)	(0.0452)
single	-0.0346	0.0614	0.0289	-0.0244*	0.0675**
	(0.0378)	(0.0541)	(0.0307)	(0.0129)	(0.0274)
child(ren) in household	0.0189	-0.0420	0.1216	-0.0028	-0.0235
	(0.0327)	(0.0425)	(0.0845)	(0.0110)	(0.0145)
less than three-person household	-0.0671	-0.0151	-0.0842	0.0056	-0.0290
	(0.2081)	(0.0631)	(0.1245)	(0.0332)	(0.0790)
three-person household	-0.0872***	-0.1155***	-0.0279	-0.0197*	-0.0319*
	(0.0306)	(0.0404)	(0.0193)	(0.0119)	(0.0169)
at least four-person household	0.0541**	0.1270**	0.0754	0.0239	0.0354*
	(0.0261)	(0.0575)	(0.0476)	(0.0201)	(0.0198)
Total	0.0160	-0.2609	0.9258*	-0.0973	-0.3167***
	(0.2884)	(0.5254)	(0.5332)	(0.1510)	(0.1105)
urban area		0.0017	-0.0294		0.0663
		(0.0408)	(0.0203)		(0.0671)
Observations	3252	2238	2839	4472	4409

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

2.4 Non contributory benefits

2.4.1 Participation

Tabelle: 64: Oaxaca decompositions for non contributory benefits and migrant households (participation equation)

	AT	BE	CY	CZ	DE	EE	ES
overall							
group_1	0.4618***	0.4826***	0.5082***	0.1615***	0.2580***	0.3161***	0.0778***
	(0.0122)	(0.0123)	(0.0174)	(0.0115)	(0.0071)	(0.0113)	(0.0077)
group_2	0.3656***	0.3561***	0.5315***	0.1677***	0.3489***	0.4375***	0.0533***
	(0.0059)	(0.0052)	(0.0098)	(0.0032)	(0.0037)	(0.0062)	(0.0022)
difference	0.0962***	0.1265***	-0.0234	-0.0062	-0.0908***	-0.1213***	0.0245***
	(0.0136)	(0.0133)	(0.0199)	(0.0119)	(0.0080)	(0.0128)	(0.0080)
explained	0.1426***	0.1455***	0.0542***	-0.0125**	-0.0740***	-0.0567***	0.0493***
	(0.0109)	(0.0100)	(0.0152)	(0.0059)	(0.0061)	(0.0112)	(0.0052)
unexplained	-0.0464***	-0.0190*	-0.0775***	0.0063	-0.0168***	-0.0646***	-0.0248***
	(0.0111)	(0.0107)	(0.0168)	(0.0104)	(0.0062)	(0.0117)	(0.0094)
explained							
age	-0.0391***	-0.1291***	-0.0742**	-0.0023	0.1119***	0.0561***	0.0566***
	(0.0091)	(0.0176)	(0.0358)	(0.0073)	(0.0101)	(0.0128)	(0.0112)
age^2	0.0464***	0.1596***	0.0513	-0.0179*	-0.1554***	-0.0754***	-0.0406***
	(0.0097)	(0.0201)	(0.0343)	(0.0093)	(0.0118)	(0.0145)	(0.0113)
gross household income	-0.0518***	-0.0482	-0.0197	0.0396	-0.0182***	-0.0081*	-0.0044
	(0.0170)	(0.0341)	(0.0239)	(0.0261)	(0.0068)	(0.0043)	(0.0036)
gross household income^2	0.0714***	0.0544*	0.0161	-0.0225	0.0232***	0.0151***	0.0030
	(0.0175)	(0.0309)	(0.0204)	(0.0185)	(0.0072)	(0.0057)	(0.0038)
social contacts	0.0000	-0.0002	-0.0009	0.0003	0.0006**	-0.0001	-0.0001
	(0.0004)	(0.0005)	(0.0007)	(0.0003)	(0.0003)	(0.0004)	(0.0002)
leisure activities	0.0014	0.0020**	-0.0027**	0.0027*	0.0008***	-0.0006	0.0006**
	(0.0008)	(0.0008)	(0.0012)	(0.0014)	(0.0003)	(0.0006)	(0.0002)
urban area	0.0033**	0.0015	-0.0029**	0.0004	0.0002	0.0078**	0.0005**
	(0.0015)	(0.0010)	(0.0013)	(0.0004)	(0.0001)	(0.0034)	(0.0002)
less than secondary education	0.0003	-0.0002	-0.0038	0.0033	0.0007**	0.0002	0.0000
	(0.0005)	(0.0006)	(0.0036)	(0.0022)	(0.0003)	(0.0003)	(0.0004)
secondary education	0.0017***	0.0000	0.0000	0.0015	0.0014***	0.0007	-0.0004
	(0.0006)	(0.0002)	(0.0001)	(0.0011)	(0.0004)	(0.0005)	(0.0004)
tertiary education	0.0002	-0.0002	-0.0043	0.0001	-0.0001	-0.0002	0.0000
	(0.0004)	(0.0007)	(0.0038)	(0.0002)	(0.0002)	(0.0005)	(0.0001)
houseowner	0.0057***	0.0043***	0.0019	0.0012	-0.0000	-0.0001	0.0047***
	(0.0015)	(0.0013)	(0.0014)	(0.0009)	(0.0000)	(0.0006)	(0.0014)
single	0.0013	0.0007	0.0008	-0.0007	-0.0015**	0.0008	0.0002
	(0.0008)	(0.0007)	(0.0006)	(0.0006)	(0.0007)	(0.0008)	(0.0002)
child(ren) in household	0.0284***	0.0213***	0.0266***	-0.0067***	-0.0092***	-0.0243***	0.0134***
	(0.0032)	(0.0027)	(0.0037)	(0.0018)	(0.0015)	(0.0025)	(0.0015)
less than three person household	0.0196***	0.0283***	0.0327***	-0.0055***	-0.0108***	-0.0049	-0.0013*
	(0.0030)	(0.0032)	(0.0050)	(0.0019)	(0.0024)	(0.0034)	(0.0008)
three-person household	0.0006	0.0004	0.0003	-0.0005	-0.0002	0.0003	0.0000
	(0.0005)	(0.0003)	(0.0014)	(0.0006)	(0.0002)	(0.0003)	(0.0001)
at least four-person household	0.0133***	0.0213***	0.0100**	-0.0025**	-0.0084***	-0.0075***	-0.0021***
	(0.0023)	(0.0029)	(0.0050)	(0.0010)	(0.0017)	(0.0026)	(0.0006)
unexplained							
age	-0.2372**	-0.0005	0.0612	-0.1063	0.0242	-0.3816	0.3206
	(0.1184)	(0.0908)	(0.2447)	(0.2060)	(0.1255)	(0.2999)	(0.2548)
age^2	0.1416**	0.0141	-0.1138	0.0802	-0.0050	0.2232	-0.1336
	(0.0621)	(0.0511)	(0.1232)	(0.1308)	(0.0793)	(0.1804)	(0.1220)
gross household income	-0.6620	-0.2829	1.6344	-4.3933	-0.5045	0.5586	0.4818
	(0.6403)	(0.7003)	(4.2462)	(5.7323)	(0.4242)	(0.8838)	(0.5116)
gross household income^2	0.4189	0.0835	-0.9810	2.1487	0.2399	-0.4901	-0.3885
	(0.3531)	(0.3564)	(2.1179)	(2.7972)	(0.2311)	(0.4909)	(0.3109)
social contacts	0.0080	-0.0005	-0.0172	0.0039	0.0002	-0.0054	0.0008
	(0.0072)	(0.0041)	(0.0162)	(0.0102)	(0.0030)	(0.0145)	(0.0135)
leisure activities	-0.0081**	0.0028	0.0007	0.0019	0.0029	-0.0038	-0.0069
	(0.0041)	(0.0030)	(0.0077)	(0.0041)	(0.0032)	(0.0065)	(0.0082)
urban area	-0.0060	-0.0023	0.0121	0.0002	0.0011	-0.0207**	0.0087
	(0.0042)	(0.0033)	(0.0077)	(0.0028)	(0.0027)	(0.0090)	(0.0063)
less than secondary education	-0.0008	0.0029	-0.0057	0.0060	-0.0024*	-0.0102*	0.0018
	(0.0024)	(0.0024)	(0.0047)	(0.0091)	(0.0014)	(0.0056)	(0.0062)
secondary education	0.0057	0.0010	-0.0014	0.0108	0.0045	0.0106	-0.0073
	(0.0042)	(0.0018)	(0.0059)	(0.0139)	(0.0030)	(0.0089)	(0.0051)
tertiary education	-0.0026	-0.0044	0.0124	-0.0058	0.0045	0.0087	0.0069
	(0.0032)	(0.0029)	(0.0084)	(0.0078)	(0.0036)	(0.0067)	(0.0057)
houseowner	0.0027	0.0055	0.0230***	-0.0030	-0.0061*	-0.0106	0.0098
	(0.0026)	(0.0035)	(0.0085)	(0.0064)	(0.0031)	(0.0206)	(0.0073)
single	0.0034	0.0035	-0.0011	-0.0044	-0.0018	-0.0095	0.0010
	(0.0032)	(0.0025)	(0.0038)	(0.0062)	(0.0016)	(0.0078)	(0.0051)
child(ren) in household	-0.0054	-0.0048**	-0.0128**	0.0017	-0.0032**	0.0001	0.0006
	(0.0038)	(0.0023)	(0.0060)	(0.0033)	(0.0014)	(0.0049)	(0.0090)
less than three person household	0.0146*	0.0072	0.0153*	0.0009	-0.0021	0.0300**	0.0136*
	(0.0075)	(0.0047)	(0.0079)	(0.0105)	(0.0077)	(0.0140)	(0.0083)
three-person household	-0.0036	0.0011	-0.0024	0.0012	0.0005	-0.0013	-0.0092*
	(0.0022)	(0.0012)	(0.0042)	(0.0027)	(0.0012)	(0.0040)	(0.0051)
at least four-person household	-0.0011	-0.0065*	-0.0117	-0.0015	-0.0001	-0.0123**	-0.0016
	(0.0040)	(0.0034)	(0.0074)	(0.0027)	(0.0018)	(0.0059)	(0.0079)
Observations	5799	5454	3087	9867	12765	4872	11752

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 65: Oaxaca decompositions for non contributory benefits and migrant households (participation equation)

	FR	GR	IE	IT	LT	LU	LV
overall							
group_1	0.5128***	0.2714***	0.6878***	0.3708***	0.2183***	0.5910***	0.2994***
	(0.0120)	(0.0173)	(0.0147)	(0.0146)	(0.0156)	(0.0072)	(0.0112)
group_2	0.4193***	0.2016***	0.6869***	0.3020***	0.2835***	0.3648***	0.4055***
	(0.0047)	(0.0053)	(0.0075)	(0.0042)	(0.0057)	(0.0090)	(0.0067)
difference	0.0935***	0.0698***	0.0009	0.0688***	-0.0651***	0.2262***	-0.1062***
	(0.0128)	(0.0181)	(0.0166)	(0.0152)	(0.0166)	(0.0116)	(0.0131)
explained	0.0893***	0.0401***	0.0083	0.0975***	-0.0496***	0.2540***	-0.0757***
	(0.0092)	(0.0099)	(0.0144)	(0.0118)	(0.0086)	(0.0104)	(0.0091)
unexplained	0.0042	0.0297*	-0.0074	-0.0287**	-0.0155	-0.0277***	-0.0305**
	(0.0098)	(0.0180)	(0.0124)	(0.0112)	(0.0147)	(0.0099)	(0.0119)
explained							
age	0.0003	0.0053	0.0208	0.0380**	-0.0001	-0.2212***	-0.0007
	(0.0010)	(0.0242)	(0.0328)	(0.0149)	(0.0020)	(0.0352)	(0.0117)
age^2	0.0015	-0.0307	-0.0308	-0.0473***	-0.0001	0.2495***	-0.0027
	(0.0023)	(0.0249)	(0.0484)	(0.0148)	(0.0014)	(0.0367)	(0.0113)
gross household income	-0.0306***	-0.0752**	0.0073	-0.2645***	0.0034	0.0932	-0.0055
	(0.0075)	(0.0312)	(0.0114)	(0.0405)	(0.0097)	(0.0793)	(0.0066)
gross household income^2	0.0495***	0.0826***	-0.0082	0.2811***	-0.0099	-0.0673	0.0109
	(0.0099)	(0.0308)	(0.0126)	(0.0347)	(0.0101)	(0.0769)	(0.0073)
social contacts	0.0007**	-0.0018**	-0.0000	0.0004*	0.0006	0.0029**	0.0010
	(0.0003)	(0.0007)	(0.0001)	(0.0002)	(0.0005)	(0.0013)	(0.0007)
leisure activities	0.0009**	0.0006	-0.0001	0.0009***	-0.0002	0.0010	0.0010
	(0.0004)	(0.0007)	(0.0002)	(0.0003)	(0.0003)	(0.0010)	(0.0011)
urban area	0.0008	-0.0019**	0.0000	0.0003	-0.0051***	0.0031**	-0.0002
	(0.0008)	(0.0008)	(0.0000)	(0.0002)	(0.0015)	(0.0013)	(0.0021)
less than secondary education	0.0001	-0.0048***	-0.0005	-0.0042***	-0.0005	0.0003	0.0001
	(0.0005)	(0.0015)	(0.0008)	(0.0008)	(0.0011)	(0.0004)	(0.0003)
secondary education	0.0020***	-0.0019**	-0.0000	-0.0005	-0.0000	0.0008	-0.0000
	(0.0005)	(0.0009)	(0.0000)	(0.0006)	(0.0001)	(0.0017)	(0.0001)
tertiary education	0.0002	-0.0004	-0.0004	0.0001	-0.0002	-0.0003	0.0001
	(0.0003)	(0.0005)	(0.0006)	(0.0004)	(0.0008)	(0.0017)	(0.0004)
houseowner	0.0086***	0.0051**	0.0011	0.0038***	0.0005	0.0054	-0.0011**
	(0.0015)	(0.0025)	(0.0017)	(0.0013)	(0.0008)	(0.0038)	(0.0005)
single	-0.0022***	-0.0055***	-0.0004	0.0059***	-0.0005	-0.0003	-0.0004
	(0.0007)	(0.0012)	(0.0007)	(0.0009)	(0.0006)	(0.0011)	(0.0006)
child(ren) in household	0.0070***	0.0151***	0.0073	0.0193***	-0.0198***	0.0503***	-0.0325***
	(0.0016)	(0.0024)	(0.0118)	(0.0015)	(0.0030)	(0.0044)	(0.0029)
less than three person household	0.0167***	0.0250***	0.0025	0.0220***	0.0051	0.0443***	-0.0060***
	(0.0020)	(0.0033)	(0.0041)	(0.0020)	(0.0032)	(0.0041)	(0.0022)
three-person household	-0.0016**	-0.0007	-0.0000	0.0023***	0.0006	0.0015	0.0001
	(0.0007)	(0.0008)	(0.0001)	(0.0008)	(0.0005)	(0.0009)	(0.0002)
at least four-person household	0.0197***	0.0176***	0.0019	0.0088***	0.0013	0.0285***	-0.0071***
	(0.0025)	(0.0028)	(0.0031)	(0.0012)	(0.0021)	(0.0036)	(0.0018)
unexplained							
age	0.0637	-1.0405	0.0453	0.6392**	0.1881	0.0093	0.0764
	(0.1234)	(1.2149)	(0.0824)	(0.3094)	(0.2007)	(0.0752)	(0.1746)
age^2	-0.0173	0.5893	-0.0195	-0.2955**	-0.0787	0.0124	-0.0202
	(0.0528)	(0.6772)	(0.0362)	(0.1485)	(0.1040)	(0.0361)	(0.0985)
gross household income	-9.7665	-0.2558	-0.2079	-0.5300	1.2674	-0.6085	1.7164
	(13.0619)	(8.0563)	(0.6839)	(2.7053)	(0.8778)	(1.9207)	(1.1489)
gross household income^2	4.8452	-0.0941	0.1105	0.3870	-0.6632	0.3619	-0.8861
	(6.4805)	(4.2375)	(0.3515)	(1.4392)	(0.4654)	(0.9610)	(0.5875)
social contacts	0.0059	-0.0049	-0.0011	0.0060	0.0120	0.0003	-0.0001
	(0.0095)	(0.0460)	(0.0025)	(0.0104)	(0.0089)	(0.0054)	(0.0062)
leisure activities	-0.0002	0.0284	-0.0011	-0.0062	0.0026	0.0050	0.0040
	(0.0025)	(0.0327)	(0.0029)	(0.0060)	(0.0028)	(0.0040)	(0.0034)
urban area	0.0020	0.0324	-0.0001	-0.0040	-0.0102	-0.0024	-0.0040
	(0.0039)	(0.0362)	(0.0008)	(0.0048)	(0.0074)	(0.0024)	(0.0060)
less than secondary education	-0.0025	-0.0175	0.0000	-0.0206**	0.0035	0.0016	0.0047
	(0.0043)	(0.0238)	(0.0008)	(0.0101)	(0.0034)	(0.0024)	(0.0036)
secondary education	0.0052	0.0138	0.0005	-0.0073	-0.0014	-0.0002	0.0036
	(0.0072)	(0.0199)	(0.0011)	(0.0078)	(0.0033)	(0.0015)	(0.0052)
tertiary education	-0.0025	0.0032	-0.0015	0.0113**	-0.0075	-0.0012	-0.0080*
	(0.0039)	(0.0136)	(0.0031)	(0.0052)	(0.0079)	(0.0026)	(0.0042)
houseowner	0.0005	0.0341	0.0052	0.0194**	0.0186	0.0027	0.0096
	(0.0028)	(0.0381)	(0.0088)	(0.0091)	(0.0199)	(0.0030)	(0.0110)
single	0.0028	-0.0054	0.0003	0.0115*	0.0046	0.0003	0.0070
	(0.0043)	(0.0133)	(0.0011)	(0.0069)	(0.0043)	(0.0018)	(0.0054)
child(ren) in household	0.0022	-0.0290	-0.0041	0.0025	0.0026	-0.0035	-0.0013
	(0.0033)	(0.0326)	(0.0057)	(0.0070)	(0.0023)	(0.0033)	(0.0024)
less than three person household	0.0105	-0.0706	-0.0025	0.0054	0.0113	0.0042	0.0136
	(0.0148)	(0.0809)	(0.0043)	(0.0099)	(0.0116)	(0.0030)	(0.0103)
three-person household	-0.0008	0.0272	0.0003	-0.0075	-0.0006	0.0006	0.0002
	(0.0015)	(0.0319)	(0.0009)	(0.0057)	(0.0029)	(0.0015)	(0.0028)
at least four-person household	-0.0049	0.0372	0.0018	0.0058	-0.0040	-0.0045	-0.0041
	(0.0073)	(0.0451)	(0.0035)	(0.0068)	(0.0046)	(0.0030)	(0.0033)
Observations	10503	6823	4993	19983	5106	4204	5716

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 66: Oaxaca decompositions for non contributory benefits and migrant households (participation equation)

	NL	PT	SE	SI	UK
overall					
group_1	0.4940***	0.3955***	0.4859***	0.4861***	0.4464***
	(0.0151)	(0.0264)	(0.0146)	(0.0113)	(0.0137)
group_2	0.4119***	0.3063***	0.3493***	0.4709***	0.3836***
	(0.0042)	(0.0064)	(0.0056)	(0.0051)	(0.0049)
difference	0.0821***	0.0892***	0.1365***	0.0152	0.0627***
	(0.0157)	(0.0272)	(0.0156)	(0.0124)	(0.0146)
explained	0.0673***	0.1494***	0.1203***	0.0235***	0.1225***
	(0.0115)	(0.0155)	(0.0132)	(0.0083)	(0.0111)
unexplained	0.0149	-0.0602***	0.0163	-0.0083	-0.0598***
	(0.0110)	(0.0211)	(0.0124)	(0.0094)	(0.0113)
explained					
age	-0.0084*	-0.1296***	0.0040	-0.0001	-0.0720***
	(0.0043)	(0.0265)	(0.0069)	(0.0006)	(0.0128)
age^2	0.0087**	0.1926***	-0.0042	0.0022	0.0703***
	(0.0042)	(0.0296)	(0.0076)	(0.0036)	(0.0123)
gross household income	-0.0018	0.0264	-0.2424***	-0.1093***	0.0033
	(0.0082)	(0.0249)	(0.0819)	(0.0298)	(0.0141)
gross household income^2	0.0023	-0.0321	0.2231***	0.1299***	-0.0199
	(0.0118)	(0.0262)	(0.0664)	(0.0334)	(0.0137)
social contacts	0.0002	-0.0021**	-0.0002	0.0003	-0.0001
	(0.0002)	(0.0009)	(0.0003)	(0.0003)	(0.0002)
leisure activities	0.0004	-0.0011	0.0069***	0.0000	-0.0001
	(0.0002)	(0.0007)	(0.0016)	(0.0003)	(0.0003)
less than secondary education	-0.0011**	-0.0036	0.0015*	0.0001	-0.0015***
	(0.0005)	(0.0028)	(0.0008)	(0.0005)	(0.0006)
secondary education	-0.0005	0.0020	0.0024**	0.0001	0.0017**
	(0.0003)	(0.0019)	(0.0011)	(0.0002)	(0.0009)
tertiary education	-0.0000	-0.0027*	0.0000	-0.0005	-0.0016
	(0.0002)	(0.0015)	(0.0003)	(0.0005)	(0.0014)
houseowner	0.0051***	-0.0007	0.0053***	0.0009**	0.0164***
	(0.0014)	(0.0005)	(0.0014)	(0.0004)	(0.0023)
single	0.0000	-0.0006	-0.0020**	-0.0002	-0.0014**
	(0.0006)	(0.0011)	(0.0009)	(0.0003)	(0.0007)
child(ren) in household	0.0159***	0.0288***	0.0262***	-0.0043*	0.0311***
	(0.0037)	(0.0043)	(0.0039)	(0.0023)	(0.0036)
less than three person household	0.0184***	0.0293***	0.0393***	0.0060**	0.0304***
	(0.0031)	(0.0041)	(0.0051)	(0.0027)	(0.0027)
three-person household	0.0013**	0.0027**	0.0008	0.0004	0.0018***
	(0.0006)	(0.0012)	(0.0006)	(0.0003)	(0.0007)
at least four-person household	0.0052*	0.0129***	0.0262***	0.0013	0.0173***
	(0.0028)	(0.0029)	(0.0042)	(0.0028)	(0.0022)
urban area		0.0015	-0.0014		0.0005
		(0.0010)	(0.0012)		(0.0006)
unexplained					
age	0.1305	0.6611**	0.1258	-0.1099	0.1937*
	(0.3649)	(0.3104)	(0.1075)	(0.2142)	(0.1163)
age^2	-0.0703	-0.4401**	-0.0527	0.0738	-0.0844
	(0.1934)	(0.1715)	(0.0524)	(0.1236)	(0.0597)
gross household income	5.0238	-1.0133	-1.6279*	9.1358	-0.6834
	(11.7134)	(2.2180)	(0.9062)	(8.0259)	(0.6491)
gross household income^2	-2.7119	0.4891	0.8385*	-4.6837	0.4063
	(6.2504)	(1.1493)	(0.4811)	(4.0878)	(0.3471)
social contacts	0.0299	-0.0010	-0.0117	0.0289	-0.0013
	(0.0657)	(0.0135)	(0.0090)	(0.0214)	(0.0050)
leisure activities	0.0072	-0.0042	0.0110	-0.0110	0.0010
	(0.0207)	(0.0057)	(0.0073)	(0.0082)	(0.0038)
less than secondary education	0.0046	0.0047	0.0004	-0.0040	0.0007
	(0.0114)	(0.0102)	(0.0022)	(0.0061)	(0.0020)
secondary education	0.0007	-0.0022	0.0014	-0.0152	0.0021
	(0.0093)	(0.0050)	(0.0030)	(0.0127)	(0.0024)
tertiary education	-0.0087	0.0001	-0.0018	0.0055	-0.0062
	(0.0208)	(0.0049)	(0.0030)	(0.0046)	(0.0047)
houseowner	-0.0287	0.0004	-0.0086	-0.0085	0.0232***
	(0.0624)	(0.0101)	(0.0059)	(0.0132)	(0.0050)
single	-0.0172	-0.0065	-0.0001	0.0013	0.0046*
	(0.0375)	(0.0058)	(0.0034)	(0.0058)	(0.0027)
child(ren) in household	0.0181	-0.0060	0.0049	0.0019	-0.0202***
	(0.0357)	(0.0067)	(0.0032)	(0.0051)	(0.0032)
less than three person household	-0.0251	-0.0029	0.0111	-0.0022	0.0115**
	(0.0565)	(0.0074)	(0.0075)	(0.0059)	(0.0058)
three-person household	-0.0030	0.0027	-0.0010	0.0031	-0.0005
	(0.0079)	(0.0062)	(0.0016)	(0.0035)	(0.0018)
at least four-person household	0.0174	0.0010	-0.0045	-0.0026	-0.0060*
	(0.0367)	(0.0077)	(0.0043)	(0.0075)	(0.0034)
urban area		-0.0024	-0.0026		-0.0062
		(0.0057)	(0.0023)		(0.0081)
Observations	9472	4424	5582	9001	8128

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

2.4.2 Level

Tabelle: 67: Oaxaca decompositions for non contributory benefits and migrant households (level equation)

	AT	BE	CY	CZ	DE	EE	ES
Differential							
Prediction_1	8.3750***	8.0183***	7.0056***	7.1256***	8.0580***	6.1432***	7.4084***
	(0.0455)	(0.0360)	(0.0563)	(0.1220)	(0.0325)	(0.0591)	(0.1068)
Prediction_2	8.1042***	7.8903***	7.0191***	7.1251***	8.0118***	6.4027***	7.3501***
	(0.0253)	(0.0188)	(0.0262)	(0.0263)	(0.0109)	(0.0275)	(0.0422)
Difference	0.2708***	0.1280***	-0.0135	0.0005	0.0462	-0.2594***	0.0584
	(0.0521)	(0.0406)	(0.0621)	(0.1248)	(0.0343)	(0.0652)	(0.1148)
Adjusted	0.1935	0.1567	-0.1850	-0.0413	0.0038	-0.0945	3.1408
	(0.1205)	(0.1036)	(0.2529)	(0.5268)	(0.0714)	(0.1778)	(2.0609)
Explained							
age	-0.0926***	-0.0277	-0.1897***	-0.1414**	0.0122	-0.0812*	0.1099
	(0.0332)	(0.0291)	(0.0697)	(0.0678)	(0.0197)	(0.0428)	(0.1147)
age^2	0.1338***	0.0183	0.1282*	0.0922	-0.0280	0.0326	-0.0883
	(0.0472)	(0.0267)	(0.0721)	(0.0617)	(0.0234)	(0.0431)	(0.0880)
gross household income	-0.3765	0.3111	0.0154	0.0386	-0.0364	0.0348	-0.0986
	(0.2360)	(0.2547)	(0.0608)	(0.1433)	(0.0296)	(0.0549)	(0.2333)
gross household income^2	0.3662	-0.2040	-0.0249	0.0051	0.0432	-0.0304	-0.0073
	(0.2317)	(0.2462)	(0.0694)	(0.1412)	(0.0307)	(0.0582)	(0.2424)
urban area	0.0185***	0.0015	-0.0105***	0.0015	0.0023**	-0.0044	0.0085
	(0.0064)	(0.0029)	(0.0040)	(0.0020)	(0.0011)	(0.0107)	(0.0089)
less than secondary education	-0.0116**	-0.0120***	-0.0258***	-0.0094	0.0105***	0.0012	-0.0006
	(0.0047)	(0.0039)	(0.0078)	(0.0082)	(0.0035)	(0.0023)	(0.0040)
secondary education	0.0001	-0.0001	0.0062*	0.0106	0.0084***	0.0014	-0.0003
	(0.0008)	(0.0003)	(0.0036)	(0.0066)	(0.0031)	(0.0021)	(0.0022)
tertiary education	-0.0085**	-0.0144***	-0.0131	-0.0066	-0.0012	-0.0012	-0.0038
	(0.0036)	(0.0042)	(0.0093)	(0.0061)	(0.0018)	(0.0016)	(0.0053)
houseowner	0.0135*	0.0110**	0.0052	0.0026	0.0030**	-0.0038*	0.0543*
	(0.0078)	(0.0048)	(0.0036)	(0.0052)	(0.0013)	(0.0023)	(0.0289)
single	-0.0009	-0.0056**	-0.0030	-0.0038	-0.0065***	-0.0034	-0.0003
	(0.0038)	(0.0026)	(0.0022)	(0.0054)	(0.0020)	(0.0029)	(0.0043)
child(ren) in household	0.0374***	0.0096*	0.1073***	-0.0246	0.0020	-0.0338**	0.0305
	(0.0089)	(0.0057)	(0.0191)	(0.0172)	(0.0033)	(0.0170)	(0.0290)
less than three-person household	0.0362***	0.0177*	0.1075***	-0.0100	0.0207***	0.0100	-0.0026
	(0.0116)	(0.0103)	(0.0217)	(0.0084)	(0.0060)	(0.0101)	(0.0097)
three-person household	-0.0006	0.0034	-0.0114**	-0.0017	-0.0098***	-0.0002	-0.0219*
	(0.0013)	(0.0024)	(0.0055)	(0.0031)	(0.0036)	(0.0014)	(0.0130)
at least four-person household	0.0537***	0.0456**	0.0561*	-0.0035	0.0010	0.0111	0.0089
	(0.0138)	(0.0179)	(0.0300)	(0.0058)	(0.0105)	(0.0151)	(0.0146)
Total	0.2371***	0.1708***	0.2464***	-0.0746	0.0223	-0.1127**	0.0815
	(0.0563)	(0.0353)	(0.0698)	(0.0551)	(0.0225)	(0.0572)	(0.1196)
Unexplained							
age	-0.0959	-1.1060	3.2002**	1.9030	-1.3177	0.3526	5.5325*
	(0.6837)	(1.2800)	(1.4117)	(2.1829)	(0.8805)	(1.2919)	(2.9248)
age^2	0.0368	0.5655	-2.0286***	-0.7421	0.7757*	-0.0609	-1.6629
	(0.3341)	(0.6563)	(0.7161)	(1.1008)	(0.4684)	(0.7026)	(1.2230)
gross household income	7.4722	7.0024	19.1018	-5.4335	17.0428**	-9.4588	1.0515
	(10.0219)	(12.2536)	(28.3160)	(29.9822)	(8.3936)	(14.4649)	(17.6666)
gross household income^2	-4.5300	-3.3117	-10.6064	1.3446	-9.1424**	5.4031	0.4821
	(5.0150)	(6.1267)	(14.1362)	(14.8407)	(4.2734)	(7.3801)	(9.6513)
urban area	-0.0250	0.0356	-0.0095	-0.0147	-0.0237	-0.0021	-0.0231
	(0.0219)	(0.0255)	(0.0353)	(0.0417)	(0.0163)	(0.0362)	(0.1278)
less than secondary education	0.0298**	0.0331*	-0.0314	-0.0458	-0.0170**	0.0052	0.0034
	(0.0151)	(0.0179)	(0.0207)	(0.0704)	(0.0084)	(0.0141)	(0.0794)
secondary education	-0.0467*	-0.0083	0.0095	0.0058	0.0076	0.0033	0.0278
	(0.0256)	(0.0166)	(0.0261)	(0.1313)	(0.0167)	(0.0460)	(0.0549)
tertiary education	-0.0128	-0.0288	0.0613	0.0180	0.0533**	-0.0177	-0.0424
	(0.0166)	(0.0199)	(0.0446)	(0.0345)	(0.0230)	(0.0322)	(0.0634)
houseowner	-0.0143	0.0694***	0.0572	-0.0275	-0.0094	0.1281	-0.0846
	(0.0137)	(0.0268)	(0.0541)	(0.0666)	(0.0168)	(0.0993)	(0.0679)
single	-0.0096	-0.0012	0.0395***	0.0733	-0.0076	-0.0366	-0.0141
	(0.0134)	(0.0143)	(0.0146)	(0.0597)	(0.0100)	(0.0267)	(0.0475)
child(ren) in household	0.0623	-0.0380	0.1031	0.0459	0.0221	-0.1235	-0.7696
	(0.1066)	(0.0804)	(0.1226)	(0.2927)	(0.0336)	(0.1073)	(0.4693)
less than three-person household	-0.0126	0.0585***	-0.0055	0.0014	0.0043	0.0415*	-0.0449
	(0.0258)	(0.0215)	(0.0294)	(0.0665)	(0.0229)	(0.0228)	(0.0686)
three-person household	-0.0108	-0.0787***	-0.0094	-0.0100	-0.0072	-0.0515	0.0174
	(0.0181)	(0.0244)	(0.0275)	(0.0624)	(0.0245)	(0.0329)	(0.0532)
at least four-person household	0.0624	-0.1446**	0.0666	0.0165	-0.0026	-0.1700*	0.0910
	(0.0538)	(0.0700)	(0.1647)	(0.1103)	(0.0368)	(0.1010)	(0.1342)
Total	-0.0436	-0.0141	-0.4314*	0.0333	-0.0185	0.0182	3.0593
	(0.1050)	(0.1011)	(0.2381)	(0.5257)	(0.0681)	(0.1781)	(2.0129)
Observations	2228	2077	1626	1654	4316	2001	656

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 68: Oaxaca decompositions for non contributory benefits and migrant households (level equation)

	FR	GR	IE	IT	LT	LU	LV
Differential							
Prediction_1	8.0015***	7.2145***	8.4068***	6.7951***	5.7362***	8.9884***	5.5224***
	(0.0399)	(0.0712)	(0.0438)	(0.0412)	(0.1145)	(0.0206)	(0.0517)
Prediction_2	7.7731***	7.3636***	7.8770***	6.4294***	5.8378***	8.7860***	5.8811***
	(0.0170)	(0.0227)	(0.0193)	(0.0146)	(0.0341)	(0.0346)	(0.0294)
Difference	0.2284***	-0.1490**	0.5298***	0.3657***	-0.1016	0.2025***	-0.3587***
	(0.0434)	(0.0747)	(0.0479)	(0.0437)	(0.1194)	(0.0402)	(0.0595)
Adjusted	0.4346***	-0.1852	0.7070***	1.3933***	-0.9970	0.0673	-0.3933
	(0.0787)	(1.5827)	(0.0644)	(0.5241)	(0.7353)	(0.0613)	(0.5130)
Explained							
age	0.0159	-0.0109	0.0544	-0.0628	-0.0525	0.0039	-0.2185***
	(0.0222)	(0.1029)	(0.0780)	(0.0517)	(0.0677)	(0.0681)	(0.0669)
age^2	-0.0554**	-0.0471	0.0267	0.0726	-0.0228	-0.0161	0.1762***
	(0.0230)	(0.1046)	(0.0888)	(0.0558)	(0.0641)	(0.0696)	(0.0659)
gross household income	0.1934**	-0.1219	0.3891***	-0.3166***	0.0001	0.9750***	0.0264
	(0.0823)	(0.1057)	(0.0845)	(0.1201)	(0.0022)	(0.3324)	(0.0283)
gross household income^2	-0.0798	0.1033	-0.4293***	0.3432***	-0.0001	-0.9050***	-0.0377
	(0.0791)	(0.1085)	(0.0913)	(0.1267)	(0.0043)	(0.3223)	(0.0345)
urban area	0.0051	-0.0046	-0.0013	-0.0011	-0.0001	-0.0024	-0.0168**
	(0.0040)	(0.0048)	(0.0009)	(0.0009)	(0.0020)	(0.0055)	(0.0071)
less than secondary education	0.0074*	-0.0013	-0.0198***	-0.0139***	0.0023	-0.0020	-0.0005
	(0.0042)	(0.0085)	(0.0066)	(0.0046)	(0.0042)	(0.0062)	(0.0016)
secondary education	0.0126***	-0.0036	-0.0003	-0.0056**	0.0013	0.0180**	-0.0000
	(0.0031)	(0.0046)	(0.0006)	(0.0023)	(0.0024)	(0.0076)	(0.0006)
tertiary education	-0.0039**	0.0009	-0.0144**	-0.0017	-0.0003	0.0061*	0.0001
	(0.0018)	(0.0021)	(0.0064)	(0.0014)	(0.0027)	(0.0036)	(0.0013)
houseowner	0.0204***	-0.0121	0.0385***	0.0223***	-0.0013	0.0358***	-0.0035
	(0.0049)	(0.0083)	(0.0057)	(0.0044)	(0.0030)	(0.0134)	(0.0023)
single	-0.0122***	-0.0137*	-0.0151***	0.0010	0.0026	-0.0002	-0.0006
	(0.0031)	(0.0076)	(0.0039)	(0.0019)	(0.0037)	(0.0041)	(0.0011)
child(ren) in household	-0.0009	0.0172	0.1964***	0.1238***	-0.0493	0.0193**	-0.0951***
	(0.0094)	(0.0147)	(0.0189)	(0.0160)	(0.0314)	(0.0087)	(0.0263)
less than three-person household	0.0244***	-0.0232	0.0864***	0.0554***	-0.0255	0.0223***	-0.0306**
	(0.0077)	(0.0288)	(0.0131)	(0.0145)	(0.0199)	(0.0084)	(0.0135)
three-person household	0.0062*	-0.0124**	-0.0011	-0.0002	0.0002	-0.0002	0.0024
	(0.0033)	(0.0060)	(0.0031)	(0.0007)	(0.0016)	(0.0035)	(0.0028)
at least four-person household	0.0553***	0.0128	0.0626***	0.0538***	-0.0132	0.0347***	-0.0242
	(0.0128)	(0.0202)	(0.0093)	(0.0099)	(0.0213)	(0.0113)	(0.0166)
Total	0.2008***	-0.1294***	0.5914***	0.4161***	-0.2066**	0.2415***	-0.3386***
	(0.0401)	(0.0376)	(0.0416)	(0.0547)	(0.0969)	(0.0514)	(0.0786)
Unexplained							
age	0.6110	1.3690	2.7640***	0.1461	3.1036	1.5095*	2.7249**
	(0.6924)	(2.8304)	(0.7201)	(1.0565)	(2.4587)	(0.8399)	(1.1513)
age^2	-0.2788	-0.4992	-1.3688***	-0.2934	-1.6168	-0.7611*	-1.2563**
	(0.3579)	(1.7246)	(0.3948)	(0.4806)	(1.2805)	(0.4008)	(0.6251)
gross household income	-15.2242	10.9132	-10.3637	-43.1984**	-23.2013	28.3911*	2.0646
	(11.7951)	(20.8588)	(8.5265)	(18.2368)	(22.2092)	(16.2877)	(12.0921)
gross household income^2	7.8360	-6.9445	5.3601	22.9304**	10.9639	-13.4759*	-1.5625
	(5.9001)	(10.7662)	(4.3369)	(9.6524)	(11.4827)	(7.9529)	(6.2399)
urban area	0.0121	0.0167	0.0039	0.0211	-0.0432	0.0135	0.0908**
	(0.0270)	(0.0557)	(0.0135)	(0.0160)	(0.0757)	(0.0198)	(0.0374)
less than secondary education	0.0143	-0.0470	-0.0361**	-0.0120	0.0708	-0.0310	0.0204
	(0.0231)	(0.0514)	(0.0148)	(0.0262)	(0.0484)	(0.0235)	(0.0238)
secondary education	0.0363**	-0.0175	0.0184	0.0151	-0.0688	0.0227*	0.0283
	(0.0178)	(0.0377)	(0.0122)	(0.0264)	(0.0493)	(0.0120)	(0.0363)
tertiary education	-0.0343**	0.0399	0.0331	-0.0010	-0.0462	-0.0062	-0.0420
	(0.0153)	(0.0346)	(0.0297)	(0.0128)	(0.0857)	(0.0179)	(0.0266)
houseowner	0.0315*	-0.0489	0.0497*	-0.0283	-0.0648	0.0457*	-0.0173
	(0.0190)	(0.0695)	(0.0258)	(0.0256)	(0.1785)	(0.0239)	(0.0738)
single	-0.0058	0.0099	0.0428***	-0.0050	0.0590	0.0095	-0.0187
	(0.0179)	(0.0478)	(0.0144)	(0.0190)	(0.0620)	(0.0119)	(0.0369)
child(ren) in household	-0.0838**	-0.0519	-0.2226***	-0.2168**	0.3394	0.0475	-0.1277
	(0.0393)	(0.0885)	(0.0638)	(0.1000)	(0.3266)	(0.0527)	(0.2040)
less than three-person household	0.0385	-0.0022	0.0051	0.0749**	0.0001	-0.0087	0.0117
	(0.0260)	(0.1241)	(0.0235)	(0.0323)	(0.0813)	(0.0123)	(0.0680)
three-person household	-0.0006	-0.0601	-0.0207	-0.0723**	-0.0432	-0.0129	0.0248
	(0.0108)	(0.0712)	(0.0160)	(0.0291)	(0.0403)	(0.0181)	(0.0252)
at least four-person household	-0.0641	0.1452	0.0339	-0.1284*	0.0997	0.0683*	-0.0616
	(0.0406)	(0.4160)	(0.0374)	(0.0695)	(0.1154)	(0.0412)	(0.0744)
Total	0.2338***	-0.0558	0.1155*	0.9772*	-0.7905	-0.1742***	-0.0547
	(0.0710)	(1.5773)	(0.0590)	(0.5057)	(0.7496)	(0.0535)	(0.5251)
Observations	4557	1426	3430	6168	1415	2088	2165

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Tabelle: 69: Oaxaca decompositions for non contributory benefits and migrant households (level equation)

	NL	PT	SE	SI	UK
Differential					
Prediction_1	7.6896***	6.3941***	8.0247***	6.9781***	8.0780***
	(0.0470)	(0.0793)	(0.0514)	(0.0386)	(0.0446)
Prediction_2	7.6278***	6.3390***	7.8568***	7.0660***	8.0482***
	(0.0132)	(0.0262)	(0.0265)	(0.0195)	(0.0190)
Difference	0.0617	0.0551	0.1680***	-0.0879**	0.0298
	(0.0489)	(0.0835)	(0.0578)	(0.0432)	(0.0485)
Adjusted	0.0297	0.4299	0.1788	0.0034	-0.0082
	(0.0814)	(0.4462)	(0.1264)	(0.1108)	(0.1170)
Explained					
age	-0.1039**	0.0147	0.0033	-0.0092	-0.0629***
	(0.0413)	(0.0596)	(0.0171)	(0.0088)	(0.0232)
age^2	0.0999***	0.0194	-0.0046	0.0039	0.0966***
	(0.0369)	(0.0699)	(0.0193)	(0.0062)	(0.0287)
gross household income	0.0061	-0.0003	-0.5323***	0.1373	-0.0567
	(0.0127)	(0.0121)	(0.1790)	(0.1025)	(0.0816)
gross household income^2	0.0016	-0.0082	0.5696***	-0.0487	0.0385
	(0.0071)	(0.0254)	(0.1807)	(0.1036)	(0.0911)
less than secondary education	-0.0056*	-0.0137	-0.0000	-0.0043	-0.0017
	(0.0033)	(0.0086)	(0.0036)	(0.0036)	(0.0020)
secondary education	0.0009	-0.0006	0.0063*	0.0044**	0.0083*
	(0.0016)	(0.0054)	(0.0035)	(0.0022)	(0.0045)
tertiary education	-0.0043*	-0.0049	0.0005	-0.0089***	-0.0100*
	(0.0023)	(0.0048)	(0.0020)	(0.0028)	(0.0056)
houseowner	0.0136***	0.0070	0.0093	0.0028*	0.0224**
	(0.0046)	(0.0046)	(0.0069)	(0.0015)	(0.0112)
single	0.0079**	-0.0000	0.0059*	0.0001	-0.0301***
	(0.0040)	(0.0001)	(0.0032)	(0.0005)	(0.0052)
child(ren) in household	0.0014	0.0359**	0.0091	-0.0247***	0.0192***
	(0.0041)	(0.0158)	(0.0217)	(0.0088)	(0.0058)
less than three-person household	0.0058	-0.0039	-0.0003	0.0042	0.0133**
	(0.0051)	(0.0079)	(0.0012)	(0.0035)	(0.0060)
three-person household	-0.0132***	-0.0047	0.0002	-0.0022	-0.0015
	(0.0047)	(0.0101)	(0.0011)	(0.0018)	(0.0017)
at least four-person household	-0.0190*	0.0089	0.0003	-0.0047	0.0223***
	(0.0111)	(0.0087)	(0.0011)	(0.0079)	(0.0056)
Total	0.0142	0.1116*	0.0866*	0.0280	0.0868**
	(0.0264)	(0.0633)	(0.0476)	(0.0275)	(0.0363)
urban area		0.0095**	-0.0025		0.0088***
		(0.0047)	(0.0029)		(0.0025)
Unexplained					
age	-1.1384*	0.9440	1.7141**	0.6742	-0.6737
	(0.6833)	(4.0099)	(0.7605)	(0.5602)	(0.8873)
age^2	0.6964**	0.0068	-1.0068***	-0.1994	0.3951
	(0.3418)	(2.1300)	(0.3846)	(0.2865)	(0.4221)
gross household income	-8.5529	14.5416	13.9096	34.2936	1.2637
	(15.2378)	(12.7503)	(11.6954)	(24.7676)	(7.2263)
gross household income^2	3.6526	-6.5085	-8.9620	-16.6609	-1.0176
	(7.7194)	(6.5414)	(6.1096)	(12.7313)	(3.7371)
less than secondary education	0.0053	-0.1024	0.0021	0.0093	0.0079
	(0.0164)	(0.0849)	(0.0251)	(0.0223)	(0.0168)
secondary education	0.0088	-0.0031	-0.0156	0.0361	0.0102
	(0.0225)	(0.0341)	(0.0269)	(0.0316)	(0.0163)
tertiary education	-0.0186	0.0316	0.0124	-0.0097	-0.0364
	(0.0256)	(0.0295)	(0.0284)	(0.0092)	(0.0309)
houseowner	0.0026	-0.0234	-0.0512	-0.0263	0.0594**
	(0.0366)	(0.0658)	(0.0351)	(0.0337)	(0.0292)
single	-0.0118	0.0444	0.0181	0.0420*	-0.0550***
	(0.0244)	(0.0370)	(0.0317)	(0.0234)	(0.0182)
child(ren) in household	-0.0327	-0.1514	-0.2098*	-0.0512	0.0049
	(0.0863)	(0.2260)	(0.1071)	(0.0371)	(0.0802)
less than three-person household	-0.0140	0.0150	0.0201	0.0051	0.0383
	(0.0253)	(0.0173)	(0.0330)	(0.0116)	(0.0238)
three-person household	0.0014	-0.0997	-0.0513**	-0.0102	-0.0366*
	(0.0203)	(0.0767)	(0.0224)	(0.0197)	(0.0196)
at least four-person household	0.0313	-0.0900	0.0684	-0.0249	-0.0341
	(0.0432)	(0.1769)	(0.0646)	(0.0873)	(0.0478)
Total	0.0155	0.3183	0.0922	-0.0246	-0.0950
	(0.0766)	(0.4311)	(0.1182)	(0.1081)	(0.1134)
urban area		-0.0389	0.0249		-0.1178*
		(0.0391)	(0.0163)		(0.0613)
Observations	3987	1389	2086	4270	3197

Marginal effects; Standard errors in parentheses
(d) for discrete change of dummy variable from 0 to 1
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Reallocation of Resources Across Age in a Comparative European Setting

Working Paper no 13

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Abstract

We investigate the reallocation of resources across age and gender in a comparative European setting. Our analysis is based on concepts and data from the National Transfer Accounts (NTA) project, as well as on data from income and time use surveys. We introduce the aggregate NTA life cycle deficit as a concept of an economic dependency ratio. This dependency measure allows for flexible age limits and age-specific levels of economic dependency. We then move beyond the current NTA methodology and study gender differences in the generation of income and extend our analysis by unpaid household work. We find large cross-country differences in the age- and gender-specific levels and type of production activities and consequently in the organisation of the resource reallocation across age. Our results clearly indicate that a reform of the welfare system needs to take into account not only public transfers but also private transfers, in particular the services produced within the households for own consumption (e.g. childcare, cooking, cleaning...).

1 Introduction

Persistent low fertility and increasing survival to older ages in combination with the ageing of the baby boom generation are the key determinants of population ageing in many European countries. The consequences of the changing age structure for the overall economic development depend on the design of the economic life cycle, i.e. the age pattern of economic activities such as consumption, the generation of labour income and saving. A typical characteristic of the life cycle in modern societies are phases of economic dependency at the beginning and end of life, in the sense that in these life phases consumption exceeds the income generated through one's own labour input. In childhood and retirement at least part of consumption has to be covered through the reallocation of resources in form of transfers or asset accumulation. A shift in the age structure of the population - as a consequence of the ageing process - asks for an adjustment of the inter-generational transfer system. The current system of the reallocation of resources will be under pressure as an increasing share of elderly people has to be sustained by an ageing and shrinking population in working age.

The underlying economic theory that relates changes in the age structure of a population to the overall economic development dates back to the life cycle hypothesis by Modigliani and Brumberg (1954) and Ando and Modigliani (1963). The life cycle model is concerned with how the savings of individuals lead to the accumulation of wealth at the individual level and of the capital stock at the national level. The savings of individuals rest on the hypothesis of smooth consumption patterns over the course of their lives in the face of varying income. Saving and the accumulation of assets is one way to reallocate resources over age. In most societies transfers play a much more important role than asset reallocations: in childhood transfers are received from the parents, in old age transfers consist mainly of public pensions and publicly financed health- and long-term care services. It is important to understand the mechanisms by which resources are shifted across age groups, as these mechanisms determine whether population ageing leads to the accumulation of assets or to the expansion of transfer programs.

National Transfer Accounts (NTA) offer the method and data to study the economic life cycle at the aggregate level. NTA are built on the System of National Accounts (SNA) and add the age dimension to the SNA. National Transfer Accounts measure how much labour- and asset income each age group generates, how income is subsequently redistributed across age groups through public and private transfers and how each age group uses the disposable resources for consumption and saving. The NTA dataset consists of age-profiles of per capita averages of consumption, income as well as the in- and outflows of transfers for each age group. Among the 41 NTA countries worldwide[1] are the following 12 European countries: Austria, Finland, France, Germany, Hungary, Italy, Poland, Slovenia, Spain, Sweden, Turkey and the UK. Due to data availability we focus on 10 European countries excluding Poland and Turkey.[2].

The difference between consumption and labour income is termed the *life cycle deficit* (LCD) and plays a central role in NTA. In childhood as well as in old age the life cycle deficit is positive, i.e. average consumption in these ages exceeds average labour income, while it is negative during the working years when labour income is higher than consumption. The question arises how the life cycle deficit is financed: In how far are young and old people dependent on their families, on the state or their own assets? NTA data are predestined to study the redistribution of economic output between age groups. By multiplying the observed age-specific per capita averages of economic quantities with the corresponding population numbers we obtain a measure for total production and consumption at each age and for the volume of age reallocations. With the discrepancy between consumption and labour income we in particular obtain a measure for the aggregate economic dependency of children and the elderly and the economic surplus of the working age population respectively.

An investigation of the life cycle surplus (LCS, i.e. the negative life cycle deficit of the working age population) is of particular importance. Its size determines to a large extent the potential to reallocate resources to the young and elderly in a society. Our analysis shows on an aggregate level how the LCS differs across gender and how much the different types of production activities compete with each other. Such an analysis is important in order to identify the options for reforming the age reallocation system when faced with population ageing. For instance, an increase in the labour force exit age and the labour force participation of females may not be feasible if the participation in paid labour competes with non-market production activities (e.g. childcare).

We argue that a better understanding of the reallocation of resources across age is necessary to guide any welfare reform in the face of population ageing. In particular it needs to consider gender differences in the type and the intensity of production activities at each age as well as private transfers (including goods and services produced in the households for own consumption) in combination with public transfers. Through our analysis we obtain a comparative European picture of economic activities carried out by

[1] http://www.ntaccounts.org/web/nta/show/NTA%20Countries

[2] For data from Austria, Finland, Germany, Hungary, Slovenia, Spain and Sweden see Lee and Mason (2011). For the Italian data see Zannella (2013). Turkey and Poland joined the NTA project in 2012 and 2013, respectively. For these two countries no NTA dataset is available yet.

each age group. This pattern is influenced by the country-specific institutional settings, established practices, and norms, values and attitudes as well as the current demographic structure. Indeed, it is the combination of these factors that in the end will have to guide a reform of the welfare state in various countries. With this comparative analysis we aim to identify challenges, but also possible strategies and best practice examples regarding the organisation of production and age reallocations.

In this paper we investigate the reallocation of resources across age and gender in a comparative European setting. Our analysis is based on the NTA methodology, NTA-data, as well as on income data from the European Survey of Income and Living Conditions (EU-SILC) and data from the Multinational Time Use Study (MTUS), complemented by Austrian time use data. We start by giving an overview over the NTA methodology in Section 2. Furthermore, the aggregate NTA life cycle deficit is introduced as a concept of an economic dependency ratio here. Different to the commonly used demographic measures like the young and old age dependency ratios[3] that are based on fixed age limits and consider only the demographic structure, the aggregate life cycle deficit allows for flexible age limits and age specific levels of economic dependency. NTA data therefore allow to endogenously define the stages of the life cycle (see also Sanderson and Scherbov, 2010).

In Section 3 we move beyond the current NTA methodology and study gender differences in the generation of income, i.e. we introduce gender as a further dimension to NTA. Thus, we are able to present the life cycle deficit for men and women separately. With this analysis we aim to gain further insights into the cross-country differences regarding the gender-specific shape of the economic life cycle. Descriptive statistics on the economic status by age and the economic activities of women after giving birth provide further information on how the specific shapes of the age profiles emerge.

By purely considering paid work, the redistribution of resources across gender would be biased since it ignores unpaid household labour that is on average higher for females as compared to males. We therefore further extend our analysis by unpaid household work in Section 4. Similar to the NTA life cycle deficit we build up an indicator that measures the difference between the production and consumption of goods and services which are produced by unpaid household work in a specific age group. In Section 5 we combine paid work as well as unpaid household work into a measure for total production and consumption at each age and by gender. Section 6 concludes.

[3]The young age dependency ratio relates the number of people below age 15 to those in working age, as commonly assumed to be the age group 15 to below 65 years of age. Similarly the elderly dependency ratio records the number of the population above age 65 relative to those in working age.

2 National Transfer Accounts

In order to illustrate, measure and compare aspects of the economic life course across countries we use data and concepts from the National Transfer Accounts (NTA) project. The NTA project is a collaborative work of international research teams from 41 countries[4] and aims at the measurement, analysis and understanding of the macroeconomic consequences of population ageing. At the centre of the project is the development of an accounting system which extends the System of National Accounts (SNA) by information on age - the so-called National Transfer Accounts. These accounts contain age group measures on generated labour- and asset income, its subsequent redistribution in the form of transfers - private and public - as well as the use of resources for consumption and savings.

The values in NTA are consistent with the System of National Accounts which records the generation of income, its subsequent redistribution among institutional units and its use for the total economy. National Transfer Accounts allocate central SNA quantities to age groups and additionally provide estimates for transfers between members of the same household, e.g. from parents to children. The broad estimation strategy for age-specific averages of economic quantities is, first, to derive the aggregate values (e.g. total income, total consumption) from the System of National Accounts and related sources. In the second step the distribution of these quantities over age groups is measured or estimated by using administrative and survey data.

The NTA dataset consists of an extensive number of age profiles containing per capita averages of labour income, asset income, public transfers, private transfers, consumption and savings for each age group. A detailed introduction to the methodology is given in Mason et al. (2009) and in Lee and Mason (2011). The latter furthermore contains a description of the results from many countries. A more detailed description and data for selected countries can be found on the homepage of the project: `www.ntaccounts.org`. NTA measure economic activities of individuals in a given year. It is important to note that the age patterns represent a cross-section snapshot of the economic activities of each age group and do not represent the actual life course pattern of an average individual.

Aggregate Values in the NTA System: The Relation to the SNA

The aggregate quantities in the NTA are derived from the SNA. The income measure in NTA includes all primary income which is generated by national institutional units

[4]http://www.ntaccounts.org/web/nta/show/NTA%20Countries

and represents the resources available in the economy taking depreciation (consumption of fixed capital) into account and before any transfers are implemented. It corresponds by and large to Net National Income (NNI) at basic prices as it is usually defined in the National Accounts.[5] The NTA methodology distinguishes labour- and asset income, i.e. income generated through the input of labour in production and income generated through the input of capital. The main component of labour income is clearly the compensation of employees, the main component of asset income are the net operating surplus[6] and the net property income.[7] Further income components are mixed income, and other taxes (less subsidies) on production which are assumed to be a transfer paid out of labour and asset income. These two components are divided into a labour- and asset part and consequently added to labour- and asset income, respectively.[8]

A large part of the generated resources are redistributed between individuals through public or private transfers. A transfer is defined as "a transaction in which one person provides a good, service or asset to another person without receiving from the latter any good, service or asset in return as counterpart" (adopted from SNA, 2009). Public transfers are those transfers mandated and organized by the public sector: Payments are mainly in the form of taxes and social contributions; benefits consist mainly of public consumption (public transfers in-kind) and social benefits (in cash). Private transfers include flows within the households (e.g. from parents to children), and flows between

[5] Differences between the income concept in NTA and Net National Income at basic prices in the SNA lie in the treatment of *Taxes/Subsidies on Production and Imports*. This tax/subsidy category consists of two components: *Taxes/Subsidies on Products* and *Other Taxes/Subsidies on Production*. In NTA the tax incidence for the latter category is assumed to be on the producer. These taxes less the subsidies are therefore added to the NTA income measure - their payment is regarded as a public transfer paid out of income. However, the other taxes less the subsidies on production are not included in the net national income at basic prices (SNA concept). Another difference between net national production in NTA and the net national income in SNA are the taxes/subsidies paid by the rest of the world (ROW): The NTA net national production does not include the taxes less subsidies which are paid by the ROW as these taxes (less the subsidies) are treated as transfers.

[6] The net operating surplus is the income generated by incorporated enterprises after paying the cost of the labour input, the taxes which accrue during the production process (less the subsidies) and replacing the consumption of fixed capital. It can be interpreted as return to capital in the respective enterprises.

[7] Net property income received from the rest of the world is the net income receivable by the domestic institutional unit for putting a financial asset or a tangible non-produced asset at the disposal of another non-domestic institutional unit. It consists of interest, dividends, rents ...

[8] Mixed income implicitly consists of the remuneration for work done by the owner and the return for the input of the owners capital; it is divided into a labour- and asset share by assuming that two thirds of mixed income is labour income and one third is capital income. For the other taxes less subsidies on production a similar rule is applied: They are assumed to be paid out of labour (2/3) and asset income (1/3) and consequently added to labour and asset income, respectively.

households.

The amount of resources available after the redistribution through transfers is the disposable income, which is available for the purpose of consumption and saving. Consumption in NTA is measured in terms of basic prices. It measures the value of the resources which are used for consumption and therefore does not include taxes on products (e.g. VAT), as taxes represent transfers. The savings measure in NTA corresponds to Net Saving in the SNA. The 2010 values of the NTA aggregates for the included countries are shown in Table A-1.

National Transfer Accounts: Basic Principles and Results

NTA are based on an accounting identity which states that for each individual, and consequently for each age group, the disposable income consisting of labour income (YL), asset income (YA) and net transfers (τ) equals the value of resources used for consumption (C) and saving (S):

$$\underbrace{YL + YA + \tau}_{\text{disposable income}} = C + S \tag{1}$$

For a better graphical presentation of NTA results as well as the motivation of an NTA dependency measure we introduce *available income*, an income measure which represents the amount of resources available for the purpose of consumption and net transfer payments. We split net transfers into a positive part τ^+, representing a net inflow (in childhood and old age), and a negative part τ^- representing a net outflow (in working age). Available income can then be derived through a rearrangement of the terms in Equation (1)

$$\underbrace{YL + \tau^+ + (YA - S)}_{\text{available income}} = C + \tau^- \tag{2}$$

Available income consists of labour income, net-transfer inflows and *asset based reallocations*. Asset based reallocations are defined as asset income minus savings ($YA - S$) and represents the amount of the economic resources which are generated/reallocated by the accumulation of assets and available for the purpose of consumption and transfer payments.

Available income and its components for Austria 2010 and Slovenia 2004 are illustrated in Figure 1. This figure plots the components of available income (positive y-axis) by age (x-axis): Labour income is represented by the white area, asset based reallocations by the black, public transfers by the light-grey and private transfers by the dark-grey area. The black line represents consumption. Those age groups for which available

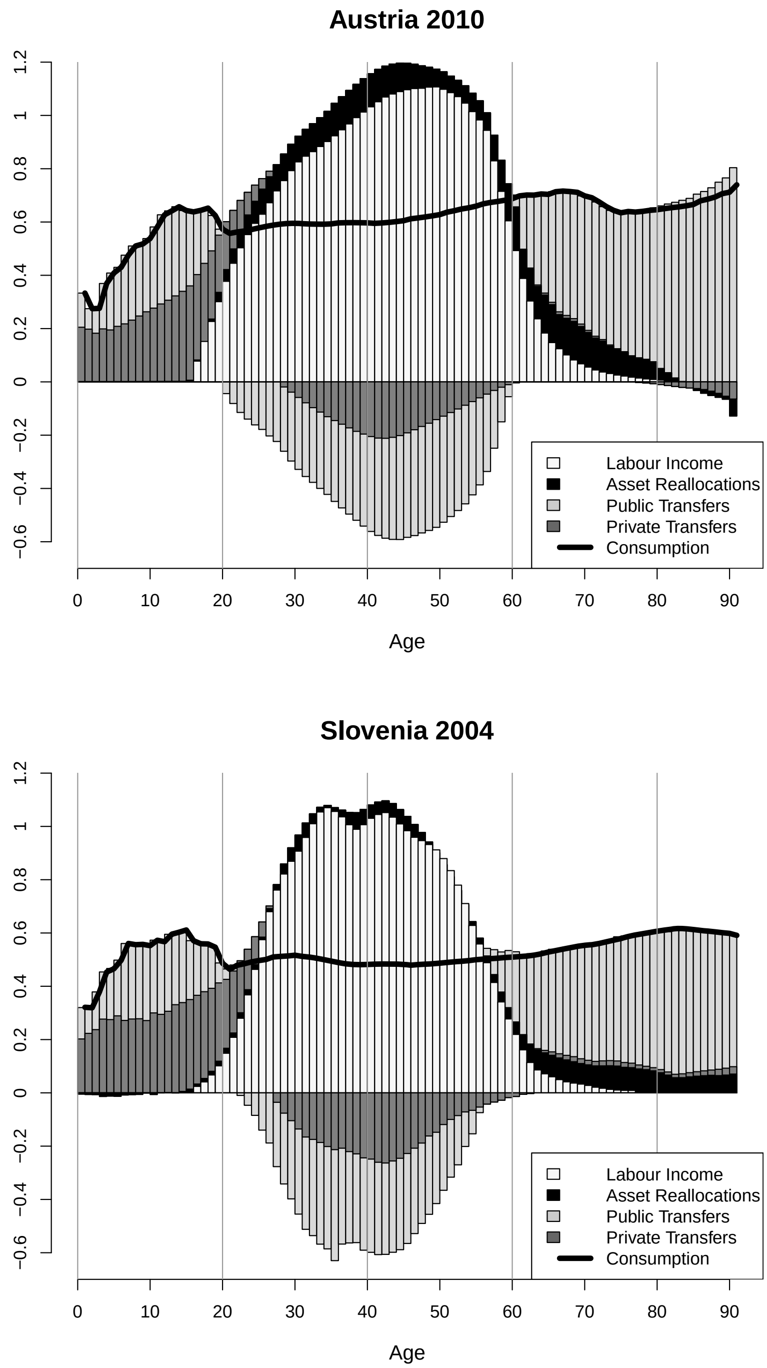

Figure 1: National Transfers Accounts - Results for Austria and Slovenia: Average Labour Income p.c. by 1-Year Age Groups Relative to the Average Labour Income Between Age 30 and 49.

income exceeds consumption support those age groups where available income falls short of consumption. This support either works through public or private transfers. The transfer outflows from the age groups that generate an income surplus are plotted on the negative y-axis in Figure 1. In order to make the values comparable across countries all these quantities are measured relative to the average income in the age group from 30 to 49 years.

The age groups can be divided into three “life-stages” depending on whether the consumption of an age group can be purely financed by own labour income or not. In childhood (until age the age of 23 years in Austria and 24 years in Slovenia) labour income falls short of consumption. Since children have not yet accumulated assets and have very restricted access to credit, they finance their consumption almost exclusively through transfers: Mainly through private transfers (from the parents to the child), but to a considerable extent also through public transfers, e.g. in form of publicly financed education. On the other hand, an average person in working age generates more income than needed for his/her own consumption and is able to support other age groups with this surplus income (i.e. the part of available income which exceeds the own consumption). In higher ages the pattern turns again: The age groups older than 56 years in Slovenia and 58 years in Austria are economically dependent in the sense that the consumption of these age groups is not covered by their own labour income. As they have accumulated assets during their working life, elderly persons finance a part of their consumption through asset based reallocations. However, in Austria and Slovenia the bulk of the consumption of the elderly persons is financed through public transfers such as pensions and publicly provided health- and long-term care services.

As Figure 1 indicates[9], the qualitative shape of the per-capita age profiles is similar across countries. The economic needs of children and elderly persons are financed through asset based reallocations and through the transfer of the surplus income from the working age population. However, the type and intensity of economic activities at each age, and therefore also the shape of the age profiles differ across countries depending on country-specific characteristics of individuals (such as the level and type of education, labour market entry and exit ages, etc.), institutional arrangements (family policies, labour market regulations, etc.) as well as the overall macroeconomic situation of a country. Also the age structure of the population has a huge influence on the age reallocation of resources. Once we also take the composition of the population into account (and multiply the per capita age profiles by the respective number of people in each age group), we obtain a complete picture of how the current reallocation of economic resources across

[9]See also Lee and Mason (2011).

age is organized within a country. In particular we receive a measure for the total amount of resources which have to be reallocated to children and elderly persons as well as the amount of labour income of the population in working age which can be provided to the dependent population in other age groups.

2.1 An Economic Dependency Ratio: The Life Cycle Deficit

The difference between consumption and labour income in NTA offers a measure for the average economic dependency (if positive) or the economic ability to support others (if negative) at each age and is termed *life cycle deficit* (LCD) (Mason et al., 2006). It can also be derived by an rearrangement of the terms in Equation (1)

$$\underbrace{C - YL}_{\text{life cycle deficit}} = \underbrace{\tau + (YA - S)}_{\text{age reallocations}} \tag{3}$$

As we have illustrated with Austrian and Slovenian data the life cycle deficit is positive in childhood as well as for elderly persons and negative for the population in working age. For a negative life cycle deficit we will also use the term *life cycle surplus* (LCS). In childhood and in old age, when the life cycle deficit is positive, at least a part of consumption has to be financed through *age reallocations*, i.e. through public and private transfers from other age groups or through asset based reallocations such as asset income and dissaving. As indicated in the previous section, in order to obtain a measure for the dependency of the total population in childhood and old age the life-cycle deficit at each age is multiplied with the corresponding population size and added up afterwards. A dependency ratio is then calculated by relating the total life-cycle deficit of the children and the elderly to total labour income. The *aggregate life cycle deficit* measures the consumption of children and the elderly which cannot be financed out of their own labour income as a share of total labour income. This measure reflects both, the population structure as well as the design of the economic life course, i.e. the involvement in production and consumption activities. Likewise we can derive a support ratio by relating the total life cycle surplus (the negative life cycle deficit) of those in working age to total labour income in order to receive the *aggregate life cycle surplus*. It represents the share of labour income which is not consumed by the working age population and available for transfers to other age-groups.

Figure 2 shows aggregate consumption and aggregate labour income for each age group in Austria and Slovenia in percent of total labour income. The light grey area in young and old age represents the aggregate life cycle deficit in young and old age, respectively. The dark grey area in turn represents the life cycle surplus. In particular Austria serves

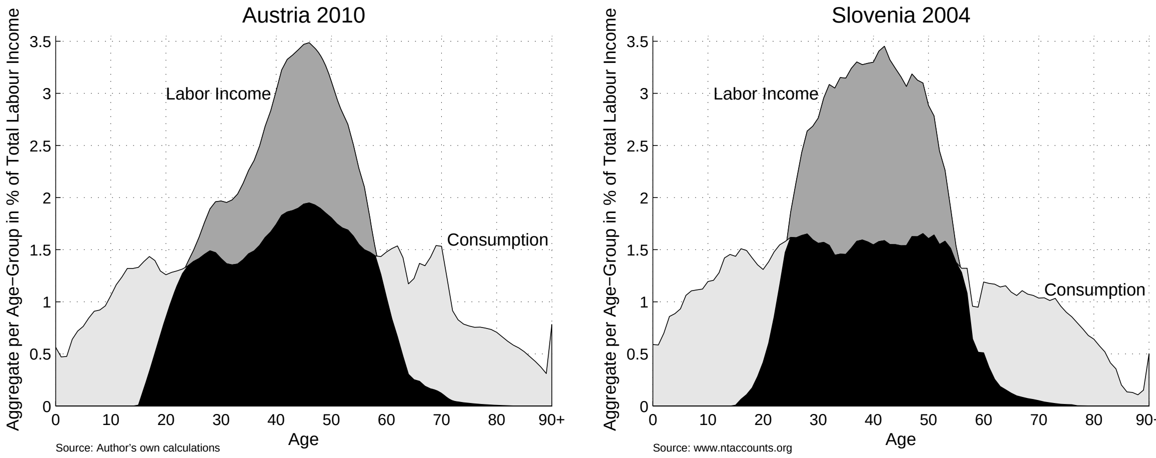

Figure 2: Aggregate Labour Income and Consumption

as an example to illustrate the importance of the age structure of the population: The peak of the labour income between age 40 and 50 represents the large contribution of the baby-boom cohort born in the 1960s. The transition of these cohorts into retirement will require a change in the reallocation of resources. This change has to be accommodated by a change in the age-specific economic behaviour of individuals (e.g. by extending the working period), thus by a change in the shape of the per capita age profiles.

The life cycle deficit in young and old age as well as the life cycle surplus for the European NTA-countries are shown in Table 1. The table also shows the commonly used demographic dependency ratios that are based on fixed age limits and ignore the heterogeneity of economic activities over age: The demographic young age dependency ratio is calculated as the share of the population younger than 15 to those aged 15-64 years, and the old age dependency ratio as the share of the population aged 65+ to those aged 15-64 years. Obviously this indicator gives only a limited and biased estimate of the economic dependency. It neither takes into account the degree of economic dependency nor the degree of the ability to support others. The life cycle deficit in turn reflects the age structure of the population as well as age-specific labour income and consumption. A major advantage is that the age borders between the life cycle stages of dependency and support are not fixed but endogenously determined by the age profiles of consumption and labour income. According to this measure an average young person stays economically dependent almost 10 years longer (up to age 23-26 as indicated by the lower age borders in Table 1) than assumed in the demographic dependency ratios (where the life cycle stage of young dependent people has been assumed to be delimited by the age 15). In old age individuals become economically dependent again about 6 years earlier (in most countries around age 59 as indicated by the upper age borders in Table 1) as compared to the assumed age limit of 65 years for the demographic dependency ratio.

Table 1: The Aggregate Life Cycle Deficit and -Surplus in Percent of Total Labour Income as compared to the "standard" Young- and Old Age Dependency Ratio

	LCD and LCS in % of Total Labour Income			**Dependency Ratio in %**		**Age Borders LCD positive**	
Country*	**Young (LCD)**	**Working Age (LCS)**	**Old (LCD)**	**Young**	**Old**	**until:**	**from:**
Austria 2010	19	31	25	22	26	23	59
Germany 2003	21	31	32	22	27	26	58
Finland 2004	26	30	23	26	24	25	60
Hungary 2005	23	33	23	22	23	24	59
Italy 2008	24	24	30	21	30	26	59
Slovenia 2003	25	41	23	21	22	23	56
Spain 2000	25	31	21	22	25	24	59
Sweden 2003	24	41	22	27	26	24	63

* National Transfer Accounts exist in each country only for specific years, the base year therefore differs across countries.

Sources: Lee and Mason (2011), www.ntaccounts.org

Obviously, the life cycle deficit/surplus is strongly influenced by the age structure: Italy and Germany are the countries with the highest share of the population aged 65+. These are also the countries with the highest LCD in old age, corresponding to 32 and 30 percent of total labour income, respectively, and the highest total LCD (LCD in young and old age combined), corresponding to more than half of total labour income. The values for Sweden make clear that the population structure is not the only determinant of economic dependency (see also Hammer and Prskawetz, 2013): With an old age dependency ratio of 26% Sweden has a rather old population, who in addition has a rather high consumption (cf. also Figure 3). However, the LCD in old age is rather low (22%). The demographic structure and the high consumption in old age are compensated by a higher labour force participation of elderly persons: In Sweden the average labour income exceeds the average age-specific consumption until the age of 63 years, which is 3 to 7 years longer than in all the other countries.

3 The Life Cycle Deficit by Gender

The aggregate life cycle deficit certainly constitutes a major improvement for measuring economic dependency as compared to standard demographic dependency ratios that assume fixed age limits and ignore the heterogeneity of economic characteristics by age. We attempt to gain further insights into the structure of economic activities at each age with a focus on gender differences. For this aim we calculate the life cycle deficit for men and women separately. The large differences between men and women, which we find, are not surprising regarding the gendered distribution of paid work and unpaid household work. We therefore extend the analysis further in Section 4 and include also goods and services produced by unpaid household work into our analysis. Since our focus in this paper is the comparison of the shape of the life cycle across European countries, we use a standardized (and stationary) population for all of the countries. This population is calculated by assuming the same number of births for men and women and age- and sex-specific mortality corresponding to the average in the included countries.[10] With the use of a standardized population we control for differences in the population structure across countries.

3.1 Data

Data on labour income by age and sex is taken from the European Survey of Income and Living Conditions (EU-SILC) 2010[11]. This survey is carried out yearly and includes highly comparable data for all EU member countries. The sample population of the EU-SILC are persons residing in private households. The data contain extensive information on incomes such as wages, income from self-employment, asset income as well as public and private cash transfers. The components of income, which are of interest for us, are those that emerge from the input of labour in production. This includes the gross remuneration of employees, the employers' social contributions and gross income from self-employment. These labour income components are reported as the annual income generated during the income reference period.[12] Beside the information on income the EU-SILC includes a wide range of variables on the socio-economic background, economic activity as well as indicators on social exclusion, poverty and living conditions. We also use information on the self-defined economic status and the household structure in order to gain further insights into the economic behaviour which shape the age profiles of labour income and consumption.

A certain limitation of our data is the fact, that age-specific information on consumption is not available for the same year as on labour income as well as across countries, and by gender. The estimation of age averages for consumption is highly complex as both, public consumption as well as private consumption, consist of many different components for which often only limited age-specific information is available. Consumption age profiles have been estimated by the country teams within the NTA project. Although there is

[10] Source: EUROSTAT, statistics by theme – population, deaths by age and sex; reference year 2009.

[11] We herewith acknowledge data provision by Eurostat and the European Commission respectively. Presented results and drawn conlucions are those of the authors and not those of Eurostat, the European Commission or any of the national authorities whose data have been used.

[12] With the exception of the UK the income reference period in the 2010 survey was the calendar year 2009. In the UK yearly income is extrapolated from smaller and flexible reference periods and refers to the current year.

intensive work on gender-specific NTA, consumption age profiles by sex are not available for all of the countries so far. We therefore assume that consumption does not differ between men and women and use the age averages provided by the NTA project for both, men and women. While these profiles are not from the same year as the income data, historical NTA data show that the shape of the age profiles changes only slowly with time. Furthermore consumption of adults is rather constant over the whole age range (see Figure 3). We make use of the aggregate values from the year 2010. Thus, the consumption and labour income age profiles are adjusted so that the ratio of aggregate consumption to aggregate labour income corresponds to the one derived from the SNA for 2010.[13] For an overview of the 2010 aggregate values of income, consumption and saving see Table A-1 in the Appendix.

3.2 Results

The differences in the gender specific life cycle deficit/surplus across countries can be attributed to a) the shape and level of the consumption age profiles, and b) the shape and level of the labour income age profiles. Consumption and gender-specific income age profiles are plotted in Figure 3. To facilitate the comparison of the age patterns across countries we measure the age group averages relative to the average income in the respective country sample, which is representative for the population aged 16+ living in private households.

The shape of the consumption age profiles are rather similar across countries, with the consumption of adults being rather constant over the age range. An exception is Sweden with a strong increase of consumption from age 70 onwards, which can be attributed to Swedens comprehensive but expensive system of long-term care (see Bengtsson, 2010). Two further specific consumption patterns are the fairly high average consumption of children in Italy, Slovenia and France as well as the - compared to younger adults - higher consumption of persons 56+ in Germany and Hungary. An important factor is the amount of total consumption relative to total labour income. Total consumption exceeds labour income in all of the analysed countries, as part of consumption is financed through asset based reallocations. The ratio of consumption to labour income in turn is influenced by the share of asset income relative to total income and by the savings rate. Table A-1 in the Appendix gives us more information about the generation and use of income in 2010, and therefore also on the share of consumption to labour income: The

[13] As we standardize labour income and consumption across countries by measuring these quantities in relation to the sample average of labour income it is only the relation of consumption to labour income which influences the results. The absolute values are not relevant.

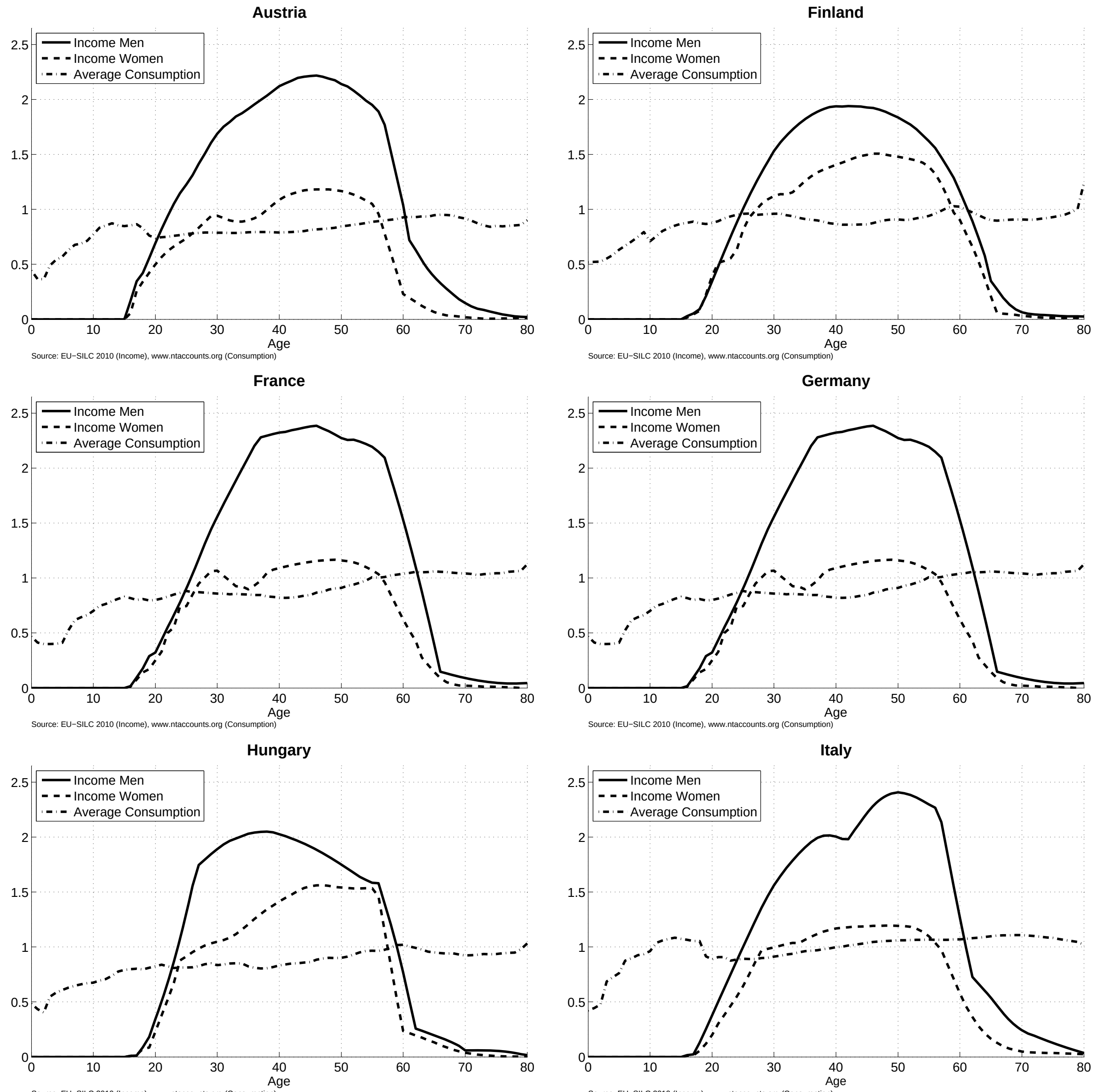

Figure 3: Labour Income and Consumption by Age and Sex in Relation to the Sample Average of Labour Income

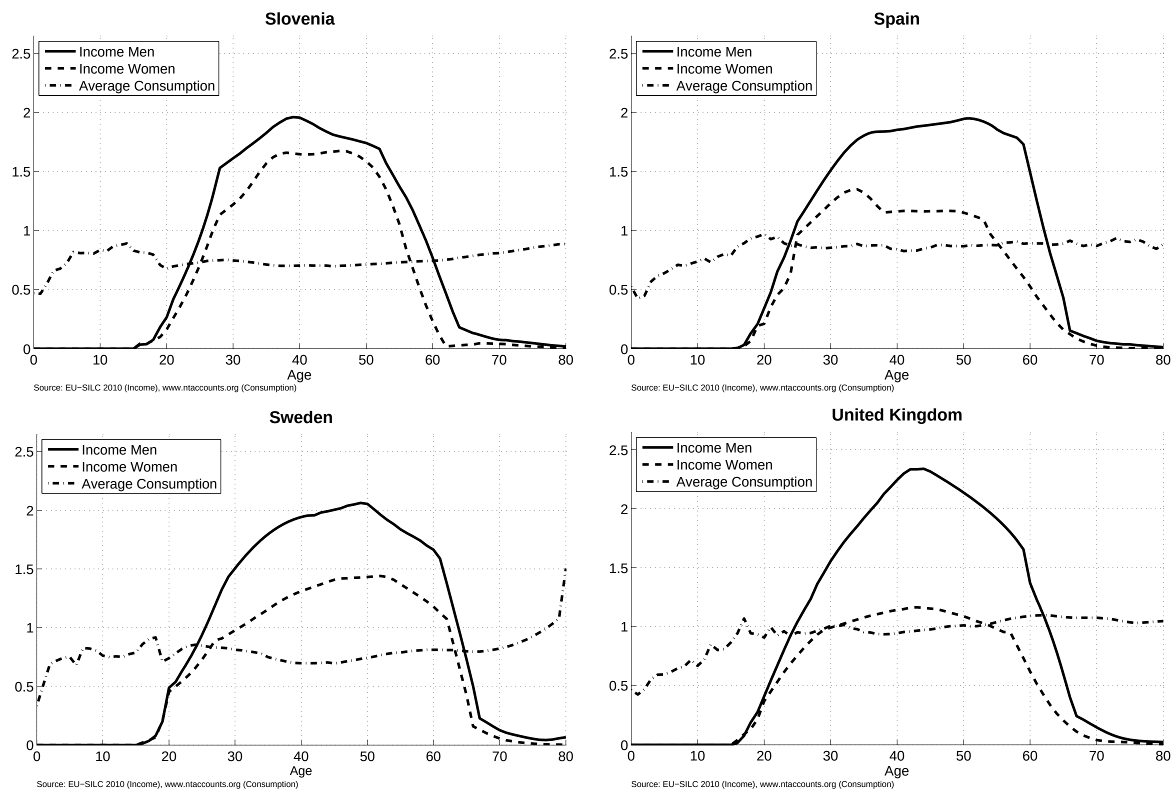

Figure 3: Labour Income and Consumption by Age and Sex in Relation to the Sample Average of Labour Income

ratio of total consumption to labour income is rather low in Sweden and Austria as these are countries with high savings rates. A large part of asset income is saved/reinvested and only a small part used for consumption. The rather low level of consumption relative to labour income in Slovenia is a result of a low share of asset income (of total income) and a moderately high savings rate. The high values of consumption relative to labour income for the other countries can be explained through a combination of a low/moderate savings rate of the private sector and large dissaving of the public sector (in particular in the UK, Spain, France and Hungary). As can be seen from Table A-1 in the Appendix Italy is an extreme case with a negative savings rate - consumption exceeds labour and asset income altogether. The result is a very high ratio of consumption to labour income and consequently a comparatively large life cycle deficit and low life cycle surplus than in Sweden or Austria, for instance (Figure 3).

The LCD in young and old age for men and women is obviously strongly affected by the shape of the labour income age profile, in particular by the ages at entry and exit from the labour force. In Austria people start generating income at a slightly younger age than in the other countries, but otherwise the income age profiles in young age are quite similar across countries. However, there are considerable differences for the age group 56+ (see Table 2). The two extreme examples regarding the labour participation of elderly persons are Slovenia with a very low average amount of labour income generated by the age groups 56+ on the one hand, and Sweden with a comparable high amount - with a particular large contribution of women - on the other hand. However, the most astonishing differences across countries are in the share of the labour income generated by women as compared to the labour income of men. In most of the countries the average labour income of women is considerably lower than that of men. An exception is Slovenia, where the difference between the labour income age-profile of men and women is low. The difference is also comparably small in Finland, Sweden and Hungary (see Figure 3).

The information on the distribution of income by sex and age which is provided by the age profiles is comprehensively summarized in Table 2. The values show the contribution of men and women (in four age groups) to total labour income in the economy. That is, we multiply the per capita age group averages of labour income with the respective (standard-) population to receive a measure for total labour income of these groups. We then calculate the contribution of each of these groups as a share of total income. The population aged 25 and less contribute a rather similar share to total labour income in all countries. As already mentioned, an exception is Austria where due to an early entry into the labour market the share (11.4 percent) is somewhat higher than in other countries. The differences in old age are higher: While the age group 56+ contributes more than

20 percent to total labour income in Sweden, the share is even less than 10 percent in Slovenia. Remarkable are the cross-country differences in the share of labour income contributed by women: While the labour income of women amounts to only about one third of total income in Austria, Germany and the UK, it is almost 45 percent in Slovenia, 44 percent in Finland and 42 percent in Sweden and Hungary.

Table 2: The Generation of Labour Income by Age and Sex in Percent of Total Labour Income

	Austria				**Finland**		
	Men	Women	**Total**		Men	Women	**Total**
<= 25	6.9	4.6	**11.4**	<= 25	3.4	2.9	**6.3**
26 - 40	23.6	12.2	**35.8**	26 - 40	20.1	14.6	**34.7**
40 - 55	25.6	14.0	**39.6**	40 - 55	21.8	17.6	**39.3**
56+	9.8	3.3	**13.1**	56+	10.9	8.7	**19.6**
Total	**65.9**	**34.1**	**100.0**	**Total**	**56.2**	**43.8**	**100.0**
	France				**Germany**		
	Men	Women	**Total**		Men	Women	**Total**
<= 25	4.7	3.5	**8.1**	<= 25	4.4	3.7	**8.1**
26 - 40	23.7	15.6	**39.3**	26 - 40	21.3	11.8	**33.1**
40 - 55	25.3	15.4	**40.6**	40 - 55	29.7	14.9	**44.6**
56+	7.3	4.6	**11.9**	56+	9.9	4.3	**14.2**
Total	**60.9**	**39.1**	**100.0**	**Total**	**65.3**	**34.7**	**100.0**
	Hungary				**Italy**		
	Men	Women	**Total**		Men	Women	**Total**
<= 25	4.0	3.0	**7.0**	<= 25	3.4	2.1	**5.5**
26 - 40	26.6	15.9	**42.5**	26 - 40	20.4	12.3	**32.8**
40 - 55	21.6	18.8	**40.4**	40 - 55	29.4	15.6	**44.9**
56+	6.0	4.1	**10.1**	56+	11.6	5.2	**16.8**
Total	**58.2**	**41.8**	**100.0**	**Total**	**64.8**	**35.2**	**100.0**
	Slovenia				**Spain**		
	Men	Women	**Total**		Men	Women	**Total**
<= 25	3.9	2.7	**6.6**	<= 25	3.6	2.7	**6.2**
26 - 40	22.9	18.8	**41.6**	26 - 40	23.5	17.8	**41.3**
40 - 55	22.5	20.4	**42.9**	40 - 55	24.1	14.4	**38.5**
56+	6.2	2.7	**8.8**	56+	9.9	4.1	**14.0**
Total	**55.4**	**44.6**	**100.0**	**Total**	**61.1**	**38.9**	**100.0**
	Sweden				**United Kingdom**		
	Men	Women	**Total**		Men	Women	**Total**
<= 25	3.4	2.9	**6.3**	<= 25	4.3	3.4	**7.6**
26 - 40	18.5	12.3	**30.8**	26 - 40	21.8	12.8	**34.6**
40 - 55	23.3	16.8	**40.1**	40 - 55	27.8	14.3	**42.1**
56+	13.2	9.6	**22.8**	56+	10.6	4.9	**15.6**
Total	**58.3**	**41.7**	**100.0**	**Total**	**64.5**	**35.5**	**100.0**

To facilitate the comparison across countries a standard population is applied for all countries.

Source: EU-SILC 2010; Authors' own calculations

With this comprehensive information on the level as well as the distribution of income and consumption by age and sex we are equipped to understand the results of the aggregate life cycle deficit/surplus by gender shown in Table 3. The results are different from those shown in Table 1[14]. This illustrates the role played by the population structure as the differences in the LCD in young and in old age across countries are lower in Table 3 where we applied a standard population for all countries. In the standard population the demographic dependency ratios in young and old age are higher as there is no baby boom, and therefore the share of the population in working age is lower as compared to the corresponding share in the actual population. However, there are still remarkable differences as a result of the differences in the level and shape of the age profiles: The LCD in young and old age is highest in Italy, reflecting the high consumption expenditure relative to labour income. In old age the LCD is lowest in Sweden, which is due to the overall low consumption as a share of labour income (despite the increase in old age) and the high contribution of the age group 56+ to labour income. In particular women in this age group contribute more than in other countries: While in Sweden an average women is able to cover consumption expenditure out of her own labour income up to the age of 64 years, this is the case only until the age of 59 years in Finland and up to an even lower age in the other countries. For men the cross-country differences are lower, but Sweden is exceptional again: On average Swedish men cover their consumption by own labour income until the age of 65 years, while the corresponding age is 58 years in Hungary. A more detailed picture on the LCD by gender is given in Figure 4.

There are huge gender differences across countries in the generation of the life cycle surplus. Outstanding are Slovenia and Sweden where the working age population generates a large surplus income which can be reallocated to other age groups. In these two countries it is mainly the large contribution of women to total labour income which explains the result.

The cross-country differences in the share of women's labour relative to the income of men can be explained by the differences in their labour force participation. In virtually all of the countries men between the age of 30 and 49 years are - if not unemployed - full time employees. The labour force participation of women differs greatly across countries, but also across age within countries. Table A-2 shows the self-defined economic status of women by 10 year age groups. It is clear that in those countries with a low gender gap in the average labour income the majority of women work full time. The low share of female labour income in the other countries arises through a combination of a high prevalence of part-time work and a high share of women who report that their main activity is fulfilling domestic tasks and care responsibilities. These differences can be

[14] Note that the differences in the LCD age borders between Table 1 and Table 3 can be explained by the different data sources implying different time points as well as the application of a standard population for Table 3.

Table 3: The Aggregate Life Cycle Deficit and -Surplus by Gender in Percent of Total Labour Income

Country	Sex	LCD and LCS in % of Total Labour Income Young (LCD)	Working Age (LCS)	Old (LCD)	Age Borders LCD positive until:	from:
Austria	Women	12	6	18	25	57
	Men	11	33	11	20	61
	Total	**22**	**38**	**28**	**21**	**59**
Finland	Women	14	11	17	26	59
	Men	13	22	12	24	62
	Total	**27**	**33**	**29**	**25**	**61**
France	Women	15	8	17	26	54
	Men	14	28	12	23	60
	Total	**29**	**36**	**28**	**23**	**59**
Germany	Women	12	5	20	26	57
	Men	11	33	12	24	63
	Total	**23**	**37**	**31**	**25**	**61**
Hungary	Women	13	13	19	23	59
	Men	12	27	13	22	58
	Total	**25**	**40**	**32**	**23**	**58**
Italy	Women	17	3	20	27	56
	Men	16	28	12	24	61
	Total	**33**	**30**	**31**	**25**	**60**
Slovenia	Women	15	20	17	25	57
	Men	14	28	11	23	61
	Total	**29**	**48**	**28**	**24**	**59**
Spain	Women	15	8	17	24	56
	Men	14	28	11	23	63
	Total	**29**	**35**	**27**	**24**	**61**
Sweden	Women	13	14	16	24	64
	Men	13	30	10	26	65
	Total	**25**	**44**	**26**	**25**	**64**
UK	Women	14	2	20	30	54
	Men	13	27	12	23	62
	Total	**27**	**28**	**30**	**25**	**60**

To facilitate the comparison across countries a standard population is applied for all countries.

Source: Authors' own calculations based on EU-SILC (income) and data from the NTA project (consumption).

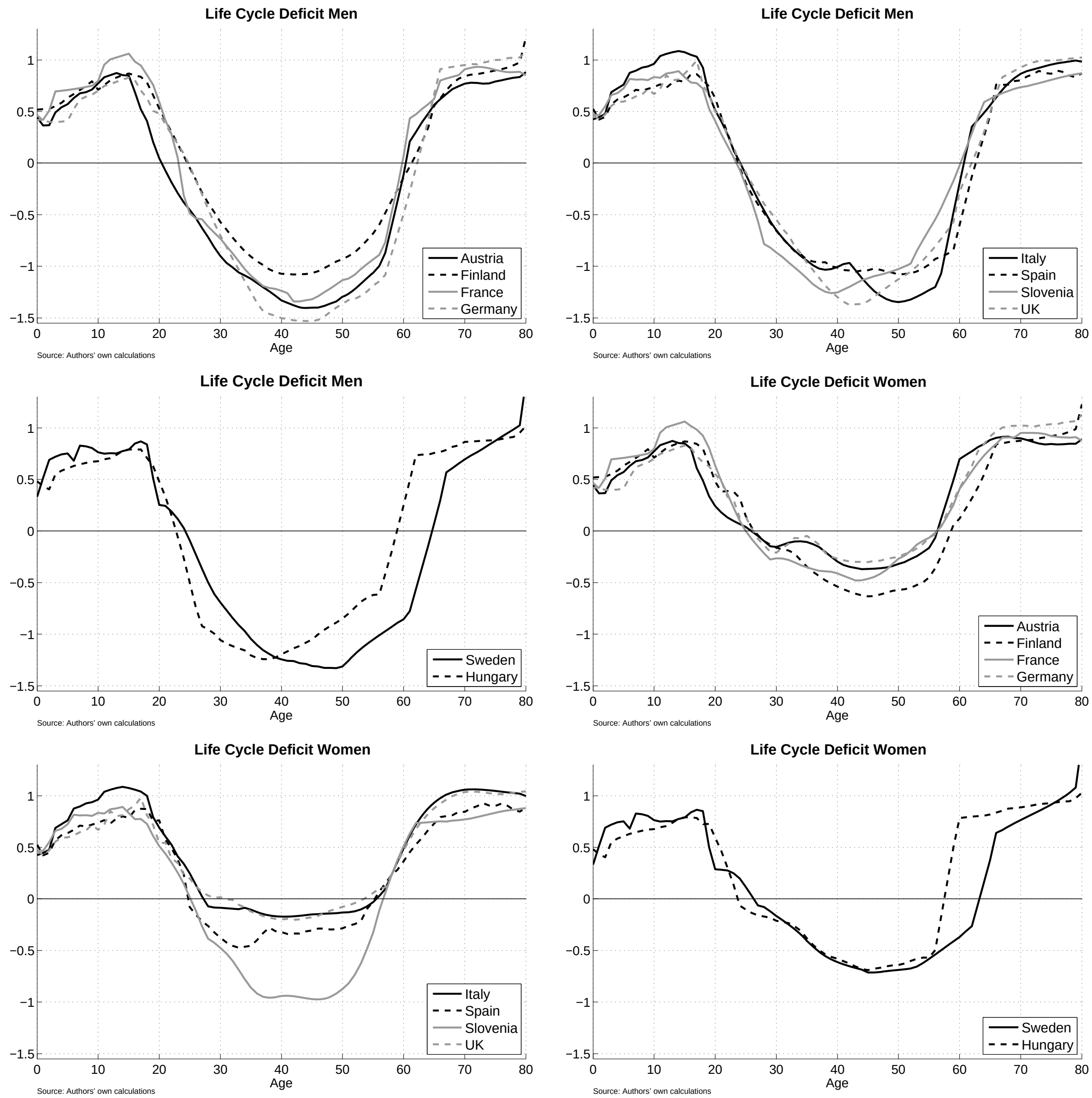

Figure 4: The Life Cycle Deficit in Relation to the Sample Average of Labour Income

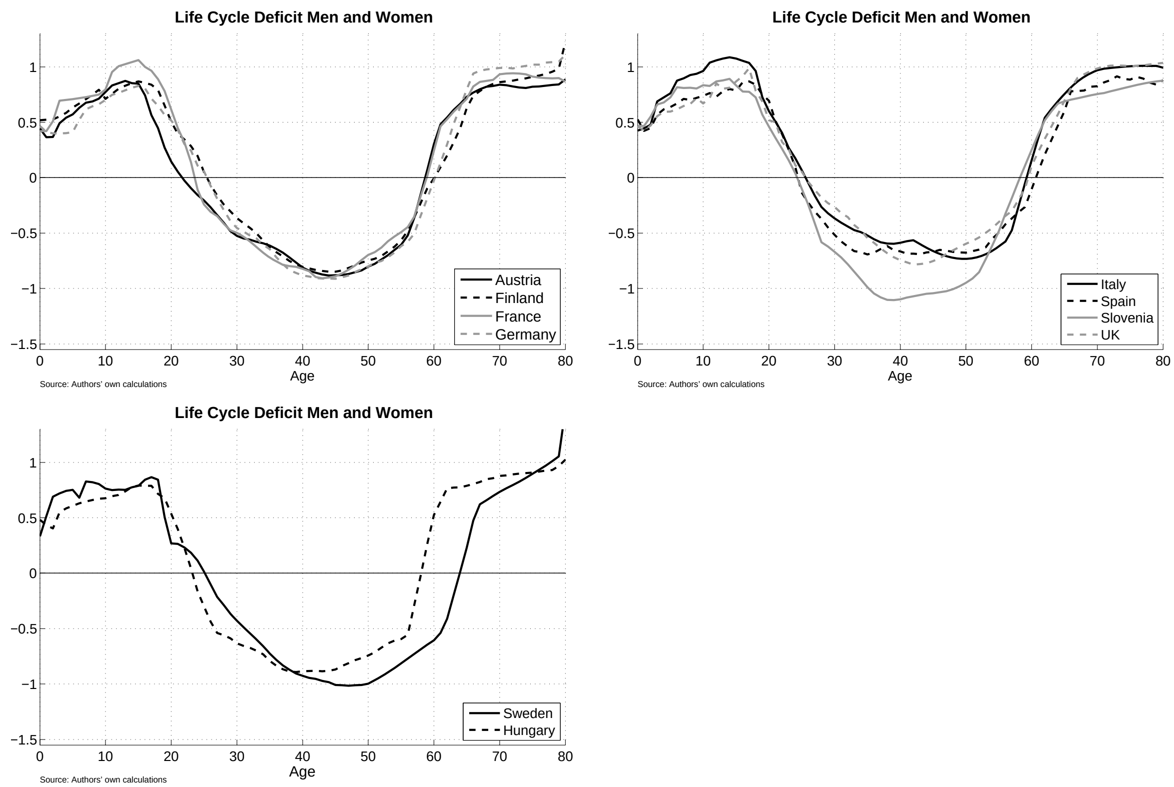

Figure 4: The Life Cycle Deficit in Relation to the Sample Average of Labour Income

ascribed to differences in labour market behaviour of women after giving birth to a child and are closely connected to the country-specific institutional environment. Figure 5 plots the income of women relative to the average labour income of men in the age group 30-49 by the age of the youngest co-residing child, Table A-3 shows the corresponding composition of activity statuses. In Sweden, Finland and Slovenia women reduce paid work in the first 1-2 years after giving birth to a child but return to paid work rather fast and mostly full-time[15]. Such a pattern can also be observed for Hungary, where women with older children are mostly employed full-time. We have to be aware however, that these differences in the labour market participation across age might reflect a cohort effect. Hence, the behaviour of currently young mothers might be different when their child grows older. In addition, part of the increase in labour income with the age of the youngest child may be ascribed to a seniority effect, i.e. reflect the increase in wages due to ageing (of mothers here). Germany and Austria are countries where almost all of the women drop out of the labour force in the first 2-3 years after giving birth to a child and re-enter the labour force slowly, and to a large degree part-time. In Italy, Spain, France and the UK the level of mothers' labour income does not seem to be related to the age of the youngest co-residing child. In these countries (with the exception of France) as well as for Germany and Austria the level of labour income for women with co-residing children is considerably lower as for women who do not live with own children in the same household (the category "no child" in Figure 5). The comparison group "no child" consist of women between the age of 25 and 55 who are not students, not retired and who do not live together with their own children.

[15]The drop in labour income becomes visible only at age 1 of the youngest child, since the labour income at age 0 includes a woman's labour income that has been generated in the income reference period before the child has been born.

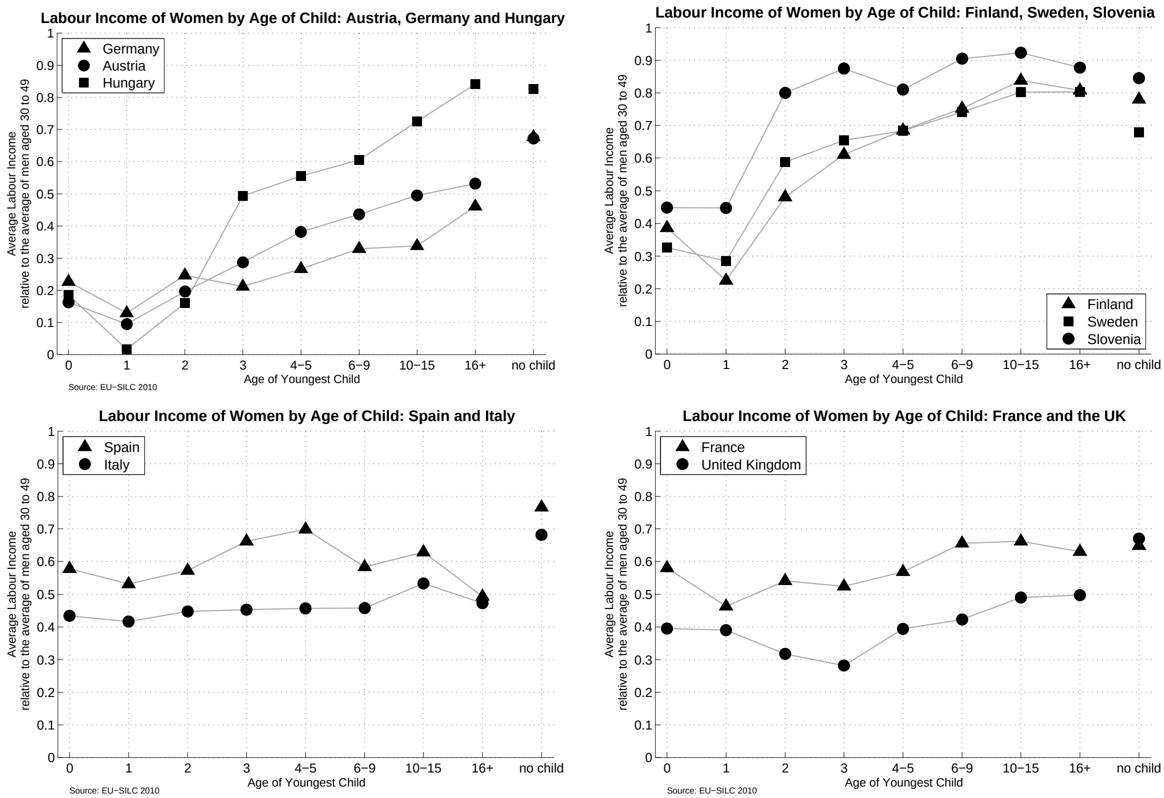

Figure 5: Labour Income by Age of Youngest Child

4 Non-market household production

The life cycle deficit as it is calculated in the previous section underestimates the actual contribution of women. In virtually all countries women spend on average notably more time on unpaid household work than men, who in turn devote more time to paid work (see e.g. Miranda, 2011). However, there are pronounced cross-country differences in the share and level of unpaid work carried out by women. These differences have been documented and analysed in a large number of comparative studies on the gendered distribution of production activities (see e.g. Gimenez-Nadal and Sevilla, 2012, for an analysis of changes over time). Several studies analyse how the national context and welfare state arrangements shape the distribution of unpaid household work. One way is by providing or denying access to resources and opportunities, e.g. to parental leave, child benefits, childcare facilities or survivor benefits. Hook (2010) for example finds that long parental leaves are positively related to gender specialization and lower contributions of men to household work. She suggests that paternity leave not only boosts the involvement in housework and childcare in the short, but also in the long run as fathers acquire skills as caretaker and the paternity leave fosters the relation between the father and children. The macro-level environment influences the level and distribution of household work by shaping social norms and attitudes. Geist (2005) shows with data from the International Social Survey Program that in conservative welfare state regimes (Austria, Germany, Mediterranean Countries) it is more rare for couples to share housework equally than in social-democratic regimes (Scandinavian countries), which explicitly promote gender equity.

Most measures of production ignore a large part of the goods and services which are produced by unpaid household work, in particular also the SNA. It covers the some of the goods and services produced by households for own use, e.g. own account construction of dwellings or food produced for own use, but ignores the bulk of household production such as cleaning, cooking or childcare. The output of these production activities is difficult to measure and assess, because the goods and services are not traded on the market and therefore do not have a market price. Nevertheless, there is widespread agreement that this type of production should be included also into the SNA (see e.g. Stiglitz et al., 2009). A shift of production from the household to the market (e.g. the preparation of meals) or to the government (e.g. childcare) should not affect the output measure here. To not obscure the measures in the core accounts of the SNA which have a solid basis on observed market transactions, household production which is not covered in the SNA is suggested to be introduced in the SNA through satellite accounts (e.g. Abraham and Mackie, 2005). The so-called "satellite accounts" are consistent with the system of SNA and expand the production boundary without interfering in the core accounts. An extension of the production measure by non-market production is especially important for NTA: A large part of the goods and services produced within the households for own consumption, i.e. by one household member, is enjoyed and consumed by other household members. This is obvious in the case of childcare, but also cleaning, washing and cooking activities are usually carried out also for other household members.

As this kind of output is difficult to observe, non-market production of the households for own consumption is valued by an "input approach". Since time constitutes the most important input, the measures are mainly based on time use surveys. This approach is also used in NTA: We measure non-market production by the time used for non-market production activities. Consumption of these goods and services is estimated by using information of total production in the household and the household composition.

4.1 Time Use Data: The Multinational and Austrian Time Use Survey

This part of our analysis is based on data from the Multinational Time Use Survey (MTUS)[16] (Gershuny et al., 2012) and the Austrian time use survey from 2008[17]. MTUS contains data from about 60 diary based time use surveys in 20 countries. Participants fill out diaries with predefined time slots (between 5 and 30 minutes) for which the respondent reports the activity he/she is carrying out during that period. This information is later coded in terms of categories of activities. As the design and the coding of activities is different across surveys these data are harmonised within the MTUS to enable and facilitate comparisons across time and countries. Beside variables on the socio-economic background and household structure the MTUS includes the time used on the survey day(s)[18] for 51 different categories of activities. We use the most recent survey for those countries who are also member of the NTA project: Germany (2001), Finland (1999)[19], France (1998), Italy (2002), United Kingdom (2000)[20], Slovenia (2000) and Spain (2002)[21]. Furthermore, we make use of the Austrian time use data from 2008, which is not yet included in the MTUS database. We could unfortunately not make use of the Swedish data, as the Swedish survey contains only one member of each household. The estimation how the goods and services produced by unpaid work are redistributed within the household requires time use information about all, or at least most of, adult household members.

While the MTUS data is well-suited to give an overview and analyse otherwise often neglected production activities, smaller differences between surveys and age groups have to be interpreted with care. There are large methodical differences across surveys such as the length of time slots in the diary, the coding of variables and the collection of variables on the socio-demographic background. These differences are likely to influence

[16] This document presents results drawn from the Multinational Time Use Study (MTUS), but the interpretation of this data and other views expressed in this text are those of the authors. This text does not necessarily represent the views of the MTUS team or any agency which has contributed data to the MTUS archive. The authors bear full responsibility for all errors and omissions in the interpretation of the MTUS data.

[17] STATISTICS AUSTRIA, Time Use Survey 2008/09 (developed on behalf of the Federal Minister for Women and Public Services)

[18] While there are diaries for 2 days for each observation in Slovenia, Finland, Sweden, the UK and Germany, it is one day in the other countries.

[19] We thank Statitics Finland for the provision of data access.

[20] There is a survey from 2005 for the UK, but his survey does not contain all the required information on the household structure.

[21] The survey from Spain 2002 does not include the Basque country. The Basque survey has been carried out separately from the rest of Spain and does not include required information on the household structure.

the results, in particular the total amount of time devoted to a certain group of activities.

4.2 Methodology

The estimation of household production activities by age is straight forward: We simply take the average minutes devoted to these production activities by single years of age. Household production includes the categories cook/wash up, housework (laundry, cleaning activities), other domestic work (repair, paperwork, pet care, care for adults), gardening, shopping, childcare and travel related to these activities.

Moreover, we aim at gaining estimates for the consumption of these goods and services which are produced by unpaid household work. As most of the time use data includes only household members above the age of ten (France 15+, Italy 3+ and UK 8+) we cannot get estimates for the goods and services that are consumed by children. In particular are the bulk of childcare activities enjoyed by the children in the first years of their life, the amount of consumption is therefore strongly dependent on the age of the child. In order to maintain comparability across countries, we report estimates for consumption only for the age groups 15+ and assume that childcare services are completely consumed by persons below the age of 15 years.

The basic assumption regarding the consumption of goods and services emerging from non-market household production (excluding childcare) is, that these goods and services are distributed within the household in equal shares, i.e. every household member consumes the same amount. This assumption is necessary since it is not observable how much each member of the household really consumes. It is also justified as many of the goods and service have public good character within the households in the sense of non-rivalry and non-excludability (e.g. having a clean flat, having an attractive garden). Assigning the consumption of these goods to certain household members is neither possible nor sensible.[22] To calculate the consumption of goods and services produced by household members we sum up the total time which is spent to produce these goods and services and equally divide it among all household members.

[22] The assumption that the goods and services produced by unpaid household work are shared by the household members is simplifying also in another dimension: Unpaid production can also be carried out for members of another household. While most national time use surveys include an indicator if an activity is also carried out for another household such information is not included in the version of MTUS we are using.

4.3 Results

The averages of time devoted to non-market household production by age and sex are plotted in Figure 6. There are two peaks in the age profiles for women: One in the age groups around 30-35 years and another one in the age groups from 60-70 years. The first one emerges from childcare as in these age-groups there is a high number of women who have small children. The peak in retirement age emerges as part of the time which is used for paid work in other age groups is replaced by household production. For women the level of time use for household work is quite similar in Austria, Germany, Finland, France and the UK, where adult women on average devote about 5 hours (300 minutes) daily to non-market production activities (a bit more in the ages of peak non-market activities, a bit less from about 40 to 55). In Spain women spend around 1 hour more in non-market production activities (around 360 minutes) and in Italy almost two hours more than in the other countries (around 400 minutes). Slovenia is exceptional: There is a smaller peak in childbearing age but a larger peak around the age of 60. Women in these age groups spend, similar as in Italy, on average almost 7 hours a day in non-market production activities. For men the picture is somewhat different: They do most of household work in retirement, when they devote between 3 and 4 hours to unpaid work. Their contribution is over the whole age-range comparatively high in Slovenia and rather low in Italy, Spain and France.

The consumption of goods and services which are produced by the household members for their own consumption is rather constant until the age of 50 with a slight reduction at the age of 35, when due to the presence of children the household size is larger and household production has to be distributed over a larger number of persons. It peaks in old age, indicating that the larger amount of non-market production in old age is consumed by the elderly person themselves and does not represent a transfer to other generations and age-groups.

With this information we can calculate the LCD at each age for non-market work by subtracting the production from the consumption age profile. The result is plotted in Figure 7. While the LCD for men is comparably moderate in Austria, Germany, Finland, Slovenia and the UK, it reflects the low contribution to unpaid household work in France, Spain and Italy. In Italy the LCD stays positive over the whole age range. Hence, an Italian man consumes on average at each age more non-market goods and services than he produces. Women in turn produce more non-market goods and services than they consume with the exception of the teen ages. While the shape as well as the level of the time use LCD is similar in most of the countries, the time use LCS (negative LCD) for

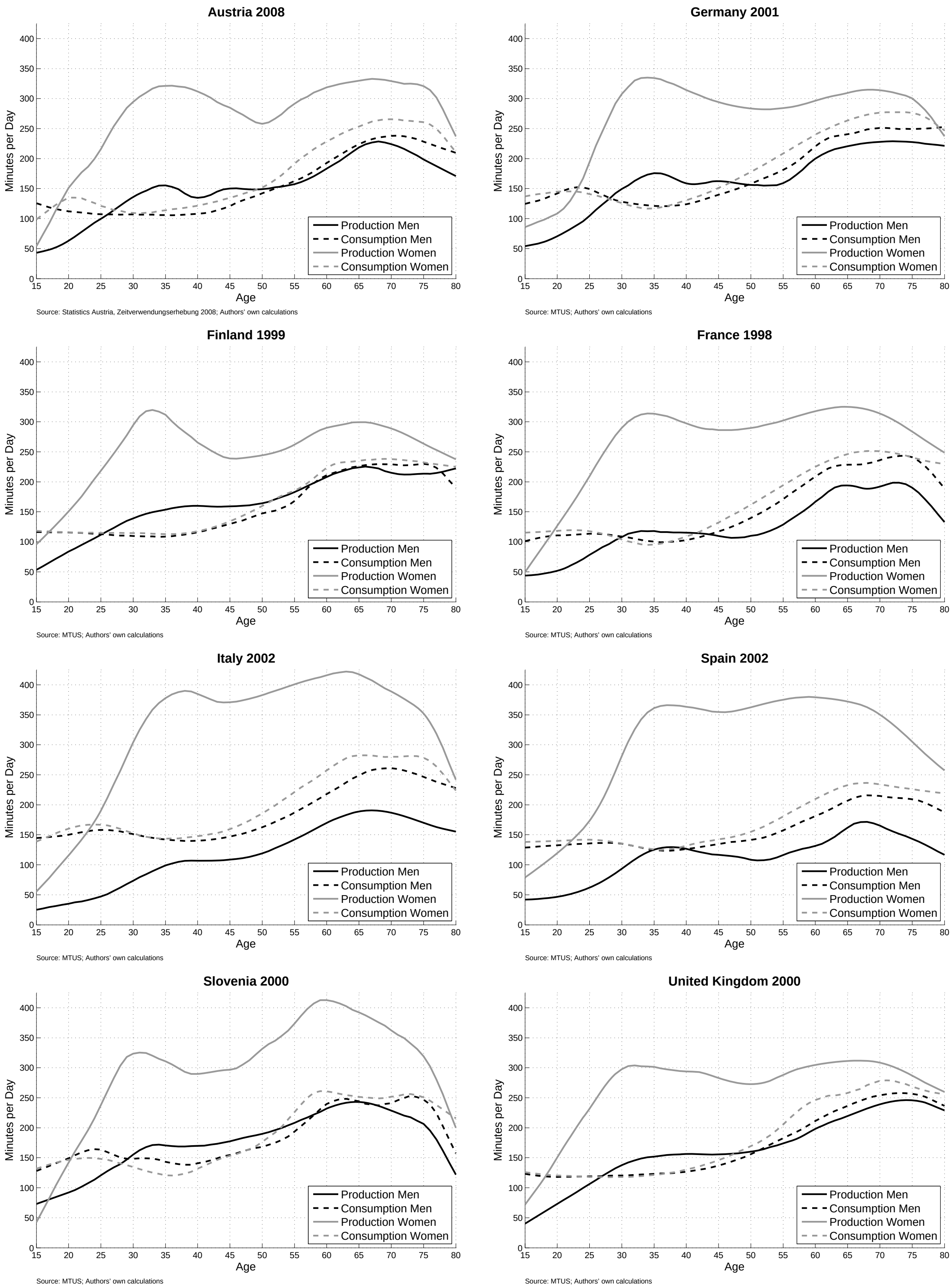

Figure 6: Unpaid Work: Production and Consumption in Minutes

women is much larger in Spain and Italy. Interesting is the shape for Slovenia: While it is similar to the other countries until the age of 45 years, the LCS remains large also in the age groups of the elderly, even more so for women. Since in Slovenia also the time use LCD for men is not especially high it is an indication that the high labour force participation of women in Slovenia is supported by transfers of non-market goods and services from retirees to the younger age groups.

With the exception of the childbearing ages for women people devote most time to unpaid household work around the age of 65 years, when they partly replace paid work with non-market production activities. When they live in the same household as their children part of these production activities is assumed to be consumed by children, reflected in the negative LCD in old age. Hence, while elderly parents receive (public) transfers from their children, they provide resources through non-market household production. An important factor influencing these results is the household structure. As we assume that transfer flows in form of non-market production of goods and services occur only within the households, intergenerational flows are only possible if several generations live together. There are huge cross-country differences in the share of persons aged 60-70 who still live together with their children (Table 4). The share is highest in Slovenia (28%), Italy (35%) and Spain (40%), which explains the lower LCD of the age group 61-70 years in these countries. An overview of the aggregate time use LCS as well as the (old age) LCD by gender and corresponding age limits can be found in Table A-4 in the Appendix.

Table 4: Percentage of Persons Living With Own Child

Percentage of Persons Living With Own Child							
Country/Age	<= 20	21-30	31-40	41-50	51-60	60-70	71+
Austria	2	31	72	70	38	16	17
Germany	1	24	66	62	26	6	8
Spain	3	20	65	80	65	40	33
Finland	2	31	70	69	24	5	9
France	2	34	78	72	32	9	9
Italy	2	25	65	75	61	35	20
Slovenia	1	29	84	87	55	28	22
UK	4	31	73	76	43	14	10

Source: EU-SILC 2010

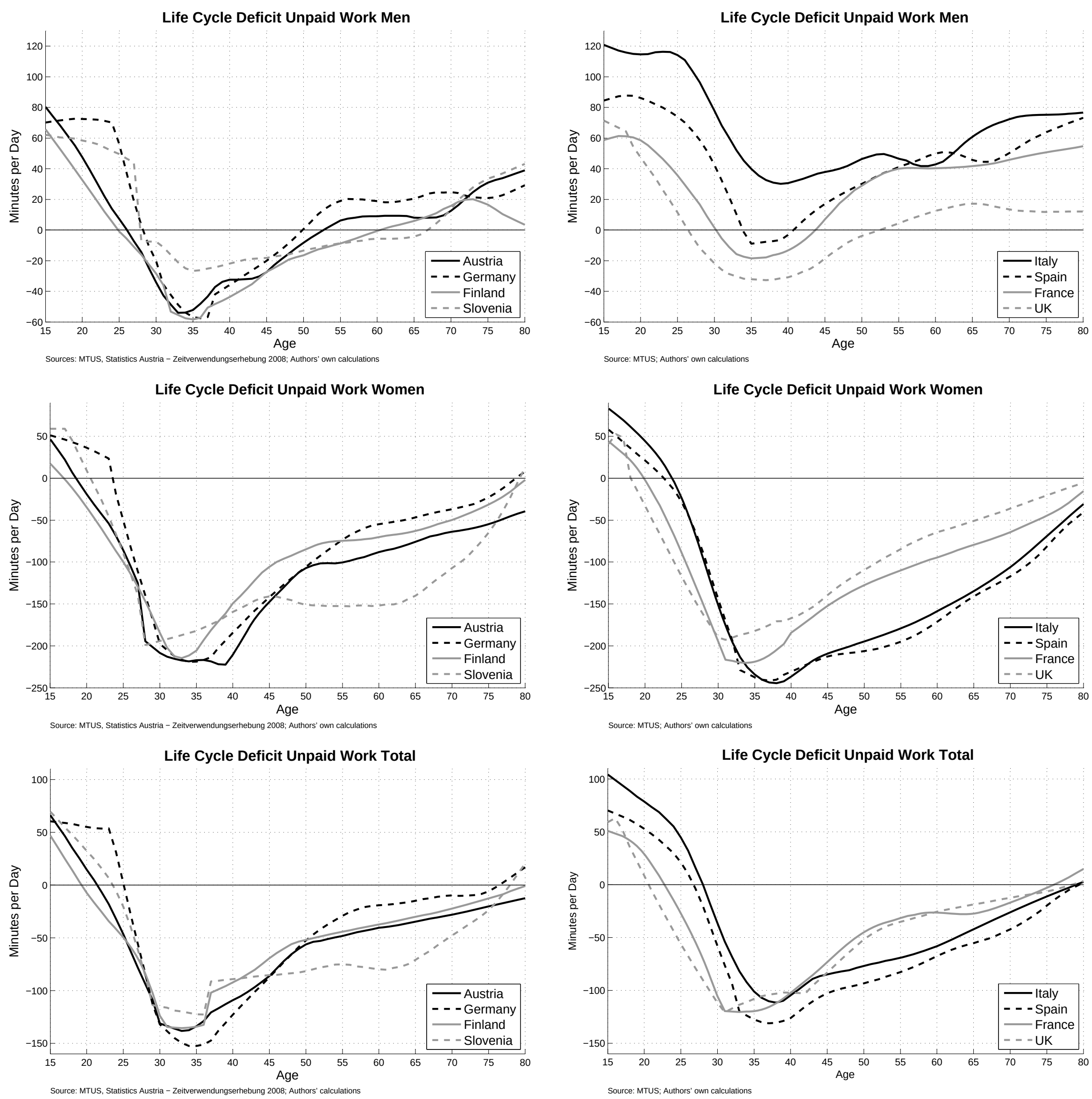

Figure 7: Unpaid Work: Life Cycle Deficit of Men and Women in Minutes

5 The Life Cycle Deficit Including Market- and Non-Market Production

In the next step we combine both, market and non-market production into one single measure. The usual approach is to value the time used for non-market production in monetary terms. It is generally suggested to use wage rates which would be obtained on the market for similar activities (e.g. European Communities, 2003). As in MTUS the activity categories are quite general and include many different tasks, we use the same wage for all of the household production activities in our analysis. The wage we apply to value unpaid work corresponds to the average hourly net income of a worker in the age group 30-49 years within a country.[23] This approach has the advantage that it is comparable across countries and does not obscure the results by differences in the wage rates across occupations.

The measures for total production and total consumption at each age are plotted in Figure 8. As expected the gender differences are clearly lower as compared to the life cycle deficit calculated only for market production in Section 3. According to this measure women in Spain have a higher income than men. They devote considerably more time to production activities than men and are thereby able to compensate for the lower valuation of an hour of household work as compared to one hour of paid work (paid work is calculated gross and also includes taxes paid in the production process). The total contribution of women is also higher in Slovenia as the differences in the average labour income between men and women are low and women devote somewhat more time to household work than men - they do a second shift (Hochschild and Machung, 1989). For the other countries a gender gap remains. However this does not imply that women engage less in production activities. Indeed, in most countries women are involved in production activities to the same extent as men. The size of the gap depends on their share of household work and its valuation.

Table 5 shows the life cycle surplus of those in working age and the life cycle deficit in old age by using the total income from market and non-market production. The aggregate LCD of the elderly is smaller compared to the values in Table 3, as elderly

[23] The average hourly net income is calculated from EU-SILC by dividing the average weekly gross income through the average number of working hours. The gross-net conversion was made using EUROSTAT data on net earnings and tax rates. However, the information on working hours corresponds to the survey period and not necessarily to the income reference period. We restrict the analysis to the age group 30-49 years because we assume that in this group changes in the employment status between the income reference period and the survey are low. Information on the employment status during the whole income reference period is unfortunately not available for all of the countries.

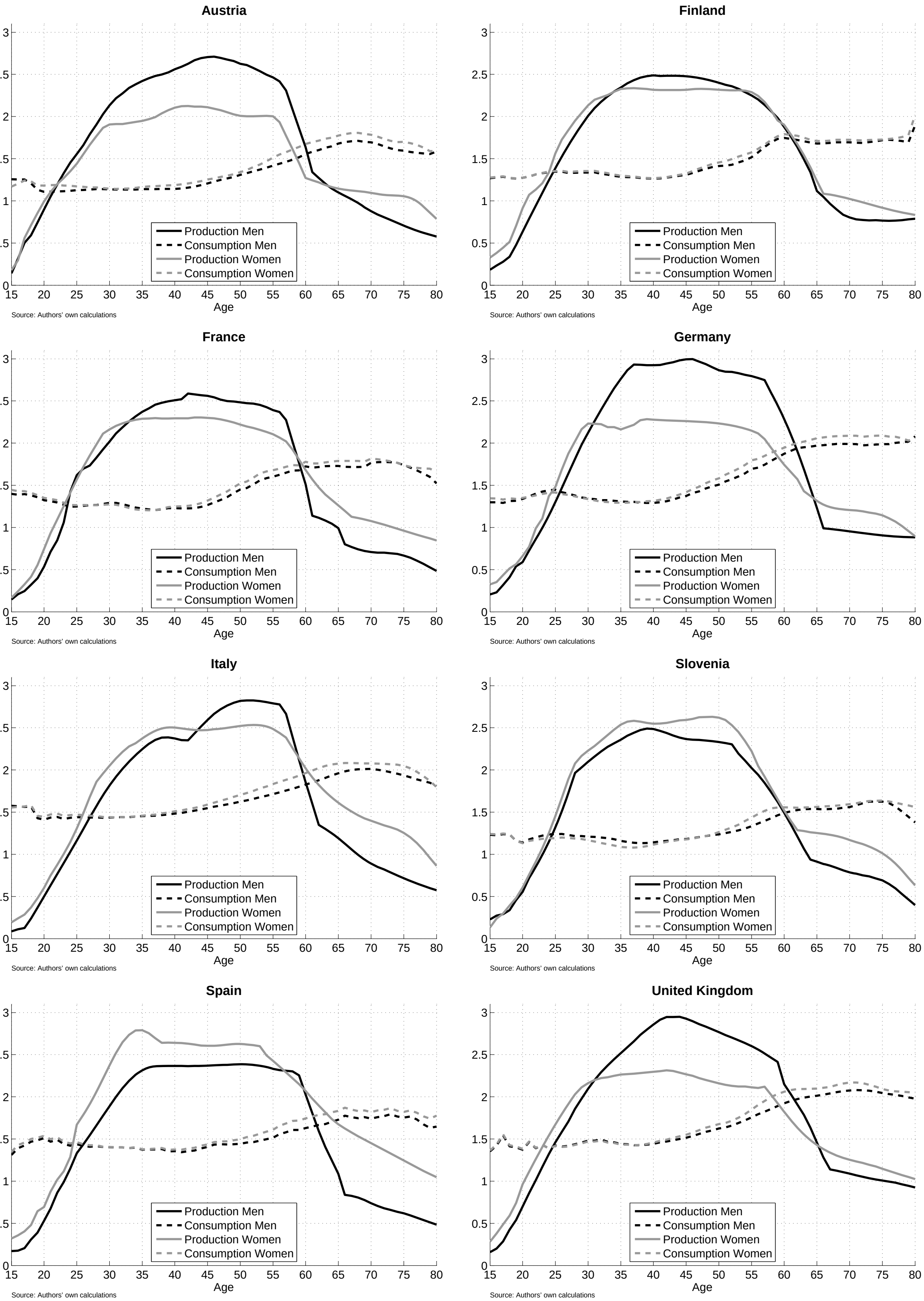

Figure 8: Market and Non-Market Production and Consumption by Age and Sex relative to the Sample-Average of Labour Income from Paid Work

persons generate slightly more resources through unpaid work as they consume and the inclusion of household production increases the generated income. This in turn decreases the aggregate life cycle deficit of the elderly as a share of total income.

The consideration of non-market work "flattens" the increase of the LCD around the age of 60 (Figure 9) for women as they partly replace paid work with unpaid household work. These goods and services are not only produced by themselves but constitute a transfer to their partner and, if they live in the same household, to their children. The age borders which separate the LCS from the LCD for women are therefore higher as compared to the pure results for market work in Section 3.

Table 5: The Aggregate Life Cycle Deficit and -Surplus for Total Production by Gender

		LCD and LCS in % of Total Labour Income			Age Borders LCD positive	
Country	**Sex**	**Young (LCD)**	**Working Age (LCS)**	**Old (LCD)**	**until:**	**from:**
Austria	Women		11	8	21	59
	Men		19	7	21	61
	Total		**30**	**14**	21	60
Finland	Women		13	8	26	62
	Men		14	7	24	62
	Total		**27**	**15**	25	62
France	Women		13	8	26	60
	Men		16	8	23	60
	Total		**29**	**16**	23	60
Germany	Women		10	9	26	59
	Men		18	7	24	62
	Total		**28**	**16**	25	61
Italy	Women		11	7	27	61
	Men		12	8	24	61
	Total		**24**	**16**	25	61
Slovenia	Women		19	6	24	60
	Men		16	7	23	61
	Total		**31**	**13**	24	60
Spain	Women		16	5	24	64
	Men		12	7	23	62
	Total		**28**	**12**	24	63
United Kingdom	Women		9	9	23	59
	Men		15	6	24	62
	Total		**23**	**15**	23	60

Source: Authors' own calculations

Note: Information on the "Young (LCD)" cannot be provided, as indivdiduals aged 15 years and younger are excluded from the time use analysis.

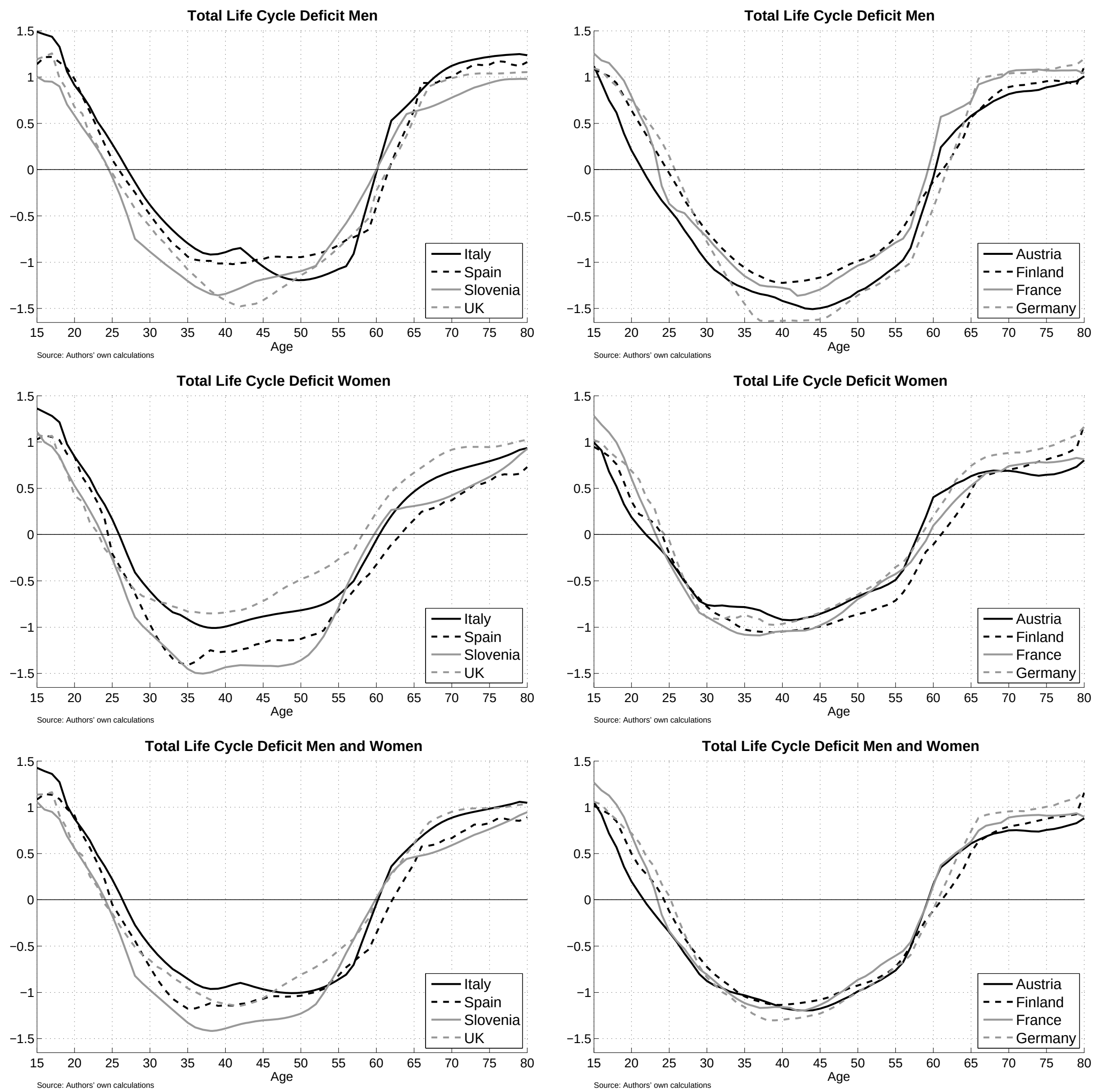

Figure 9: The Life Cycle Deficit for Market and Non-Market Production relative to the Sample Average of Income from Paid Work

6 Conclusions

The current welfare system consists to a large degree of transfers from the active population to the young and in particular to inactive elderly persons. Faced with population ageing the funding of this system is under pressure in virtually all European countries. However, the consequences of population ageing for the overall economic development and in particular for public finances not only depend on the extent of demographic change, but are to a large extent determined by the design of the economic life cycle, i.e. by the relation between the age of individuals and their economic activities. In this paper we compare several European countries using indicators for the economic dependency of the population in young and in old age. As our analysis is based on data from the National Transfer Accounts project we include in our analysis those countries that are also members of this project and which have created an NTA dataset: Austria, Germany, Hungary, Italy, France, Finland, Slovenia, Spain, Sweden and the UK.

In contrast to the commonly used demographic dependency ratios that apply fixed age limits to separate the life cycle stages of dependency and the working age, we introduce economic dependency ratios that are built on data of age-specific averages of consumption and labour income extended by the time used for unpaid work. Our measure of economic dependency - the life cycle deficit - is defined as the difference between consumption and labour income. This measure is positive in childhood and in old age, and negative in working age. The life cycle stages of economic dependency are characterized by a positive life cycle deficit, and working ages by a negative life cycle deficit, i.e. a life cycle surplus. The aggregate life cycle deficit is calculated as the total life cycle deficit of the young, respectively the old population in relation to total labour income. Analogously we calculate the aggregate life cycle surplus as the total life cycle surplus relative to labour income.

In a first step we calculate the LCD (life cycle deficit) and LCS (life cycle surplus) based on NTA data, using age group averages for labour income and consumption and the country-specific population from the NTA base year. Our results clearly indicate that the ages until which people stay (in young age), respectively become (in old age), on average economically dependent differ across Europe and are quite different as compared to the fixed age limits applied in demographic dependency ratios. When using the life cycle deficit as indicator people stay economically dependent about 10 years longer as compared to the demographic youth dependency ratio (that relates the share of people below age 15 to those between age 15 and below age 65). On the contrary, in older ages individuals become economically dependent already several years before the age of

65 that is commonly used for calculating the old age dependency ratio (that relates the share of people above age 65 to those between age 15 and below age 65). We find large differences across countries: The aggregate life cycle deficit in young age ranges from 19 percent in Austria to 26 percent in Finland, whereas the aggregate life cycle deficit in old age ranges from 21 percent in Spain to 32 percent in Germany. Regarding the ages where people on average consume less than they produce, Slovenia and Sweden constitute two extreme cases: While people generate an economic surplus until around age 63 in Sweden, people become economically dependent already at age 56 in Slovenia. Sweden therefore stands out having a life cycle surplus for 37 years (from age 25 to age 62) as compared to 31 years for Slovenia (from age 24 to age 55). However, in both countries the life cycle surplus amounts to 41 percent of labour income, a value that lies at least 8 percentage points above the value in all the other countries. The results on the aggregate life cycle deficit/surplus are obviously influenced by the shape of the age profiles as well as by the age structure of the population.

As our focus is on cross-country differences with respect to age-specific production and consumption activities, we control for cross-country differences in the demographic structure and in a next step apply a standard population to calculate the aggregate life cycle deficit for each country. In addition, we also differentiate our analysis by gender. This gives us further insights on how country-specific differences in the aggregate life cycle deficit/surplus emerge, since cross-country differences in the labour force participation of women play an important role. Although we control for the population structure the aggregate life cycle deficit and surplus varies considerably across countries. The LCD for young people lies between 22% in Austria and 33% in Italy, in old age it amounts to values between 26% in Sweden and 32 % in Hungary. This indicates that the design of the economic life cycle plays an important role: The low value of the LCD in young age for Austria is driven by the early entry into the labour market, while the low value of the LCD in old age for Sweden can be explained by the late exit from the labour market.

Interesting are the gender differences in the life cycle surplus. The aggregate life cycle surplus (a measure for the resources which are produced but not consumed by the population in working age) ranges from 28 percent in the UK to 48 percent in Slovenia. These differences can largely be explained by the differences in the share of total income which is generated by women. In Slovenia and Sweden the contribution of women to total labour income is among the highest within Europe, resulting in a LCS of 14% and 18% of total labour income for women in Sweden and Slovenia respectively. The low value for the UK is due to a low contribution of women and a high overall level of consumption relative to labour income. These large cross-country differences in women's contribution to the

LCS are in turn due to a large extent by the difference in the labour market behaviour of females with children. Moreover, this behavior is influenced by the prevailing family policies including monetary benefits as well as the provision of childcare.

The gender specific analysis of the life cycle deficit/surplus is incomplete if we ignore unpaid work. A full account of paid and unpaid work together is necessary to obtain a complete picture of the re-distribution of resources across age. Based on the multinational time use survey we investigate the age specific consumption and production of goods and services emerging through non-market production activities of households. For all countries and all age groups, the time devoted to these activities by females exceeds the corresponding values of males. The gender difference is particularly high in France, Spain and Italy.

Unpaid work peaks in childbearing age for women, reflecting the time which is devoted to childcare. For both, men and women, there is another peak in old age as part of the reduction in time devoted to paid work is replaced by household production. However, the measure for the consumption of goods and services emerging from non-market production activities generally increases with age, indicating that in most of the countries these goods and services are consumed by older age groups themselves. A larger transfer of goods and services through non-market production activities can be observed in Spain, Italy and Slovenia. In these three countries a quite high share of people in older age groups live with their children. In particular Slovenia is an interesting case since in addition to the peak of unpaid work in childbearing ages there is a quite pronounced peak around age 60 for non-market production activities. This is an indicator that these age groups provide considerable transfers through non-market production to younger age groups, thereby supporting the high labour participation of women.

Our results clearly indicate that a reform of the welfare system needs to take into account not only public transfers but also private transfers, in particular those that relate to services produced within the household for own consumption. An increase for instance in the female labour force participation - as commonly argued as a means to reduce the pressure on public finances in ageing populations - needs to be accompanied by substituting private intra household transfers accordingly. Our work provides an analysis on the aggregate level. For a deeper understanding of dynamic behavioural relationships at the individual level studies at the micro level are inevitable.

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A Appendix

Table A-1: The Generation and Use of Income

	Austria	Finland	France	Germany	Italy	Slovenia	Spain	Sweden	UK	Hungary
Net National Income in € p.c. (PPP)	**22,654**	**20,509**	**19,827**	**22,294**	**17,259**	**14,594**	**17,905**	**22,264**	**21,289**	**9,905**
Labour Income in %	76.6	75.7	76.8	73.7	73.7	85.7	79.7	75.5	75.0	81
Asset Income in %	23.4	24.3	23.2	26.3	26.3	14.3	20.3	24.5	25.0	19
+ Transfers from ROW p.c. in Euro	-216.2	-259.5	-381.7	-418.8	-257.0	69.6	-136.7	-423.5	-382.0	52
Disposable Income (DI)	**22,438**	**20,249**	**19,445**	**21,875**	**17,002**	**14,663**	**17,768**	**21,841**	**20,907**	**9,957**
Consumption in % of DI	87.5	94.6	95.3	88.8	100.5	93.9	96.8	83.2	98.2	95
Saving in % of DI	12.5	5.4	4.7	11.2	-0.5	6.1	3.2	16.8	1.8	5
Public Saving in % of DI	-2.3	-3.5	-8.2	-3.2	-5.1	-3.8	-8.8	1.8	-9.9	-9
Private Saving in & of DI	14.8	9.3	12.9	14.4	4.6	9.9	12.1	14.9	11.7	15
Consumption as Share of Labour Income	1.13	1.23	1.22	1.18	1.34	1.10	1.21	1.08	1.29	1.17

Note: Euro values adjusted for differences in purchasing power.

Table A-2: Selfdefined Economic Status of Women by Age - Percentages

Age	Full-time	Part-time	Domestic Work	Educ.	Unempl.	Inactive/Miss.	Obs.
Austria							
<= 20	34.2	3.8	2.6	53.9	3.3	2.1	424
21-30	37.9	16.0	20.6	18.3	5.2	2.1	733
31-40	32.7	35.4	22.4	1.7	4.9	2.8	1007
41-50	42.5	34.5	12.8	0.1	5.8	4.3	1250
51-60	30.2	21.6	13.5	0.1	5.4	29.3	983
60+	0.7	0.4	14.5	0.1	0.1	84.2	1646
Germany							
Age	Full-time	Part-time	Domestic Work	Educ.	Unempl.	Inactive/Miss.	Obs.
<= 20	26.6	1.9	1.3	65.4	3.3	1.5	711
21-30	45.7	15.1	10.1	20.7	6.7	1.7	1256
31-40	32.9	37.1	16.9	1.5	8.1	3.4	1702
41-50	37.2	40.0	9.3	0.2	8.1	5.2	2487
51-60	34.1	32.8	10.3	0.0	8.5	14.2	2393
60+	2.3	2.6	5.4	0.0	0.7	89.0	3714
Spain							
Age	Full-time	Part-time	Domestic Work	Educ.	Unempl.	Inactive/Miss.	Obs.
<= 20	6.2	2.8	2.8	74.3	11.1	2.8	1001
21-30	41.4	12.3	5.0	18.1	21.1	2.1	2100
31-40	53.3	15.0	11.1	0.7	18.5	1.5	2695
41-50	49.4	13.3	19.5	0.4	13.8	3.6	2937
51-60	35.1	7.8	35.5	0.0	13.2	8.4	2450
60+	2.7	1.2	48.9	0.0	1.0	46.3	4728
Finland							
Age	Full-time	Part-time	Domestic Work	Educ.	Unempl.	Inactive/Miss.	Obs.
<= 20	6.1	4.7	1.6	81.2	5.0	1.4	1034
21-30	43.5	8.2	15.6	22.7	8.3	1.7	1198
31-40	62.8	9.0	15.8	3.3	7.5	1.6	1430
41-50	74.8	7.7	2.4	2.1	6.8	6.2	2147
51-60	61.0	9.1	1.7	0.8	9.2	18.2	2224
60+	5.9	3.1	0.3	0.0	0.9	89.8	2697
France							
Age	Full-time	Part-time	Domestic Work	Educ.	Unempl.	Inactive/Miss.	Obs.
<= 20	6.0	4.2	1.7	80.9	4.1	3.1	843
21-30	48.6	17.1	5.3	13.8	10.8	4.4	1447
31-40	53.6	23.4	8.9	0.7	7.5	5.9	1688
41-50	54.8	24.8	5.8	0.5	7.1	7.0	1944
51-60	39.7	17.6	7.9	0.0	7.4	27.3	1937
60+	1.9	1.3	5.4	0.0	0.2	91.1	3087

Source: EU-SILC 2010

Table A-2: Selfdefined Economic Status of Women by Age - Percentages

Age	Full-time	Part-time	Domestic Work	Educ.	Unempl.	Inactive/Miss.	Obs.
			Italy				
<= 20	5.1	2.2	2.7	78.3	9.6	2.1	1193
21-30	35.7	8.0	15.8	23.8	13.4	3.2	2539
31-40	45.6	13.5	27.4	1.2	8.9	3.4	3520
41-50	47.9	13.9	29.0	0.0	5.2	4.1	3821
51-60	34.1	7.1	37.5	0.0	3.7	17.7	3227
60+	2.3	0.5	31.6	0.0	0.2	65.5	6761
			Sweden				
Age	Full-time	Part-time	Domestic Work	Educ.	Unempl.	Inactive/Miss.	Obs.
<= 20	9.7	13.5	0.6	60.6	9.2	6.4	798
21-30	44.0	18.8	3.2	24.0	5.2	4.7	879
31-40	56.7	28.8	2.4	5.4	3.8	2.9	1108
41-50	61.3	24.0	1.0	2.2	4.6	6.8	1361
51-60	55.7	25.2	1.2	0.3	4.2	13.3	1164
60+	6.2	5.1	0.7	0.0	0.8	87.2	1859
			Slovenia				
Age	Full-time	Part-time	Domestic Work	Educ.	Unempl.	Inactive/Miss.	Obs.
<= 20	1.6	0.4	0.1	94.5	2.5	0.9	1101
21-30	44.2	4.1	0.5	36.9	13.7	0.6	2220
31-40	79.5	5.7	3.4	0.2	10.4	0.8	1839
41-50	76.7	4.4	4.3	0.2	10.6	3.9	2512
51-60	35.4	3.4	5.1	0.0	9.8	46.4	2260
60+	0.3	0.1	2.7	0.0	0.1	96.8	2988
			United Kingdom				
Age	Full-time	Part-time	Domestic Work	Educ.	Unempl.	Inactive/Miss.	Obs.
<= 20	14.0	14.6	3.7	57.6	7.9	2.0	461
21-30	48.9	19.8	14.0	9.7	4.0	3.6	918
31-40	40.0	29.8	22.7	1.5	2.3	3.8	1173
41-50	47.2	30.0	11.1	0.7	2.4	8.6	1381
51-60	41.1	30.5	6.9	0.5	1.8	19.3	1269
60+	5.0	8.8	1.5	0.0	0.3	84.4	2764
			Hungary				
Age	Full-time	Part-time	Domestic Work	Educ.	Unempl.	Inactive/Miss.	Obs.
<= 20	4.1	1.1	1.7	83.9	3.0	6.2	901
21-30	45.0	3.4	7.2	13.9	9.9	20.7	1443
31-40	57.2	5.1	9.3	0.0	9.8	18.6	1786
41-50	70.8	4.9	3.6	0.0	10.2	10.5	1705
51-60	49.9	4.1	2.0	0.0	5.5	38.5	2361
60+	1.5	1.0	0.8	0.0	0.0	96.6	3199

Source: EU-SILC 2010

Table A-3: Activity Status of Women by Age of Youngest Co-Residing Child

Age of Child	Fulltime	Parttime	Domestic Work	Educ.	Unempl.	Inactive/Missing	Obs.
			Austria				
Age of Child	Fulltime	Parttime	Domestic Work	Educ.	Unempl.	Inactive/Missing	Obs.
0 - 1 Years	2.5	7.0	89.0	0.6	0.6	0.3	187
2-3 Years	3.9	35.1	55.6	0.4	4.5	0.4	219
4-5 Years	14.2	51.2	27.7	1.9	3.6	1.4	199
6-10 Years	26.5	47.6	18.8	0.9	6.2	0.0	427
11-15 Years	34.7	44.6	14.6	0.0	5.3	0.7	404
16+	43.2	33.6	18.1	0.2	4.4	0.5	662
no child	61.1	20.6	8.4	0.0	8.1	1.8	1618
			Germany				
Age of Child	Fulltime	Parttime	Domestic Work	Educ.	Unempl.	Inactive/Missing	Obs.
0 - 1 Years	4.8	12.5	76.3	1.2	4.6	0.7	252
2-3 Years	17.1	39.6	35.2	1.0	7.1	0.0	395
4-5 Years	10.6	52.3	17.8	1.0	11.9	6.5	298
6-10 Years	14.3	57.6	16.7	2.0	8.3	1.0	753
11-15 Years	21.2	57.9	13.0	0.3	6.5	1.2	763
16+	33.1	45.5	12.2	0.1	6.7	2.5	1324
no child	58.6	22.1	6.4	0.0	9.9	3.0	3870
			Spain				
Age of Child	Fulltime	Parttime	Domestic Work	Educ.	Unempl.	Inactive/Missing	Obs.
0 - 1 Years	44.4	14.8	19.2	0.2	19.3	2.2	416
2-3 Years	38.9	21.1	17.1	0.8	21.5	0.7	588
4-5 Years	45.8	16.9	18.8	0.1	18.1	0.2	502
6-10 Years	44.0	18.2	18.5	0.2	18.3	0.9	1132
11-15 Years	48.8	13.7	19.4	0.1	17.2	0.8	940
16+	39.3	11.3	33.8	0.1	13.8	1.6	2667
no child	54.7	10.6	12.4	0.0	20.0	2.3	3997
			Finland				
Age of Child	Fulltime	Parttime	Domestic Work	Educ.	Unempl.	Inactive/Missing	Obs.
0 - 1 Years	13.5	0.7	83.1	0.6	0.9	1.2	277
2-3 Years	36.6	9.4	42.1	7.4	3.8	0.7	512
4-5 Years	70.6	9.6	5.3	3.6	10.6	0.3	327
6-10 Years	68.9	13.5	3.9	5.2	8.4	0.1	734
11-15 Years	81.5	6.1	1.9	2.7	7.4	0.3	801
16+	80.9	6.5	2.5	1.4	7.8	0.9	1207
no child	72.1	13.4	1.3	0.0	12.2	1.1	2968
			France				
Age of Child	Fulltime	Parttime	Domestic Work	Educ.	Unempl.	Inactive/Missing	Obs.
0 - 1 Years	42.8	24.9	17.7	1.4	9.5	3.7	375
2-3 Years	44.7	28.7	18.6	0.4	6.3	1.3	433
4-5 Years	54.6	24.0	8.0	1.0	11.5	0.9	381
6-10 Years	50.4	33.8	8.2	0.5	6.9	0.2	786
11-15 Years	56.3	29.8	6.2	0.5	5.8	1.3	698
16+	55.8	24.0	10.0	0.2	8.8	1.2	1119
no child	60.4	19.3	5.6	0.0	11.6	3.1	2607

Source: EU-SILC 2010

Table A-3: Activity Status of Women by Age of Youngest Co-Residing Child

Age of Child	Fulltime	Parttime	Domestic Work	Educ.	Unempl.	Inactive/Missing	Obs.
			Hungary				
0 - 1 Years	14.6	1.9	21.5	0.3	0.7	61.0	423
2-3 Years	54.4	7.3	10.3	0.0	11.5	16.6	326
4-5 Years	56.5	7.2	11.6	0.0	15.6	9.1	708
6-10 Years	72.8	5.3	4.5	0.0	15.1	2.3	671
11-15 Years	79.8	5.5	2.9	0.0	10.0	1.7	1654
16+	75.8	6.0	1.9	0.0	10.9	5.3	2071
no child	34.4	10.2	38.8	1.4	10.3	4.9	466
			Italy				
Age of Child	Fulltime	Parttime	Domestic Work	Educ.	Unempl.	Inactive/Missing	Obs.
0 - 1 Years	34.9	15.7	37.1	0.9	9.2	2.1	749
2-3 Years	38.3	17.0	34.4	0.8	7.6	1.8	644
4-5 Years	35.2	18.6	39.3	0.0	5.2	1.7	1350
6-10 Years	41.2	16.6	35.4	0.0	4.6	2.2	1180
11-15 Years	37.5	9.4	45.6	0.0	3.9	3.6	3344
16+	55.1	8.8	17.8	0.0	13.7	4.5	4885
no child	54.4	23.3	14.5	4.8	2.7	0.3	337
			Sweden				
Age of Child	Fulltime	Parttime	Domestic Work	Educ.	Unempl.	Inactive/Missing	Obs.
0 - 1 Years	43.3	37.3	2.6	11.7	4.1	1.0	335
2-3 Years	54.5	32.6	0.0	8.4	3.5	1.1	214
4-5 Years	56.0	30.6	0.8	6.2	5.2	1.1	468
6-10 Years	64.5	28.0	1.0	2.2	3.0	1.2	491
11-15 Years	67.7	20.7	1.1	1.1	4.3	5.0	834
16+	57.9	27.5	1.0	0.0	8.2	5.4	1974
no child	70.7	4.0	0.9	3.9	20.4	0.1	332
			Slovenia				
Age of Child	Fulltime	Parttime	Domestic Work	Educ.	Unempl.	Inactive/Missing	Obs.
0 - 1 Years	68.2	13.1	2.0	3.6	12.8	0.3	485
2-3 Years	72.0	9.9	2.6	4.6	10.8	0.1	297
4-5 Years	78.7	3.7	3.5	0.2	13.9	0.0	660
6-10 Years	82.6	3.6	4.4	0.0	9.2	0.2	746
11-15 Years	75.0	4.2	7.4	0.0	12.7	0.7	2730
16+	71.4	5.7	3.7	0.0	18.1	1.1	1846
no child	22.9	25.6	44.3	3.6	1.7	2.0	309
			United Kingdom				
Age of Child	Fulltime	Parttime	Domestic Work	Educ.	Unempl.	Inactive/Missing	Obs.
0 - 1 Years	22.9	25.6	44.3	3.6	1.7	2.0	309
2-3 Years	18.9	35.9	40.7	1.1	2.5	1.0	331
4-5 Years	22.7	39.2	31.7	3.2	1.9	1.4	281
6-10 Years	30.3	40.0	24.3	2.5	1.3	1.6	507
11-15 Years	44.7	37.3	14.2	1.4	1.7	0.8	472
16+	51.2	35.1	8.5	1.0	2.9	1.3	764
no child	62.8	26.3	3.7	0.0	5.6	1.6	2085

Source: EU-SILC 2010

Table A-4: The Aggregate "Time Use" Life Cycle Deficit and -Surplus by Gender

		LCD and LCS in % of Total Labour Income			**Age Borders LCD positive**	
Country	**Sex**	**Young (LCD)**	**Working Age (LCS)**	**Old (LCD)**	**until:**	**from:**
Austria 2008	Women		25	2	18	
	Men		3	0	26	53
	Total		26	0	**21**	
Spain 2002	Women		32	0	22	
	Men		0	6	33	41
	Total		27	0	**26**	**80**
Finland 1999	Women		21	0	16	
	Men		3	1	24	61
	Total		24	0	20	
France 1998	Women		26	0	19	
	Men		1	5	30	44
	Total		22	1	**22**	**77**
Germany 2001	Women		19	0	23	79
	Men		2	2	28	50
	Total		22	1	**25**	**77**
Italy 2002	Women		29	2	23	
	Men		0	15		
	Total		20	6	**28**	**80**
Slovenia 2000	Women		24	0	20	80
	Men		2	1	27	67
	Total		25	1	**23**	**78**
UK 2000	Women		21	0	18	53
	Men		2	1	26	63
	Total		21	0	**20**	**76**

Note: Information on the "Young (LCD)" cannot be provided, as indivdiduals aged 15 years and younger are excluded from the time use analysis.

Identifying barriers to institutional change in disability services

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Authors: Ágota Scharle, Balázs Váradi (Budapest Institute)

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Identifying barriers to institutional change in disability services

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Abstract

In a comparative framework, the paper uses a recently observed shift away from cash transfers and towards the provision of rehabilitation services to identify barriers to welfare policy reform. The analysis relies on the assumption that some European welfare regimes have a similar initial structure but may differ in their speed of adaptation to the challenges posed by external shocks. A detailed comparison of fast moving and slow moving countries allows us to identify some of the barriers to change. Throughout the analysis, we focus on provisions for people with disabilities, where the above shift has been observed, and with much variation across member states. Comparing policy developments in Finland, Norway, and Sweden in the past twenty years we identify fiscal constraints, historical commitment to equal rights, policy making capacity, and centralisation as important drivers of change. While some of these factors are beyond the control of policy makers, some can be strengthened by governments wishing to improve the long term performance of the welfare system.

1 Introduction[3]

European welfare systems have changed considerably over the past two decades and a growing body of theoretical and empirical work has been devoted to explaining the drivers and constraints to change. So far, no widely accepted models have emerged that would provide a clear and empirically testable description of the mechanisms that generate adaptation in welfare regimes. In fact, there is an ongoing debate even over the interpretation of what constitutes change and adaptation in general and in particular, in welfare systems. However, the rather pragmatic need for understanding barriers to change has not diminished or even strengthened over the past decades, as politicians struggle to tackle the welfare consequences of population ageing, new social risks, and economic crises.

This paper aims to contribute to the existing literature by identifying barriers to institutional change in European welfare systems within the Social-democratic welfare regime, and focusing on rehabilitation services for the disabled. The restricted focus allows us to identify not only some of the factors that may contribute to change but also the mechanisms leading to change. This approach however does not tell us which of these factors are sufficient or even, which are necessary for reform to occur.

The next section of the paper outlines the research strategy in more detail. Section 3 provides a summary of the existing literature, section 4 describes cross country variation in the provision of rehabilitation services, pointing to a convergence of policies in the OECD.

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Section 5 explains the selection of cases for further study, while section 6 presents two comparative cases that we use to identify barriers to change. Section 7 concludes.

2 Why focus on disability services

Our general approach follows earlier work interpreting changes in welfare regimes as path-dependent adaptation to exogenous pressures (e.g. Pierson 2000, Swank 2001, Esping-Andersen et al 2002, Palier 2010). We compare economies responding to a similar external shock and identify the factors that may have determined the speed of adaptation in their welfare systems. We focus on disability services as a particular area of welfare policy that is relevant to most developed economies and where there is wide consensus over the right choice of measures.

The common shock affecting most European countries in this policy area was manifested in the sudden rise of disability benefit expenditure in the 1970s and/or 1990s (Duncan and Woods 1987, Lonsdale 1993, OECD 2003). There is mounting evidence that the rise in disability benefit claims (or in some countries, the duration of benefit receipt) was itself a response to changes in the labour market and in welfare systems, rather than a symptom of demographic processes or developments in healthcare systems. The underlying cause was a decline and structural shift in labour demand, and a subsequent rise in long term unemployment, which led to a rise in unemployment benefit expenditures. This could generate an incentive for claiming disability benefits via two channels: directly, if governments eased eligibility criteria in order to reduce labour supply or indirectly, by reducing the value of alternatives, if governments responded by tightening access to, or cutting the level of unemployment benefits. Kohli et al (1991) claim that in the Netherlands, Sweden and Germany, incapacity benefits became an institutionalised way in which older workers can withdraw from the labour market as an alternative to unemployment. Vanhuysse (2004) and Scharle (2007) show how a similar process unfolded in Hungary and Poland in the 1990s.

The rise in disability benefit receipt duly raises concerns when it is coupled with a permanent decline in labour force participation, since a large share of the working age population permanently leaving the labour market will reduce tax revenues and increase transfer expenditure. This underlying mechanism goes back to the classic problem of welfare systems: cash benefits for the active age population should alleviate poverty without discouraging labour supply.

Economic theory offers no clear cut solution to this problem, but there is growing evidence that a carefully calibrated combination of cash benefits, active labour market programmes and behavioural conditions can successfully curb growing inactivity without sacrificing income maintenance. The details of the appropriate mix of policies have been tested and refined over the past decades by a large body of empirical research and policy analysis and are now part of the standard labour market policy toolkit advocated by the EU and the OECD (EC 2010, EC 2013, OECD 2010). As we show in section 4, there is indeed remarkable convergence across developed countries in their relevant labour market policies, however, with considerable variation in the speed of change.

As we argue in the next section, there is no comprehensive and generally accepted theory of reforming welfare regimes, which is most probably in part explained by the difficulty of developing such a theory. The task is made difficult if not impossible by several complications, of which we list only the three that seem the hardest. First, the outcome variable of such an explanatory model would be change, which is difficult to define and measure in an objective manner (sometimes referred to as the dependent variable problem).[4] Second, potential explanatory variables are too numerous and often interrelated, so that disentangling their effects would require a large number of observations. Third, systematic data collections on welfare reforms have started only very recently so that research is constrained by a trade-off between width or depth in the data available for empirical analysis.

Limiting our analysis to rehabilitation services for the disabled serves to reduce the above mentioned difficulty of the task in two dimensions:

1) focusing on a specific reform agenda where the goals and the tools are both clear and by and large universally applicable in developed economies,
2) comparing cases with broadly similar welfare regimes.

The first limitation makes it easier to define the outcomes of the adaptation process in a way that is comparable across countries, while the second limitation reduces the number of explanatory variables.

Admittedly, this approach entails certain limitations in its potential results. First, due to the peculiarities of disability provisions, some or most of our conclusions may not apply to other areas of reform. Such features include the heterogeneity of the target group, the involvement of several policy areas (healthcare, education, pensions, employment and social policy), which also increase the number of stakeholders affected, the relative strength of organised interest groups, and that the necessary reforms require not only the careful calibration of incentives (as e.g. in the case of pension rules) but also a change of attitudes on the part of institutions implementing the newly introduced services (Prinz and Tompson 2009). A further caveat applies if the most important barrier in fact lies in the regime type, which we abstract away from by comparing cases *within* types. However, this seems less of a concern knowing that there is considerable variation in the speed of adaptation within regime types and also some recent evidence on significant reform attempts in Continental regimes, which had been identified as most resistant to change in early comparative studies (e.g. Esping-Andersen 1996).

3 Possible explanations in existing research

What variables can explain the variation in the direction, extent and speed of structural changes in public policy in general? As we already mentioned above, there does not seem to be a generally accepted theoretical answer to this question. As Høj et al (2006) put it: „there is neither a well-established model of the political economy of structural reform, nor an extensive empirical literature on this topic" (p. 5), or, in Häusermann's (2010) words: „… the literature on welfare state change also remains somewhat inconclusive, because different studies focus on different explanations and drivers of change." (p. 14). To sidestep a huge and largely inconclusive and even contradictory literature, one may adopt the following strategies.

[4] Consider responses to Hall's (1993) proposal to distinquish between first, second and third order change and the later proliferation of related notions, e.g. institutional change, paradigmatic change, etc.

The first strategy is to single out a few plausible explanatory variables, build a convincing model showing how those could affect policy change or the lack thereof, and test it on a dataset of countries using either regression or event history analysis. Such variables could range from the power of interest groups (Olson 1982, Alesina and Drazen 1991; Alesina et al. 2006), the political ideology of the party or parties in government (Tepe and Vanhuysse 2012) or the presence of an economic crisis (Alesina and Drazen 1991; Fernandez and Rodrik 1991) to pre-existing welfare arrangements and institutional rigidities (Boeri et al 2012, Tepe and Vanhuysse 2012).

The other strategy is to compile detailed narrative case studies of individual policy changes and try to inductively find the explanations for the launching and success (or failure) of these changes, as done for example by Tompson (2009).

As Mätzke (2009) argues with respect to the study of policy history, both approaches entail some methodological risks. Rigorous, model-based quantitative studies can be misleading, even when they yield significant results, unless we can control for all of the possible or, less ambitiously, the plausible alternative explanations, which is rarely the case. In case studies it is even more likely that, unless we start out with a list of potential explanations, we miss out on important factors that remain in the background.

We choose the second strategy and attempt to minimise the above risk by starting out with a comprehensive list of potential explanatory factors, and aim for depth instead of width as far as the many and often hard-to-measure dependent and independent variables are concerned. There is no commonly accepted and complete inventory of factors that may possibly explain variations in the way and speed in which policy outcomes react to external shocks. To generate such a list, we take two shortcuts:

(1) we concentrate not on all potential explanations for structural policy change as such, but restrict our attention to
    a. policy changes in social welfare (especially employment) policy and policies affecting the working age population only,
    b. explanations for the occurrence, extent and speed, not so much the direction of those policy changes;
    c. liberal democratic regimes in which the rule of law applies,
    d. in the last 60 years.
(2) We refrain from considering the universe of *all* possible explanations and try to identify the set of *plausible* explanations that have been already advanced and supported by some kind of empirical proof.

A further challenge is to tell apart explanations that affect policy as it appears on the books: in decrees and acts of legislatures, from ones that affect outcomes by modifying the success of implementation as well.

The study we rely most on below is Tompson's (2009) wide-ranging and insightful inductive collection on the political economy of reform, comprising twenty case studies.

In what follows, we strive to identify factors that slow down, speed up or sidetrack the connection that leads from a secular change in technology and global division of labour to adequate policy outcomes that represent successful adaptation to such external shocks.The level of globalization (proxied by trade or capital openness) has already been suggested to explain policy change. For example it has been suggested that globalization rearranges the influence of interest groups by making it easier for capital to exit and so giving investors a better bargaining position against labour, to contributing to accelerating technological change. But, as Myles and Quadagno (2002) put it, „finding a causal chain from increased globalization to diminished welfare states in the rich democracies has proven difficult, and, where the casual link has been found, the effect is often not the one expected."

We group the explanatory variables into three categories: actor-based, political-institutional and general structural. A more traditional, chronological survey of explanations is given by Myles and Quadagno (2002).

3.1. Actor-based explanations

The ideas and interests of citizens' and their groups (including organized elites) or external actors such as the EU Commission with respect to the putative policy change can and do explain social welfare policy change. This allows for changing values, perceptions and preferences to have an effect on social policy. What is considered "normal," the prevailing public opinion on who should be socially excluded, what constitutes family, what is fair, what is assumed to be the role of the family and of the state can affect policy change (Pfau and Effinger 2005, Brooks and Manza 2006). Public opinion can provide foundations to policy discourses, like Margaret Thatcher successfully appealing to the Victorian values of her electorate when reforming the social welfare system (Schmidt 2001, 2002). This also implies that policy changes that compensate at least some of the losers (e.g. exempting employees with acquired rights from labour code changes) have a greater chance for success (Tompson 2009).

But we must be careful: even the old insight (e.g. Korpi 1983, Bonoli 2010) that left wing parties support the expansion of the welfare state need not carry over to all contexts: when analysing the causes of retrenchment policies in continental Europe, Palier (2010) finds that partisan politics did not matter, Tompson (2009) allows for the "Nixon goes to China" effect, under which right wing parties are more credible and therefore more successful in passing "left wing" reforms and vice versa, and Häusermann (2010) stresses that both in the Christian Democratic and the Nordic countries center-right parties also formed coalitions with left-wing parties in expanding the welfare state.

Some mechanisms of support by actors may introduce a status quo bias against change. If those who stand to lose are more concentrated and more certain of their loss than the more uncertain and diffuse group of those whose welfare is to increase, that alone builds a powerful barrier to policy change (Tompson 2009).

Let us stress that, if citizens are at least to some extent sociotropic, their behaviour depends not only on narrow interests, but on beliefs of what they think is desirable and right in general, referred to as „paradigms," (Palier 2010) or „ideation" (Häusermann 2010, Bonoli 2010). Tompson (2009) even suggests that policy regimes can turn ripe for reform by erosion that involves „the widely shared conception that the policies and institutions in place are failing" and citizens becoming aware of the social and budgetary costs of the status quo (p. 46-47).

Recently, Vis (2010, 2011) and Tepe and Vanhuysee (2012) have attempted to apply prospect theory, a behavioural economics description of the different ways people react to the risks associated with 'winning' and 'losing' from a certain status quo (Kahneman and Tversky 1979) to explain welfare reform.

In as much as this holds, generating credible information about the effects of the planned change and relaying it to the citizenry or changing their expectations can be of importance (Tompson 2009).

3.2 Political-institutional explanations

Actors' preferences affect policies by way of the political process. This may take the form of strikes and demonstrations, interest groups bargaining with the government, or turning out to vote for or against the political parties implementing change (Galasso and Profeta 2002 enumerate studies finding voter turnout to affect social security spending). Therefore, even if we think it is the preferences of the citizens that determine policy, it happens through political institutions. That is, the institutions of interest mediation will affect "policy responsiveness" (Brooks and Manza 2006).

In that case, a host of political-institutional arrangements will also matter, such as those concerning the electoral system, the ease, necessity or tradition of forming a coalition government, the strength of the opposition, the devolution of state functions to levels of governance (including federal versus unitary models), de facto „veto points" given to various actors, or the political framework for industrial relations. Features determining whether a broad consensus is necessary for change are underlined as particularly important (Galasso and Profeta 2002; Häusermann 2010; Myles and Quadagno 2002; Palier 2010; Tompson 2009). Huber and Stephens (2000) refer to the school stressing these factors as adherents of the „power resources" approach.

These institutions will also affect crucial political party choices, for example, whether parties risk asking for an electoral mandate for a policy change before election. That, in turn, as Tompson (2009) finds, affects the chances for success.

Political institutions can have a direct effect on welfare policy changes as well, beyond how they shape the way in which the citizen's will is channelled into collective actions. Building on the theory of the political business cycle advanced by Nordhaus (1975), Tepe and Vanhuysse (2012) suggest that the length of the electoral cycle will matter if,the timing of policy change within the electoral cycle is important. Also, if institutions affect the discount rate of politicians, that, in turn, may affect the willingness to launch welfare policy changes (Tompson 2009). More generally, the level of trust and credibility garnered by political institutions − and actors within them, such as the government or political parties − can be crucial, too (Keefer & Khemani 2003, Rothstein et al 2012). This might affect outcomes not just by having an impact upon regulation but also by having an independent effect upon the success of the implementation of the new rules.

The quality of the bureaucracy: its administrative capacity to articulate goals (Rubaii-Barrett and Wise 2008) and find and elaborate policy solutions may also matter (Prinz 2010; Cseres-Gergely and Galasi 2012 discuss the Hungarian case). Less ostensibly, bureaucratic institutions are often in charge of implementation as well, thus they can affect not just the passage of regulatory changes, but the speed and extent with which they are implemented – or with which they erode (called "internal policy conversion" by Hacker 2004). Huber and Stephens (2000) refer to the approach stressing these factors as „state centric."

The fact that institutions matter can be rephrased in an optimistic way as well: sometimes, as Tompson (2009) finds, creating a new public sector body alone can help make a hard-to-pass reform happen.

The legal tradition of the country has also been shown to possibly matter (Botero et al 2004). The legal system can affect the implementation of policies too (e.g. how easily, with what chance of success and expected payoff can someone sue if he or she is shortchanged by institutions mandated to carry out policies?).

Moreover, path dependency theories „assume that early social policy developments set nations on distinct trajectories that, once adopted, are difficult to reverse" (Brooks and Manza 2006, p. 817). This has been demonstrated to be relevant for the formation of social policies as well (Ebbinghaus 2006; Häusermann 2010; Palier 2010). Hauserman (2010) and Mettler and Soss (2004) discuss policy feedback: new policies generate not just new institutions implementing them, but new constituencies supported by them, which, in turn, affect what new policies are adopted. Actors and institutions reinforce each other and clusters of countries emerge with similar welfare regimes. These have been shown to contribute to explaining social policy change as well. Esping-Andersen's (1990) welfare state categories have been used by many studies such as Palier (2010) to explain policy response in continental Europe as different from either Scandinavian or Anglo-Saxon countries and by Ebbinghaus (2006) to explain early retirement arrangements in Europe, Japan and the USA. Although Esping-Andersen's is the most widely used categorization, it is not the only one (e.g. Ebbinghaus 2006 used another division of countries when discussing different management-labour bargaining traditions). The general claim though that there are clusters of countries with similar welfare regimes and that, beyond individual institutions and actors, regime type affects policy change remains universally accepted by the literature.

3.3 General structural explanations

Beside global technological and economic change itself, a number of other structural variables have been proposed to explain welfare reform.

From the very beginning of welfare state research, two groups of explanatory variables have been shown to be correlated with proxies of social welfare policies, even though the actual causal relationship is elusive and endogeneity is in both cases hard to exclude: the average age, or more generally, demographic variables (Browning 1975) and per capita GDP (the so-called Wagner's Law), and, more generally, proxies of the level of economic development and income distribution in the country (Galasso and Profeta 2002 summarize the many quantitative studies where those variables matter). Huber and Stephens (2000) refer to the school of authors stressing these two factors as following the „logic of industrialism."

Economic development is correlated with spending on welfare as a long-run trend, but, more importantly for us, cyclical economic downturns have been shown to trigger policy responses. This can happen in several ways: fiscal austerity might cause the government to cut back on spending or phase out tax breaks; rising unemployment can increase public demand for more generous transfers, or the perception that economic crisis necessitates policy change might help break out of a political-institutional trap. It can also make reform harder (cf. Alesina and Drazen 1991; Fernandez and Rodrik 1991, Tompson 2009). On the other hand, Tompson (2009) finds that, once announced, the business cycle does not affect the likelihood of the adoption of policy change. Effects can be differential, too: Tepe and Vanhuysse (2012) find that mounting unemployment and population aging may make medium-sized pension reforms more likely but large ones less so.

Table 1 below summarises the main sets of plausible explanations (a more detailed version of which has been relegated to Table A1 in the appendix.) that we consider in the ensuing analysis.

Table 1. Potential explanatory mechanisms and their expected effect

Sets of explanatory variables	*Expected direction on OECD-recommended disability policy changes*	*Does it also affect the success of implementation?*
Actor based: ideas, values and interests of citizens, organised elites and external actors and communication targeted at them	More inclusive attitudes, interests aligned with activation and effective communication help change	(Lack of) trust in implementing agencies could
Political-institutional: institutions of interest mediation, length of the policy window,path dependence,the quality of bureaucracy, etc.	Multiple mechanisms pointing in different directions	The quality of the bureaucracy charged with implementation and interest conflicts between different agencies and levels of government could
General structural: demography, GDP, fiscal crises	Multiple mechanisms pointing in different directions, but, with the exception of economic downturns, slow to change	

4 Cross country variation in employment policies and outcomes for the disabled

The adequate response to a rise in disability claims has three main elements: the calibration of the replacement rate and entitlement conditions of disability benefits, the design of behavioural conditions and sanctions and lastly, the provision of rehabilitation services. These elements are intended to increase labour supply incentives while maintaining incomes, and may be supplemented by further measures to increase labour demand, reduce employer discrimination and encourage preventive investments (OECD 2010).

The success of this policy mix requires not only the correct calculation of monetary incentives (based mainly on the difference between potential earnings and out of work transfers), and the careful design of screening procedures, behavioural conditions and services, but also the proper implementation of these. In most welfare regimes this is the more difficult part as it usually implies a change in the attitudes of staff in welfare institutions delivering the provisions (Prinz and Tompson 2009). Attitudes and interests may compromise the effectiveness of all elements of the policy mix, but this risk is perhaps greatest in the screening of disability claims.[5] The implementation of disability reform is further complicated by the fact that it requires the cooperation of several administrative and policy making bodies: ministries, pension and health insurance funds, healthcare institutions, training providers and the public employment service. It may be blocked by the providers of ineffective services or interest groups and it may also fail if there are insufficient resources to build expert capacties for providing high quality services.

Existing empirical evidence suggests that personalised services rather than large scale uniform programmes are more effective. Reliable evidence however is relatively scarce in Europe, especially compared to the US, where rehabilitation programmes were started much earlier and the demand for rigorous impact assessments has been stronger (Van Lin 2002, OECD 2010).[6] There is also some evidence from studies in the US that the combination of (relatively expensive) personalised services and sanctions is cost-effective as opposed to sheltered employment (Cimera 2008, Kregel and Dean 2002).

The OECD has recently conducted a review of policies for integrating disabled workers in OECD member states. The report on their findings presents evidence of a convergence towards activation policies and away from generous cash transfers. However, they also note that actual practice lags behind: in most countries, the tightening of benefits and the introduction of new activation tools have not yet led to a significant shift in spending nor to a significant improvement of the labour market integration of disabled persons (OECD 2010).

Importantly, the OECD review found similar tendencies in disability policies across welfare regime types (OECD 2010, see Figure 1 below). Constructing two composite indicators for measuring the dominance of policies that encourage labour market integration on the one hand and generousity of cash benefits on the other hand, they find a definite shift towards to former between 1990 and 2007. Although Social Democratic regimes (covering the Nordic states, Germany and the Netherlands in their typology) move faster than Liberal (Anglo-Saxon countries except Ireland, Japan and Korea) and especially Corporatist (Contitental Europe and Ireland) regimes, changes over the past decades point in the same direction.[7]

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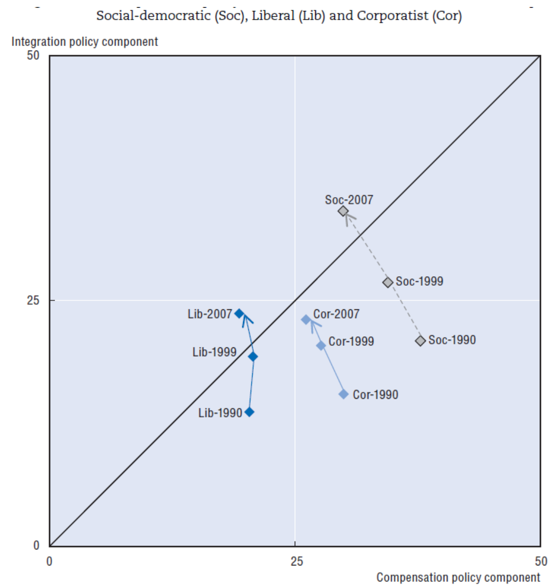
[5] Ideally, disability benefits should be granted to all who genuinely need them, and denied of all who do not. Both aims are subject to error (referred to as exclusion and inclusion error respectively), and both errors imply welfare losses. However, the denial of deserving benefit claims tends to raise more concern for those making the decision, in terms of potential legal consequences and moral considerations as well. They are therefore more likely to err on the side of leniency.

[6] Most of the disability policies recommended by the OECD originate from the US, where rehabilitation programmes were introduced very early and have also been subject to sophisticated impact evaluations. For an early review of such studies see e.g. Berkowitz 1988.

[7] The typology is based on clustering OECD countries on detailed indicators describing their disability policies at the start of the period observed.

Figure 1. Convergence of disability policies in the OECD 1990-2007



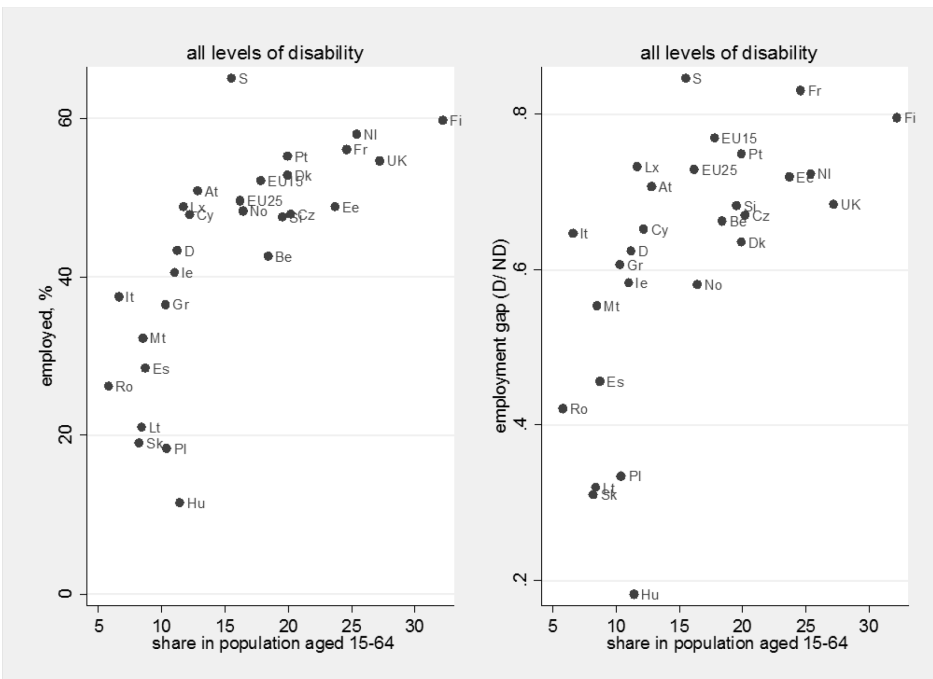
Source: OECD (2010). Note: The *Integration policy component* is a composite indicator of legal provisions to enhance labour market integration and access to rehabilitation services, the *Compensation policy component* is an indicator of access to and level of cash transfers. Both indicators are an unweighted sum of ten sub-components which rank countries in various aspect of policy (the sub indicators are presented in tables A2a-b in the Appendix. For a more detailed explanation see OECD 2010:85). A high score means more generousity (in compensation) and more activation (in integration) respectively.

While the speed of policy convergence is apparently related to regime type, there is considerable variation within regimes, suggesting that the adaptation process is influenced by several other factors as well. To illustrate this, we compare the scores on the above mentioned two OECD indicators between and within welfare models. Based on these, the overall change is about twice as large for Social Democratic as for Corporatist models, but, for example, the difference between the Swedish and the Finnish scores (both within the Social Democratic model) is almost as large (Figure 3). Or, the change appears to have been larger in Poland (belonging to the Corporatist model) than in Sweden.

In terms of outcomes, trends are less clear, for two main reasons. First, as already noted, the clear shift in policy goals and regulations has not fully translated into implementation in the field. This implies that their impact on labour market outcomes will be limited (OECD 2010). Second, labour market outcomes are difficult to compare in time and especially across countries. Evaluating change over time within a single country is complicated by the errors in measuring the level of disability, which is related to access to disability benefits and social norms as well, both of which may change over time. Kreider and Pepper (2007) report convincing evidence based on two US population surveys including self-reported disability that nonworkers overreport their disabilities. Cross country comparisons are fraught with the same problem and are further complicated by the differences in defining disability. Banks et al (2004) suggest that differences in self-reported disability across countries are influenced by differences in disability thresholds (e.g. over 50% of the difference between US and the Netherlands is due to that).

To illustrate the point, consider variation in the employment rate of the disabled population in the 2002 ad-hoc module of the European Labour Force Survey, which is based on a harmonised questionnaire and collection method. Given that health outcomes are relatively close within Europe (or vary mainly with the level of income, cf. OECD 2012), one would expect relatively little cross country variation in the incidence of disability within the working age population and no definite correlation between the incidence of disability and the employment rate of the disabled. The LFS data refute both these expectations: we find the incidence of disability to vary between 5.8% in Romania and 32.2% in Finland and the employment rate of disabled persons to increase with the incidence of disability, whether it is measured in absolute terms or relative to the employment rate of the non-disabled population (Figure 2).

Figure 2 Employment and incidence of disability in Europe 2002



Source: Own calculations using data from the EU LFS ad-hoc module of 2002 (Eurostat), except for Poland and Sweden, where we used data provided by the respective national statistical offices.

The problematic comparison of employment levels implies that the results of welfare reforms affecting the disabled population cannot be easily evaluated on the basis on improvements in the employment rate, especially if the reform entailed a redefinition of disability levels and/or a tightening of how existing definitions are applied in practice.

5. Selecting cases for further analysis

We rely on the typology of OECD (2010) to select countries for further analysis. Since our interest lies in European developments, we focus on Social Democratic and Corporatist regimes (the Liberal model in this typology includes only the UK from Europe). The main criterion for selecting the countries is that they should differ substantially *within* their welfare regime group in terms of changes in legislation (as measured by the two indicators in Figure 1), policy implementation (as measured by public expenditure) and outcomes (as measured by the change in employment). While admittedly crude, the latter measure is intended to serve as an indicator of the depth and success of the reforms. Table 2 below presents a summary of within-group variation based on the country level data given in the Appendix.

Table 2 Variation in the magnitude of change in legislation, implementation and impact within welfare types

		legislation	implementation (spending)	impact (employment)
Corporatist	A) Austria, Belgium, Hungary	medium	small	small (NI)
	B) France, Poland	small	(ND)	small (NI)
	C) Czech, Slovak Republic, Ireland, Italy, Portugal, Spain	medium	small (NI)	(ND) large
Social-democratic	A) Denmark, Netherlands, Switzerland	large	large	small (NI)
	B) Finland, Sweden, Norway, Germany	medium	medium	large

Source: authors' judgement based on data presented in Tables A3-5 in the Appendix. NI= no improvement, ND= no comparable time series available.

There appears to be more variation in legislative changes within the Social Democratic cluster. The differences in legislative change are largest between Denmark, the Netherlands and Switzerland, but this group appears to vary little in terms of outcomes: none of the three countries managed to reduce the disability employment gap. While the significant reforms in Denmark and especially in the Netherlands would make the analysis of this group potentially fruitful (cf. Andersen 2011, Van Oorschot 2010), the case is less clear when considering the impact dimension, as apparently these reforms have not yet translated into an improvement in employment outcomes (see Table A5 in the Appendix). In the Corporatist cluster, the three Southern countries Italy, Portugal and Spain exhibit some variation in terms of policy change and also markedly different outcomes in disabled employment.[8] However, none of these countries achieved a reduction in spending on cash transfers, which suggests that improved employment outcomes in this group may have been a result of factors outside rehabilitation policies.

In the ensuing analysis we therefore focus on the clearest case of the Social Democratic subgroup, which shows considerable variation in all the three phases of the policy making process. This includes Germany and three Nordic countries: Finland, Norway, and Sweden. In line with our analytical strategy, we exclude Germany to minimise variation that may come from path dependence and political tradition.

Sweden moved very little in the compensation indicator between 1990 and 2007, and less than the other Nordic states in the integration indicator of legislative changes.[9] In terms of

[8] Italy and Spain exhibit considerable improvement in the employment gap, while Portugal shows a decline.
[9] OECD (2010) only presents the detailed scores for 2007, but the scores were calculated for all years between 1990 and 2007, which the OECD kindly disclosed to us. The other subgroup of the Social Democratic model

public spending, however, the shift from cash transfers towards in kind provisions (including services) appears to be largest in Sweden, somewhat smaller in Finland, while Norwegian spending moved in the opposite direction in the past twenty years. In terms of employment outcomes, all the Nordic countries have high relative employment rates of between 50 to 70%, but, except for Sweden, showed no further improvement during the past 20 years, or even declined as in the case of Finland (Table A5).

6. Explaining disability policy developments in Finland, Norway and Sweden

Once we have confirmed (or adjusted) our initial labels for slow and fast moving countries, we can turn to exploring the reform process and identifying any features within the process or in its context that differ between the selected countries. Again, we must note that this strategy may fail to identify the true importance of those variables that do not vary considerably within the two groups.

In 1990, the three Nordic countries started out with rather similar disability policies, except that benefit legislation was considerably less generous in Finland, especially on sick leave. Benefit eligibility rules covered the total population in all three countries and this characteristic has been retained until the present. All three countries have a complex benefit system but with important differences in their administration. In Sweden, there is one agency for integration, but benefits are not co-ordinated, in Finland and Norway most programmes have their own, separate agency responsible for administration. Work incentives for beneficiaries tended to be weak and, regarding rehabilitation services, no supported employment programmes existed in 1990.

An important difference at the start is that the medical assessment of disability was done predominantly by the local general practitioner in Norway while it was done by the insurance doctor in Finland and Sweden.

6.1. Disability policy developments in the past twenty years

Legislative changes in Finland, Norway and Sweden have in almost all cases followed the direction prescribed by OECD recommendations: reducing the generosity of cash benefits and strengthening services and incentives for labour market participation. The year-on-year moves show remarkable similarity in Sweden and Norway, with the Norwegian legislation following Sweden with a lag until 1996 and taking the lead until 2008 (see Figure 3.). Finland starts from a more advantageous position as regards the generosity of cash transfers in 1990, but significant reforms to encourage labour market integration only start in 1996. By 2004, after a "short decade" of reforms, Finland converges to Norwegian policies and no significant changes occur thereafter.

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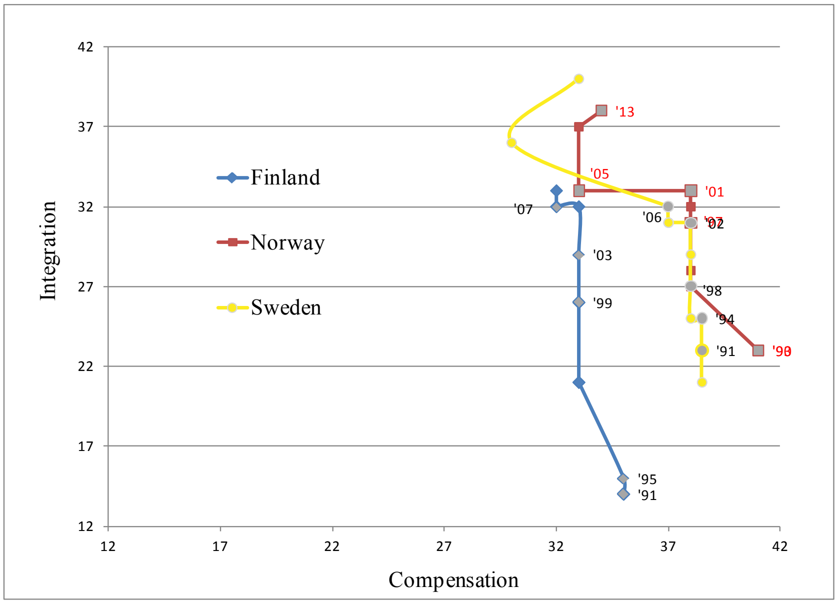
includes Denmark, the Netherlands and Switzerland, where the Netherlands is the one making most progress and the scores for the other two are roughly similar and comparable to Sweden as regards the integration indicator.

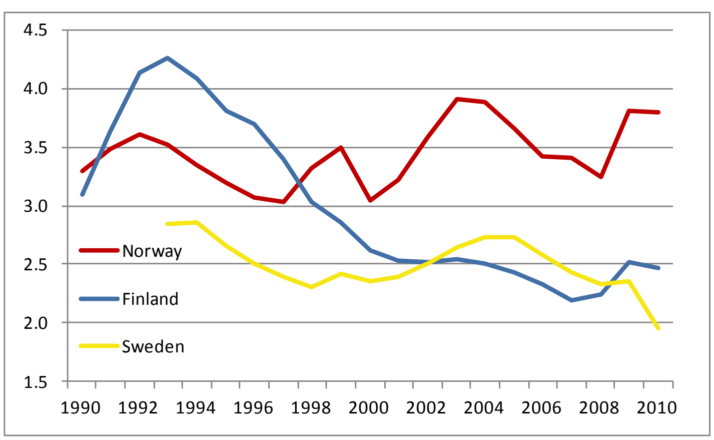
Figure 3. Legislative changes in disability policy in Finland, Norway and Sweden, 1990-2013



Source: OECD for 1990-2007, and 2008 for Sweden, authors' calculation for 2013. Grey marks and dates denote election years (printed in red for Norway). No data are available for the years between 2009-2012 (i.e. for election years for Norway in 2009, Sweden in 2010, Finland in 2011).

Implementation and outcomes are more difficult to trace as there are no data available that are fully comparable across years and countries. As already noted above, spending on cash transfers tended to increase, though with intermittent cuts, in Norway, while it declined in Sweden, and especially in Finland. This decline was most dramatic between 1995 and 2001, when Finland cut spending on cash transfers by an annual 4% on average in real terms. Reductions continued at a more modest pace until 2007 and spending started to rise at the start of the global financial crisis in 2008 (Figure 4). Sweden did not need such severe cuts as the level of spending was never too high, at least for Scandinavian standards.[10]

Figure 4 Spending on disability cash transfers, % of GDP



[10] Danish spending increased slowly from around 2% in 1990 to 3% by 2005 and then rose to 3.3% at the beginning of the global financial crises. Most other EU Member States tend to spend below 2% of their GDP on disability pensions.

Source: Eurostat online database

Spending on rehabilitation services is difficult to compare across countries. If disabled job seekers have access to standard programmes for the unemployed (e.g. training, mentoring or wage subsidies), there may be no data available on their participation and hence statistics on spending on rehabilitation may underestimate total expenses promoting labour market integration.[11] According to Eurostat, rehabilitation spending started from a low level (0.1% of GDP) in Sweden and showed a modest increase during the past twenty years, while it was higher but more or less stable in Finland (around 0.3 %) and in Norway (0.5%).

Employment outcomes seem to have diverged. The Finnish reforms in the 1990s did not reduce the disability employment gap, which even worsened towards the late 2000s. The steady shift from cash transfers to labour market programmes yielded a slight decrease and then a modest improvement in Sweden, while there was no change at all in Norway.

Two questions seem to emerge from the above description. First, what explains the poor implementation and poor outcome of Norwegian legislative reforms compared to Swedish performance? Second, what factors may explain the delay in Finnish reforms in the early 1990s, and the slow-down in reform initiatives since the mid 2000s? We return to answering these two questions after a brief outline of the policy changes in the three countries.

6.2 A brief chronology of policy developments

Concentrating solely on Finland, Norway and Sweden considerably narrows down the set of variables that we may potentially find to affect policy change. We will not be able to identify factors, however important, unless they vary substantially across the three countries.

Using the list compiled above in section 4 and Table A1 in the Appendix, let us check off the factors in which the three Nordic countries show no significant variation at all.

As far as *actor based* explanations are concerned, the fact that all three countries signed the UN convention on rights of person with disability in 2007[12] attests to at the very least a broad minimum level of support for the rights of the disabled in all of them. Kuhnle (2000) and Nygård (2006) identify highly stable patterns of support for state provided welfare, too, in all three countries, and, in line with that, they stress that the backdrop to changes in all three is a political consensus in the sense that no major political actor in any of the three countries suggests that the state should withdraw from central spheres of social security.

As far as *political-institutional* explanations are concerned, the professional quality of the civil service and research capacity it can rely on is fairly high in all three countries, whether we use the "index of professionalism" measure of *The Quality of Government* survey, the presence of high quality detailed statistics of the disabled or the existence of quantitative impact assessments.[13]

[11] To complicate matters, Norwegian statistics include disabled job seekers in general ALMP programmes until 2004, and exclude them afterwards.
[12] Source: http://www.un.org/disabilities/countries.asp?id=166
[13] See http://www.qog.pol.gu.se/

Finally, as far as *general structural* explanations go, in terms of GDP per capita, all three are rich countries; in none of the three was there a strong increase in the age dependency ratio in the last two decades and their economies exhibited a similar level of openness to trade (exports/GDP in the 40-50% range in 2010), which can also serve as a rough proxy of the uniformly high level of globalization in all the three countries.

6.3. Norway versus Sweden: fiscal squeeze and local autonomy

Both Norway and Sweden have been characterised by high welfare spending, based on strong commitment by parties and support from the public. Partisan support for the expansion of the welfare system has tended to increase in Norway while it declined somewhat in Sweden (Nygård 2006). Governments have been committed to social inclusion in both countries, though Swedish governments exhibit slightly more specific dedication to disability policies, as we show in the next sub-section. To illustrate this slight difference: while both countries established ombudspersons for the monitoring of discriminative practices, the Norwegian institution evolved from an ombudsman for women's rights, while the Swedish one was established from the beginning to oversee the implementation of the UN's disability convention of 1993 (UN 1993).

Disability policies are very similar in the two countries in 1990, and follow more or less the same paths in the last twenty years, at least in terms of legislative developments. The implementation and outcome of these policy changes are however markedly different.

Two factors emerge from a systematic review of potential explanations for the implementation gap in Norway: the lack of fiscal constraints and the relative strength and autonomy of local actors in implementing sickness and disability policy.

First, Norway enjoyed unprecedentedly high growth for most the period following the mid 1980s, and was largely shielded from the recent global crisis as well, to a large extent owing to the wise exploitation of the country's oil resources discorvered in the early 1970s (Larsen 2006). By contrast, Sweden went through a painful fiscal consolidation in the early 1990s and experienced critical periods in the beginning and end of the 2000s as well (see Calmfors at al 2012 for an overview). While the fiscal squeeze created a strong impetus for cutting welfare expenses in all these cases, the first one appeared especially important as it also evoked a strong political commitment to reforming the welfare system. The debates over how this should be done, combined with the consensual political culture, built up political support and empirical evidence for removing labour supply disincentives and strengthening activation in employment policies and in sickness and disability policies as well (Alestalo et al 2009).

Second, the centralisation of administering sickness and disability policies shows important differences between Norway and Sweden. The latter entered the 1990s with a more centralised administration in sickness insurance and employment services, while the Norwegian system has allowed more autonomy for local actors. With little financial pressure at either the local or the central level of government, local actors in Norway had little motivation to implement centrally designed measures to tighten access to sickness and disability policies, given that any potential savings on disability benefits would go to the central budget, while the political costs were to be paid at the local level. The case is particularly clear in the evaluation of disability benefit claims, which had been traditionally delegated to local general practitioners in Norway, with weak monitoring and incentives to apply centrally determined initiatives to tighten benefit access. As already noted above, the Swedish system delegated this role to local branches of the National Insurance Agency (OECD 2006). The autonomy of the municipalities has also been stronger in the implementation of active labour market policies in Norway, which may have slowed down the development of integration policies. Local support for traditional and locally rooted but relatively ineffective sheltered workshops may have slowed down the extention of individualised supported employment services that give a preference to placement in the open labour market (OECD 2013). Sweden also seems to have made more effort to monitor policy implementation at the local level. Although both countries established a separate institution for monitoring disability policy (Norway set up Dokumentasjonssenteret in 2005 and Sweden set up Handisam in 2006), the mandate of the Swedish agency extends to collecting data from local municipalities while the Norwegian one was merged into the office of the Equality and Anti-Discrimination Ombudsman in 2008 and is consequently more focused on individual cases of discrimination.[14]

To summarise, local autonomy in controlling benefit access combined with the lack of strong financial pressures appear to explain the continued high inflow into disability benefits and the low take-up of rehabilitation services (which are otherwise well developed) in Norway. This in turn explains the failure to increase the employment rate for disabled jobseekers.

6.4. Finland versus Sweden: administrative capacity and commitment

For the whole of the 1990-2013 period, in terms of legislative changes, both countries chalked up a remarkable improvement of integration policies and a more modest but marked improvement in their compensation policies is also observable in both. Timing, however, seems to have been quite different: The lion's share of improvement in Finland was due to two early efforts in 1995-1996 and 1999, but relatively little changed since. In contrast, Sweden has exhibited policy improvements that are smaller but more frequent and that have even speeded up in the new millennium.

In the wake of the economic crisis of the early nineties that affected both countries, the pressure to change was more acute in Finland, where a larger portion of the GDP was spent on disability cash transfers than in Sweden (cf. Fig. 4. and Hytti 2008). As that pressure started to vane from 1993 on, and especially after the 1995-1996 reform, though, the Finnish policy agenda veered away from disability policy back to what was also identified by the IMF as the main issue: unemployment and especially pension policies (MSAH 2008, Kangas and Saloniemi 2013). The EU Commission concurred: up until 2011 its country-specific recommendations stressed pensions and unemployment benefits, not disability policies as the foremost concern for Finland (EC 1999-2013). Given that in Finland the main driver behind the changes seems to have been the government, and it concentrated on pension reforms and reforming the social security agencies for most of the next decade, little was done until welfare issues were broached again on the eve of the 2003 general elections. Following *Towards a Society for All* (1995), the next strategic policy documents were published with a considerable lag: the *National action plan to reduce health inequalities* and *A Strong Basis*

[14] Sources: http://www.nsd.uib.no/polsys/data/en/forvaltning/enhet/38616 and www.handisam.se

for Inclusion and Equality: Finland's Disability Policy Programme[15] target the 2008-2011 and the 2010–2015 periods respectively (MSAH 2008).

In Sweden the stimuli for change seem to have come as much from outside of government and the Riksdag as from inside them: as already mentioned above, an ombudsman especially dedicated to the disabled population was appointed to oversee the issue as early as in 1994. A well organized and vocal umbrella organization representing the disabled (the Swedish Disability Federation was established in 1942, while the Finnish Disability forum was set up only in 1999), as well as vocal but consensus-minded trade unions and employers' organizations also actively participated in keeping the issue on the agenda and hammering out proposals, as did the EU Commission that stressed sickness and disability policy as a concern for Sweden in 2003 and 2007.

Another signal that disability was continuously kept on the policy agenda in Sweden is that, unlike Finland, it not just signed, but also promptly ratified the UN convention of 2006 on rights of persons with disabilities.

In Sweden, political debates tended to go into more detail and had more grounding in research evidence. An impressive series of strategic policy documents (*The report of the Lindbeck Commission* in 1993, *Agenda 22 in 1996, From Patient to Citizen: A National Action Plan for Disability Policy* in 2000, a *Strategy for Implementation of the Disability Policy* in 2011), more evenly paced than the equivalent papers in Finland, drawn up with active extra-governmental participation and with matching monitoring reports at the end of the targeted periods have kept governments on topic and on track. Swedish policy makers (ranked slightly better and trusted more by the public than their Finnish peers) could also work with more research evidence, covering a longer period on the impact of cash transfers or services than their Finnish counterparts (Nekby 2008).

In summary, the better administrative capacities and stronger commitment of Swedish governments appear to explain their sustained effort in adapting disability policies, as well as their somewhat better performance in improving the disabled employment rate.

7. Conclusion

The paper outlined a strategy for identifying barriers to institutional change, focusing on the shift away from cash transfers to households to the provision of social services and from large, one-size-fits-all programmes to personalised rehabilitation services. We showed that European welfare regimes that have a similar initial structure do differ in their speed of adaptation to the challenges posed by external shocks to the labour market.

We focused on three countries with a Social Democratic welfare regime that show considerable variation in terms of changes in disability policies, public expenditure and outcomes. This allowed us to control for several contextual variables that may also influence the speed of adaptation and focus on a manageble number of variables that differ within welfare regimes.

Comparing policy developments in Finland, Norway and Sweden in the past twenty years, we identify fiscal constraints, historical commitment to equal rights, policy making capacity, and

[15] Cf. http://www.vane.to/images/stories/vampo2012/vampo2012_english.pdf

centralisation as important drivers of change. While some of these factors are, at least in the short run, beyond the control of policy makers, some can be strengthened by governments wishing to promote the long term performance of the welfare system.

In particular, governments can strengthen the capacity of public administration to commission and communicate empirical evidence supporting the case for reform, to design adequate policy changes and to monitor the implementation of these changes at the local level. Setting up more or less independent agencies to monitor policy implementation at the central and local levels can also help in strengthening the reform commitment of governments and defend their case in the face of opposition from social partners or other actors. Lastly, it would be difficult to argue for the reduction of local autonomy as the local delivery of welfare provisions is likely to increase the quality of such provisions. However, governments may experiment with well designed financial incentives and monitoring to reduce the implementation gap.

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Annex

Table A1. Potential explanatory variables and their expected effect

Explanatory variable	*Expected direction on OECD-recommended policy changes*	*Does it also affect the success of implementation?*	*Relevant earlier work (re disability policies)*
Actor based			
ideas, values and interest of			
citizens	more inclusive attitudes, interests aligned with activation help change	Yes, (lack of) trust in general could	Schur and Adya (2012), Schur and Kruse (2000)
organised elites			
external actors (EU)			Cerami (2010)
effective communication (of goals and measures)	helps change	Yes, if also addressed at those who matter in implementation	Tompson (2009), OECD (2010)
Political-institutional			
institutions of interest mediation	Important, tied to welfare regime type, but the direction is hard to predict	Interest conflicts between agencies or levels of government charged with implementation and actors in charge of regulation could	corporatist structures (Bengtsson 2000) consensual culture (OECD 2010) barriers to voting (Schur and Adya
reform window	Can help change		
path dependence	Can hinder change		
trust in politicians	makes it easier to make stakeholders accept change		
quality of bureaucracy	below a certain level might result in misguided policy (or botched or ineffectual implementation)	Yes, the bureaucracy is usually implementing change, too	Tompson (2009), OECD (2010), Prinz (2010)
General structural			
resources (GDP, EU funds)	lack of resources has an ambiguous effect: it could make the government want to save more on monetary compensation but spend less on costly measures of integration		
demographic change	a growing proportion of old age people could make the issue directly and indirectly (through higher retirement age) more important		

Explanatory variable	*Expected direction on OECD-recommended policy changes*	*Does it also affect the success of implementation?*	*Relevant earlier work (re disability policies)*
economic/fiscal crises	a short run pressure to curb compensation increases		Tompson (2009), OECD (2010)
globalisation, technological change	multiple effects, the direction is hard to predict		Scharle (2007)

*Especially compared to other policy areas where the affected population has no pressure groups.

Table A2.a. Composing the OECD indicator of leglislation on disability policies: compensation

DIMENSION	*5 points*	*4 points*	*3 points*	*2 points*	*1 point*	*0 points*
X. Compensation						
X1. Population coverage	Total population (residents)	Some of those out of the labour force (e.g. congenital)	Labour force plus means-tested non-contrib. scheme	Labour force with voluntary self-insurance	Labour force	Employees
X2. Minimum required disability or work incapacity level	0-25%	26-40%	41-55%	56-70%	71-85%	86-100%
X3. Disability or work incapacity level for full benefit	< 50%	50-61%	62-73%	74-85%	86-99%	100%
X4. Maximum disability benefit payment level	RR > = 75%, reasonable minimum	RR > = 75%, minimum not specified	75 > RR > = 50%, reasonable minimum	75 > RR > = 50%, minimum not specified	RR < 50%, reasonable minimum	RR < 50%, minimum not specified
X5. Permanence of benefit payments	Strictly permanent	De facto permanent	Self-reported review only	Regulated review procedure	Strictly temporary, Unless fully (= 100%) disabled	Strictly temporary In all cases
X6. Medical assessment criteria	Treating doctor exclusively	Treating doctor predominantly	Insurance doctor predominantly	Insurance doctor exclusively	Team of experts in the insurance	Insurance team and two-step procedure
X7. Vocational assessment criteria	Strict own or usual occupation assessment	Reference is made to one's previous earnings	Own-occupation assessment for partial benefits	Current labour market conditions are taken into account	All jobs available taken into account leniently applied	All jobs available Taken into account, strictly applied
X8. Sickness benefit payment level	RR = 100% also for long-term sickness absence	RR = 100% (short-term) > = 75% (long-term) Sickness absence	RR > = 75% (short-term) > = 50% (long-term) sickness absence	75 > RR > = 50% for any type of sickness absence	RR > = 50% (short-term) < 50% (long-term) sickness absence	RR < 50% also for short-term Sickness absence
X9. Sickness benefit payment duration	One year or more, short or no wage payment period	One year or more, significant wage payment period	Six-twelve months, short or no wage payment period	Six-twelve months, significant wage payment period	Less than six months, short or no wage payment period	Less than six months, significant wage payment period
X10. Sickness absence monitoring	Lenient sickness certificate requirements	Sickness certificate and occupational health service with risk prevention	Frequent sickness certificates	Strict follow-up steps with early intervention and risk profiling, but no sanctions	Strict controls of Sickness certificate with own assessment of illness if necessary	Strict follow-up steps with early intervention and risk profiling, including sanctions

Note:RR = replacement rate.

Table A2.b. Composing the OECD indicator of leglislation on disability policies: integration

DIMENSION	*5 points*	*4 points*	*3 points*	*2 points*	*1 point*	*0 points*
Y. Integration						
Y1. Consistency across supports In coverage rules	All programmes accessible	Minor discrepancy, flexible mixture	Minor discrepancy, restricted mixture	Major discrepancy, flexible mixture	Major discrepancy, restricted mixture	Strong differences ineligibility
Y2. Complexity of the benefits and supports systems	Same agency for assessment for all programmes	One agency for integration, benefits coordinated	Same agency for benefits and vocational rehabilitation	One agency for integration, benefits not coordinated	Different agencies for most programmes	Different agencies for all kinds of assessments
Y3. Employer obligations for their Employees and new hires	Major obligations towards employees and new applicants	Major obligations towards employees, less for applicants	Some obligations towards employees and new applicants	Some obligations towards employees, none for applicants	No obligations at all, but dismissal protection	No obligations of any kind
Y4. Supported employment programmes	Strong programme, permanent option	Strong programme, only time-limited	Intermediary, Also permanent	Intermediary, only time-limited	Very limited programme	Not existent
Y5. Subsidised employment programmes	Strong and flexible programme, with a permanent option	Strong and flexible programme, but time-limited	Intermediary, either permanent or flexible	Intermediary, neither permanent nor flexible	Very limited programme	Not existent
Y6. Sheltered employment programmes	Strong focus, with significant transition rates	Strong focus, but largely permanent employment	Intermediary focus, with some “new” attempts	Intermediary focus, “traditional” programme	Very limited programme	Not existent
Y7. Comprehensiveness of vocational rehabilitation	Compulsory rehabilitation with large spending	Compulsory rehabilitation with low spending	Intermediary view, relatively large spending	Intermediary view, relatively low spending	Voluntary rehabilitation with large spending	Voluntary rehabilitation with low spending
Y8. Timing of vocational rehabilitation	In theory and practice any time (e.g. still at work)	In theory any time, In practice not really early	Early intervention increasingly encouraged	Generally de facto relatively late intervention	After long-term sickness or for disability recipients	Only for disability benefit recipients
Y9. Disability benefit suspension option	Two years or more	At least one but less than two years	More than three but less than 12 months	Up to three months	Some, but not for disability benefits	None
Y10. Work incentives for beneficiaries	Permanent in-work benefit provided	Benefit continued for a considerable (trial) period	Income beyond pre-disability level allowed	Income up to pre-disability level, also partial benefit	Income up to pre-disability level, no partial benefit	Some additional income allowed

Note:RR = replacement rate.

Table A3a Change in legislation affecting disabled employment

WM^{+}: C – Corporatist, L – Liberal, SD – Socialdemocratic; A, B, C subgroups

		compensation			integration		
WM^{+}		1990	1998	2007	1990	1998	2007
C-B	Greece			25			16
C-C	Portugal	32	33	33	13	13	16
C-C	Ireland	26	26	26	12	12	17
C-C	Italy			26			18
C-C	Czech R*	29		26	23		21
C-C	Slovakia*	29		26	23		21
C-B	Poland	30	32	25	9	18	22
C-C	Spain	34	27	27	19	22	22
C-A	Belgium	26	26	25	20	24	24
C-B	France*	27	27	25	15	20	26
SD-A	Switzerland	39	39	32	20	21	27
C-A	Hungary			28			28
C-A	Austria	26	25	24	20	24	30
L-A	UK	24	21	21	13	16	32
SD-B	Finland	35	33	32	14	21	32
SD-B	Sweden	38.5	38	37	21	27	32
SD-A	Netherlands	39	28	24	15	23	35
SD-B	Germany	36	36	32	25	26	35
SD-A	Denmark	36	32	28	29	34	37
SD-B	Norway	41	38	33	23	28	37

Source: OECD calculations based on a scoring system outlined in OECD (2010), except for Slovakia and the Czech Republic (i.e. Czechoslovakia) in 1990, which are the authors scores based on the same system. For France, the figures relate to legislation in 1985 and 2000 (instead of 1990 and 1998). Notes: $^{+}$ WM denotes the welfare model in the OECD typology, where C=corporatist, SD= social-democratic, L=liberal and A-B denote subtypes within.

Table A3b. Variation in legislative changes within Corporatist and Social-Democratic welfare regimes in Europe

		Compensation	Integration	Total
Corporatist	A) Austria, Belgium, Hungary	0.71	4.24	4.30
	B) France, Poland	2.12	1.41	1.94
	C) Czech, Slovak Republic Ireland, Italy, Portugal, Spain	3.13	3.21	1.82
Social-democratic	A) Denmark, Netherlands, Switzerland	4.36	7.23	8.34
	B) Finland, Sweden, Norway, Germany	2.94	3.59	3.73

Source: authors' calculations based on data in Table A2a. Standard deviations calculated for change in the compensation and integration indicator and in the vector of both indicators measuring the total "distance" of the starting point in 1990 and the position achieved by 2007.

Table A4. Government spending on cash transfers and rehabilitation for disabled persons, % of GDP

	cash transfers				rehabilitation			
	1990	1998	2007	2010	1990	1998	2007	2010
Austria	2.21	2.32	1.72	1.71	0.00	0.02	0.02	0.02
Belgium	:	1.38	1.41	1.64	:	0.02	0.02	0.03
Cyprus	:	:	0.54	0.61	:	0.01		
Czech R	:	1.19	1.35	1.38	:		0.01	0.02
Denmark*	2.01	2.25	2.92	3.33	0.17	0.13	0.14	0.18
Estonia*	:	1.04	0.96	1.61	:	0.01	0.03	0.05
Finland	3.10	3.03	2.19	2.47	0.25	0.27	0.29	0.32
France	1.27	1.20	1.30	1.37	:	:	0.19	0.21
Germany	1.49	1.62	1.46	1.53	0.17	0.20	0.22	0.23
Greece	:	0.88	1.06	1.18	:	0.11	0.09	0.10
Hungary*	:	1.70	1.82	1.61	:	0.00	0.09	0.04
Iceland	0.88	1.47	2.08	2.67	0.30	0.38	0.20	0.21
Ireland	:	0.67	0.86	1.17	:	0.03	0.07	0.11
Italy	1.63	1.40	1.46	1.61	0.02	0.03	0.01	0.01
Latvia	:	0.99	0.52	1.07	:	0.03	0.03	0.02
Lithuania	:	0.70	1.21	1.57	:	0.07	0.02	0.03
Luxembourg	2.41	2.34	1.47	1.45	0.00	0.00	0.00	0.00
Malta	:	0.76	0.83	0.64	:	0.08	0.12	0.11
Netherlands	4.72	2.88	2.04	2.03	0.16	0.21	0.37	0.44
Norway**	3.30	3.32	3.40	3.80	0.39	0.55	(0.5)	(0.5)

Poland	:	:	1.60	1.35	:	0.03	0.03	0.02
Portugal	:	2.18	2.12	1.94	:	0.03	0.07	0.08
Slovakia	:	1.09	1.06	1.27	:			0.00
Slovenia	:	1.76	1.48	1.53	:	0.05		0.06
Spain	1.44	1.47	1.33	1.51	0.04	0.07	0.15	0.12
Sweden*	2.84	2.31	2.43	1.96	0.11	0.14	0.15	0.16
Switzerland	1.26	2.01	2.20	2.01	:			
United Kingdom	1.69	2.22	2.11	2.36	:			

Note: includes disability pensions below retirement age. Source: Eurostat online database (Esspros)

* The earliest figures are for 1993 for Sweden, 1991 for Germany, 1999 for Estonia and Hungary. The latest figure for rehabilitation spending in Denmark is for 2009. ** No comparable data available for Norway after 2000. Official statistics are also difficult to compare across years due to a change in the reporting system in 2004. The number of participants in vocational rehabilitations programmes is stable between 1996-2003 and shows no clear trend afterwards. Hence, we assume that spending did not change much after 1998.

Table A5. Employment rate of the disabled and non-disabled population

	Disabled (D)			Not disabled (ND)			Disability employment gap (D/ND)		
	Mid-1990s	2000s	Late-2000s	Mid-1990s	2000s	Late-2000s	Mid-1990s	2000s	Late-2000s
Austria	48.9	48.7	43.9	74.8	76.7	70.8	0.65	0.63	0.62
Belgium	38.6	43.9	36.3	67.5	70.6	71.5	0.57	0.62	0.51
Canada	..	43.8	46.9	..	76.9	79.0		0.57	0.59
Czech Republic	..	..	35.0	..	..	73.1		..	0.48
Denmark	55.7	50.1	52.3	79.1	81.6	81.6	0.70	0.61	0.64
Estonia			55.8			82.2			0.68
Finland	48.4	54.4	43.5	69.7	77.3	76.8	0.69	0.70	0.57
France	45.9	49.1	45.8	68.5	70.0	71.8	0.67	0.70	0.64
Germany	52.4	60.4	50.4	74.0	77.2	73.7	0.71	0.78	0.68
Greece	35.0	31.7	34.2	62.5	65.0	67.0	0.56	0.49	0.51
Hungary	..	..	31.7	..	..	71.3		..	0.44
Iceland	..	..	61.3	..	..	86.4			0.71
Ireland	25.7	33.6	32.9	60.0	71.5	72.7	0.43	0.47	0.45
Italy	34.9	32.8	40.7	58.3	59.1	63.7	0.60	0.55	0.64
Luxembourg	..	49.7	50.4	..	71.7	71.3		0.69	0.71
Netherlands	40.2	48.5	44.5	65.5	74.8	80.5	0.61	0.65	0.55
Norway	..	47.1	44.7	..	86.0	83.4		0.55	0.54
Poland	24.8	21.0	17.6	70.7	66.7	62.1	0.35	0.31	0.28

Portugal	50.2	51.8	47.9	75.7	79.3	75.4	0.66	0.65	0.63
Slovakia	..	..	41.1	..	..	74.0		..	0.56
Slovenia			41.3			69.7			0.59
Spain	27.0	25.5	35.7	56.3	63.0	71.1	0.48	0.41	0.50
Sweden	54.6	53.6	62.3	77.7	80.1	83.9	0.70	0.67	0.74
Switzerland	..		54.9	..		85.5			0.64
United Kingdom	38.0	42.1	45.3	81.2	80.9	81.4	0.47	0.52	0.56

Source: OECD 2010:51 Figure 2.1.

Based on EU-SILC 2007 (wave 4) and ECHP 1995 (Wave 2), except: Denmark: LFS 2005 and 1995; Finland: ECHP 1996; Netherlands: LFS 2006 and 1995; Norway: LFS 2005; Poland: LFS 2004 and 1996; Sweden: ECHP 1997; Switzerland: LFS 2008; United Kingdom: LFS 2006 and 1998;

Origins of Reform Resistance and the Southern European Regime

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Nontechnical summary

This analysis deals with reform obstacles in general and with the particular challenges of institutional change under the conditions of Southern Europe in particular.

It presents a survey on the possible drivers of reform resistance. This includes very different qualities of approaches ranging from classical economics and political-economic explanations to more innovative explanations linked to behavioral economics. This classifying approach on potential reform obstacles is novel with respect to its broadness and systematization and offers a basis for the measurement and empirical testing.

The subsequent part analyzes qualitatively and quantitatively to which extent the "Southern European regime" may imply a particular relevance of some of the potential reform obstacles classified before. While a generalization on common factors is always at risk of oversimplification, the literature clearly points towards some relevant similarities which contrast the southern EU member countries with the rest of Europe. Reform ability profiles quantify several of the reform obstacles (or reform drivers) to compare EU countries in their likely reform predisposition. These profiles confirm particular Southern European weaknesses which tend to reduce the political-economic feasibility of long-term reforms: a low effectiveness in poverty protection, high intertemporal discounting and uncertainty avoidance, a poor information level of the population and deeply shattered trust in national institutions.

In a microeconometric analysis based on Eurobarometer survey data, the analysis leaves the highly aggregated level and looks into the individual heterogeneity in reform acceptance. It is shown that several of the reform obstacles identified in theory are also empirically correlated with the individual inclination to accept reforms. The perception of procedural fairness (i.e. satisfaction with the way democracy works) together with trust are the keys for the acceptance of reforms. The impression that outsiders, contrary to theoretical expectations, do not push hard for institutional change is confirmed by the micro-data.

These findings are not only helpful to understand the difficulties and constraints of reform strategies. They may also back the development of more convincing crisis strategies. At least for those countries where the trust in national elites, public administration and the democratic system is almost fully eroded, a strong European involvement in guiding the reform process may help to foster acceptance. Of course, this only holds as long as the EU institutions have a trust advantage over national institutions – which empirically seems to be the case for some Southern European countries. Furthermore, there is a clear priority for a particular reform of the Southern European welfare state which should accompany the otherwise required cutback of benefits and privileges. This priority relates to a system of an effective poverty protection. Without a credible minimum insurance system it is unrealistic to expect that important groups of the population are willing to give up their old privileges. Finally, an important challenge is to win the support of current outsiders whose reform supporting potential is so far not being realized.

Keywords: behavioral economics, Eurobarometer, European debt crisis, reform resistance, trust

JEL Codes: D7, D8, H3, O1, P2, P3

Contents

1 Introduction

Why do reforms fail? The European debt crisis has revealed the pressing need for structural change in numerous European countries. At the same time the crisis experience provides an impressive record of the challenges for any far reaching reform policy in terms of voter acceptance and resulting political feasibility. It appears that the kind of policies which is deemed necessary to safeguard the economic future of a country may often fail to be consistent with the political constraints. Economic advice which hints at the sustainability of the welfare state, the budgetary system, the labor market or the monetary union may be irrelevant if it does not consider these political constraints. Hence, the nature of anti-reform incentives matters for the design of effective reform packages, because reforms require majority approval not only in representative institutions but also at the level of society in order to have long-term effects and fulfill their stated objectives.

Furthermore, anecdotal evidence from the crisis countries seem to suggest that reform resistance is not less intense in those groups of the society who are the losers of the institutional standstill: for example the young who do not benefit from lifelong positions, unemployed outsiders who have no advantage from highly regulated labor markets or those groups who do not benefit from hidden corruption and other privileges. With other words: It is not easy to understand why there are no stronger and more visible pro-reform pressure groups originating from these societal groups demanding the dismantling of existing rigidities.

It is our objective to explore the factors which are of relevance for reform resistance with a particular focus on Southern European countries in the era of a deep crisis of confidence. The paper's contributions are the following:

First, we give a concise survey on the possible drivers of reform resistance (section 2). In this survey we include very different qualities of approaches ranging from classical economics and (also more or less standard) political-economic explanations to more innovative arguments related to bounded rationality, behavioral insights and perceptional limitations and biases. We think that classifying approach on potential reform obstacles is novel with respect to its broadness and systematization and that it offers a basis for the subsequent measurement and empirical testing.

Second, we analyze qualitatively and quantitatively to which extent the "Southern European regime" may imply a particular relevance of some of the potential reform obstacles classified before (section 3). While a generalization on common factors is always at risk of oversimplification, the literature clearly points towards some relevant similarities which contrast the southern EU member states with the rest of Europe. We also provide own aggregate descriptive evidence along these lines (section 4). Our reform ability profiles quantify several of the reform obstacles (or reform drivers) to compare EU countries in their likely reform disposition. These profiles confirm particular Southern European weaknesses which tend to reduce the political-economic feasibility of long-term reforms: a low effectiveness in poverty protection, high intertemporal discounting and uncertainty avoidance, a poor information level of the population and deeply shattered trust in national institutions.

Third, in our microeconometric analysis based on recent Eurobarometer survey data, we leave the highly aggregated level and analyze individual heterogeneity in reform acceptance (sections 5). Here, we are able to demonstrate that several of the reform obstacles identified in theory are also empirically correlated with the individual inclination to accept reforms. The perception of procedural fairness (i.e. satisfaction with the way democracy works) together with trust are the keys for the acceptance of reforms. The impression that outsiders, contrary to theoretical expectations, do not push hard for institutional change, is confirmed by the micro-data.

We conclude with insights on the design of reform strategies: A strong EU involvement is recommendable where trust in European institutions can substitute lacking confidence at the national level. Furthermore, a reform design should address the poor effectiveness of poverty protection in the traditional Southern European welfare state since reform processes are supported by functioning poverty insurance. Finally, an important challenge is to win the support of current outsiders whose reform supporting potential is so far not being realized.

2 Causes for lacking reform-support: a literature survey

2.1 Explanations for reform resistance

For a survey on reform obstacles and reform drivers the following two questions are helpful to guide a classifying survey: First, why do individuals or groups of society reject reforms although these reforms are regarded by experts to be beneficial for the long-run economic prospect of a society? And second, which environment is conducive to overcoming reform resistance? Both questions are deeply interrelated. We start by summarizing answers to the first question before we embark on questions to the second question.

There is a whole universe of possible answers to the first question given in the literature or indirectly emerging from certain strands of the literature. These answers could be classified in the following way although a precise distinction is in some cases hard to make: (A) consistent with full rationality and full information, (B) consistent with full rationality and limited information, (C) consistent with bounded rationality and behavioral views on human decision making, (D) consistent with behavioral views of human preference formation.

It must be stressed that many phenomena classified as “behavioral” do not defy the concept of full rationality but only reject a narrow definition of self-interest. Other-regarding preferences (e.g. related to reciprocity and distributional fairness preferences) are an example in this respect. Here, behavioral economics point to a richer modeling of preferences bud does not negate the assumption that individuals are rational optimizers. Hence, there is a considerable overlap between rational choice-approaches and behavioral economics. Nevertheless, certain aspects of behavioral economics clearly are in contrast to rational optimization. With respect to the behavioral C-type answers below, C1 explanations do not contradict the assumption of rationality, whereas explanations C2-C4 are in conflict with full rationality.

Box 1: Classification reform obstacles

Why do individuals or groups of society reject reforms although these reforms are regarded by experts to be beneficial for the long-run economic prospect of a society?

(A) Answers consistent with full rationality and full information

A1: In contrast to the society as a whole, the individual is a long-run reform loser.

A2: The individual is a short-run loser and has a limited time-horizon or is discounting the future heavily.

A3: The reform consequences have a positive expected value but are associated with uncertainty and the individual is risk-averse.

(B) Answers consistent with full rationality and limited information

B1: The individual has no reliable information on the consequences of reforms compared to those of the status quo.

(C) Answers consistent with behavioral views

C1: Individuals do not form reform preferences primarily with respect to their narrow self-interest but stress procedural and/or distributive fairness and reciprocity.

C2: Individuals have a bias in favor of the status quo however accidentally it may have emerged.

C3: Individuals have computational limits and apply misleading heuristics and rules of thumb to decide their position on reforms. These decision rules may be biased against reforms.

C4: Individuals do not form reform preferences based on a stable and accurately perceived utility function. People may not correctly predict how reform impact on their utility even if there is no uncertainty on the consequences of a reform.

2.2 Full rationality and full information

A1: In contrast to the society as a whole, the individual is a long-run reform loser.

A1-types of explanations for reform resistance are part of conventional political-economy: Hardly any reform will exclusively produce winners, and losers have incentive to invest into reform-resistance (Rodrik, 1996). Olson's theory of interest groups (Olson, 1965) stresses the fact that under certain conditions losers can defend their interests even if they are a minority. Labor markets offer an important example where insiders (employees with generous protection) are being privileged at the expenses of outsiders (unemployed or employees in non-regular and unprotected employment) and where insiders are able to defend this divide (Saint-Paul, 1997). If, however, in crisis times the privileges of protected lobby groups turn highly costly for outsiders and costs become very visible, change should be expected. Olson points out that big upheavals imply a chance for change and to overcome long-grown rigidities. In theory, distributive reform effects could be addressed by compensatory packages. In reality, any such compensations may be too complex and transaction costs too high to be bearable (Grüner, 2002).

A2: The individual is a short-run loser and has a limited time-horizon or is discounting the future heavily.

The time horizon of reform policies' outcomes (A2) is increasingly identified to be particularly relevant in ageing societies where a growing number of voters – already from purely biological reasons – have a short time horizon or lack intergenerational ties (i.e. no own children). Without assuming intergenerational altruism an ageing society has increasing difficulties to vote for the type of reforms necessary to stabilize the welfare state in general and the pension system in particular (Werding and Konrad, 2012). The "gerontocracy" (Sinn and Uebelmesser, 2002) is characterized by a short time-horizon and a protection of privileges for the old. Country panel analyses are consistent with this view: Heinemann shows that reform progress (measured as an increase in indicators of economic freedom) can be attributed to rational ignorance and an ageing society (2004: 21-22). The general message is that reforms for which the benefits are delayed or even preceded by initial societal losses (J-curve effect) societal discounting has a crucial impact on the acceptance.

A3: The reform consequences have a positive expected value but are associated with uncertainty and the individual is risk-averse.

Uncertainty of reform consequences in combination with risk aversion is a further explanation of reform resistance fully in line with usual neoclassical behavioral assumptions. If a reform increases expected income but raises income volatility this reform may simply not be utility increasing for a risk-averse median voter. Uncertainty on different groups' reform costs may lead to a war of attrition and a reform standstill (Alesina and Drazen, 1991).

It has been stressed in the literature (Heinemann, 2004) that his argument is, however, only applicable if the status quo compared to a post-reform situation implies less uncertainty. In a situation where the status quo (e.g. of public finances or social security systems) has become unsustainable, a reform may even reduce uncertainty compared to doing nothing. Intuitively, the uncertainty argument has low relevance in today's crisis context where reform denial is associated with highly risky and hardly predictable scenarios (inorderly sovereign default, exit from euro area).

2.3 Full rationality and limited information

B1: The individual has no reliable information on the consequences of reforms compared to those of the status quo.

The origins of today's economic crises are highly complex. Even if one assumes that there is an expert consensus on the list of crucial factors and the promising reform strategy, one cannot assume that voters can easily share that knowledge.

Anthony Down's concept of "rational ignorance" (Downs, 1957) implies that due to lacking individual benefits of voter information, voters tend to be "rationally ignorant": They lack the incentive to engage in costly information gathering if the expected benefit from better information is low. And from the individual perspective, a well-informed voter, due to her negligible impact on the voting result, has a low expected benefit. One important insight from rational expectation economics is, however, that imperfect information cannot be equated with systematically biased information (Wittman, 1995). While some poorly informed voters may underestimate the benefit from reforms, other may exaggerate it. Hence, poor voter information increases the variance of expectations but not the mean.

However, already a high variance of views may also increase the difficulties to sell a reform. This high variance should translate into a high polarization of society: Individuals and groups which have unduly pessimistic expectations on reform consequences are confronted with those who are too euphoric. Thus, a badly informed electorate should be associated with more aggressive disputes and higher costs of conflicts, and larger difficulties to find reform preparing compensation packages. Thus, better informed societies should also be societies more united on the promising way out of a critical economic situation.

A crucial question of bad information-explanations for reform-resistance relates to societal learning. Even if there is poor information shouldn't individuals and societies correct their mistaken beliefs from the ongoing confrontation with empirical realities? One interesting question in this context is under which conditions media are able to correct information deficiencies. The literature on media bias (surveyed in Gentzkow and Shapiro, 2008) is optimistic that competition of independent media helps correcting biases which result from government manipulation or single media's manipulative objectives. According to this literature, media competition is not able to correct biases which are demand-driven because consumers may ask for biased news or for news without significant information content. Here, media competition implies that this "demand for non-information" is satisfied: competitive media provide each group with the kind of bias which corresponds to this group's views, beliefs and prejudices.

A further question is why voters do not simply rely on what experts or the government is saying. Indeed, for Swiss direct democracy Stadelmann and Torgler (2012) show that voters tend to follow parliamentary recommendations if referenda are complex (complexity measured on the presence of multiple referenda). This complexity reaction is, however, only possible if voters regard experts or politicians as a reliable advisor and if these groups do not send out massive signals of disagreement.

A modern strand of the theoretical literature also looks into "endogenous indoctrination", i.e. the survival and permanent reproduction of economic beliefs (e.g. the working of a market economy) even if they may not be consistent with empirical observations. Saint-Paul (2010) observes that anti-reform beliefs are endogenously defined by educational institutions and their intellectuals. He assumes that individuals with rather anti-market beliefs self-select into public occupations such as teachers. If schools compared to families have a strong impact on belief formation of the young, this process keeps anti-market beliefs alive. This process is stable even if these beliefs are constantly falsified by the actual experience of those employed in the private sector.

B1-type explanations for reform resistance may be reinforced strongly by C2- and C3-type explanations (see below) where information deficiencies are also allowed to be the outcome of bounded rationality.

2.4 A richer modeling of the utility function: Other-regarding preferences and reciprocity

C1: Individuals do not form reform preferences primarily with respect to their narrow self-interest but stress procedural and/or distributive fairness and reciprocity.

Behavioral economics deals with deviations from standard assumptions on human decision making of very different types. In his influential review article, Rabin (1998) classifies these phenomena into three different types: first, a more complex modeling of the utility function including, inter alia, other regarding preferences; second, perceptional biases; and third, phenomena which are not consistent with a "coherent, stable, and accurately perceived" (Rabin, 1998, p. 12) utility function. All three classes have large potential relevance in the explanation of reform resistance.[1]

For a long time, a conventional assumption in economic modeling of individual utility was that individual utility exclusively depends on the individual consumption of goods, services or leisure, but not of other persons' consumption or utility.[2] Behavioral approaches, based on empirical observations of human decision making in the real world (field experiments) or in an artificial setting (laboratory experiments) have substantiated the role of other-regarding preferences over the last twenty years. A simple, but famous model is that of "inequality aversion" (Fehr and Schmidt, 1999) where individuals derive utility not just from their consumption bundle but also from an equal dis-

[1] The first type is not in contradiction to assumptions of rationality, the other types challenge rational assumptions because they imply a mistaken use of available information or, more serious, the absence of a utility function.

[2] It is not true to say that other-regarding preferences have completely been ignored by classical economic thinking. On the contrary, they have played a prominent role e.g. in the writing of Adam Smith and his "Theory of Moral Sentiments". However, this dimension has hardly received much interest in mainstream economics up to the rise of behavioral and experimental economics. See Heinemann et al. (2011) for an extensive survey and empirical evidence for Germany on the role of fairness related reform resistance.

tribution within their reference group. Andreoni (1990) does not focus on the distributional outcome but on the act of giving: donors receive positive utility (a “warm glow”) from their doing. Voluntary giving in this sense is nothing but a subtle type of utility generating consumption.

A further class of models and empirical studies point the role of procedures which result in a certain distributional outcome. It may not be the outcome as such but the decision procedure which creates satisfaction or discomfort. The acceptance of a certain distributional outcome will then depend on how the procedure is perceived. Tyler (2000) identifies the following favorable properties: neutrality and absence of biased interest groups influence in the decision process; balanced involvement of all affected groups; these groups have a voice in the process. If this and other conditions are fulfilled a decision procedure is regarded as fair and the distributional outcome more likely to be accepted. Related to the procedural view are intentional models (Rabin, 1993; Falk and Fischbacher, 2006): the outcome is more acceptable if the intentions of the other players are regarded to be non-selfish e.g. because these players appear to be constrained themselves (“there is no alternative”). These approaches stress the role of reciprocity: A behavior which is perceived to be unfair provokes resistance whereas a fairly achieved outcome is easier to accept even if it involves losses.

There is a particular dimension of procedural fairness with respect to market friendly economic reforms. Here, the acceptance depends significantly on beliefs related to the origins of income differences in a market economy (Alesina and Angeletos, 2005): If these differences are perceived to be the outcome of differences in individual effort they tend to be more acceptable whereas they are rather rejected if income differences are seen to reflect simply societal rigidities or luck. Based on survey data analyses, this link has been shown to be relevant with respect to labor market reforms (Heinemann, Bischoff and Hennighausen, 2009) or the heterogeneity of social fairness assessments (Bischoff, Heinemann and Hennighausen, forthcoming).

Reciprocal behavior is also one of the robust findings from experiments (Güth et al., 1982; Fehr and Gächter, 2000a,b, 2002): In games like the ultimatum game participate sanction a behavior which is perceived to be unfair (“negative reciprocity”). What is highly relevant for the context of reforms: negative reciprocity occurs even then if sanctioning involves costs and even then if the player herself is not the victim of the unfair behavior. This means that people are obviously willing to punish an unfair treatment of third parties even if they themselves have no immediate disadvantage from this unfairness.

These richer models of utility formation involving procedures and other-regarding preferences provide additional answers to our overriding question: An individual may reject a reform (even if it has a positive effect on this individual's economic well-being with certainty so that his reform resistance is individually costly) because this reform is perceived to be the outcome of a biased and unfair procedure or may lead to utility losses due to higher inequality.

2.5 A more inclusive setup of the utility function: preferences for the status quo

C2: Individuals have a bias in favor of the status quo however accidentally it may have emerged.

While neoclassical modelling of utility function stresses the level of income or consumption as crucial driver of utility, behavioural approaches tend to stress changes. This different perspective has an immediate relevance in the context of reforms (for a survey of reform relevant biases see Heinemann, 2001). The "status quo bias", the "endowment effect" or "loss aversion" can play an independent role for reform resistance or may also strengthen existing rational channels. A "status quo bias" is given if an individual has a preference for one option among many others only because this option happens to be the status quo (Samuelson and Zeckhauser, 1988). Thus, a historical accident may lead to an institutional outcome which may be highly suboptimal but nevertheless be protected by the support of voters with a status quo bias. The status quo bias has an interesting reform implication: reform resistance prior and post-reform will differ significantly. Once reformed institutions are the new status quo, the bias will tend to stabilize this new institutional solution.

The "endowment effect" describes preferences which differ whether a certain good is possessed or not: A good possessed receives a higher valuation compared to a situation if the same good is no personal possession even if possession is the outcome of accident. The endowment effect is empirically shown in experiments where the willingness to pay for acquiring good x is significantly smaller than the willingness to accept for giving up good x (Kahneman et al., 1991). Equally to the status quo effect, this behavioural phenomenon stabilizes existing structures complicates compensation solutions: Voters who are threatened to lose certain public goods or services which they currently benefit from may demand a high compensation for giving it up. This compensation may be higher than the price they would be willing to pay for acquiring this public good or service.

Loss aversion, finally, denotes the fact that the absolute change in utility associated with a loss is larger than the absolute change in utility associated with a gain (Tversky and Kahnemann, 1991). With loss aversion the utility function is non-continuous in the reference point which tends to be the status quo. In the reform context, loss aversion points to the fact that reform resistance may outweigh reform support even if gains and losses cancel out. If loser perceive their losses more intensely than winners they will also have a stronger motivation to lobby against the reform than winners to lobby in favour.

2.6 Perceptional biases

C3: Individuals have computational limits and apply misleading heuristics and rules of thumb to decide their position on reforms. These decision rules may be biased against reforms.

Approaches as described in the preceding section do not yet fundamentally challenge rational economics since they just argue for a richer and empirically better founded specification of the utility function. With reference to this modified utility function, agents still optimize and fully exploit available information. A further reaching diversion from the usual assumptions of unbounded rationality is implied by insights which point to the incorrect processing of available information. These have been identified in the context of numerous cognitive biases.

These biases have to be strictly distinguished from B1-approaches related to incomplete information due to costly information procedures which is a standard facet of conventional classical modeling. Cognitive biases relate to the imperfect mental use of the available information in a consumer’s or voter’s optimization process. If information gathering and the process of exploiting the available information are costly it is fully rational to apply rules of thumb. A rational agent, however, would only apply those rules which do not systematically lead to wrong results. Hence, with biased heuristics one leaves the field of Down’s “rational ignorance” and enters “rational irrationality” (Caplan, 2001): Biased information processing and deviations from rational expectations can be a rational conversion to irrationality: If irrationality is associated with low private costs the demand for it will increase. Biased positions on economic policy reform options are clearly associated with negligible private costs for an individual voter: It is highly unlikely that reform beliefs on one individual will have a noticeable impact on societal decision making.

Behavioral economics has identified a large list of cognitive biases (see for example Rabin, 1998): people wrongly derive general insights from few observations ("law of small number") or they don't exploit available information if it is contradictory to pre-existing strong hypotheses ("confirmatory bias"). Confirmatory bias is distinct from incomplete information and rational ignorance: Rational ignorant voters would nevertheless constantly correct their prejudices if they – accidentally – are confronted with new information contradicting their priors. The confirmatory bias, however, suggests that available information is filtered so that beliefs can survive even massive contradicting information. For long, psychology has described these phenomena with the theory of "cognitive dissonance" (Festinger, 1957): Incompatible cognitions create "dissonance" and human beings try to avoid this unpleasant situation, for example, by repressing signals contradicting prior beliefs. Basov, Blanckenberg and Gangadharan, based on an evolutionary-dynamic model, provide additional types of heuristics such as the caution heuristic, the recognition heuristic or the selecting-the-best heuristic (2007).

Further approaches stress the limits of memory and mental constraints in processing past information (Rubinstein, 1998; Mullainathan, 2002). Here, the memory is the place where true history is transformed into partially perceived history. Mullainathan makes the critical distinction between hard and soft information at the onset of his model (2002: 738-739). He defines as hard information the type of information that is readily available in records and can be easily reiterated; soft information, on the contrary, can be evoked or not, based on a binary probability (2002: 738-739). As Maullainathan underscores, soft information events that are forgotten are as if they never happened (2002: 740-741).

These mental biases can explain why even robust information on the beneficial consequences of certain reforms (e.g. from neighboring countries) does not necessarily induce learning processes. A bias may also interact with other behavioral phenomena: It may well be the case that a reform option which is being regarded as unfair will also receive a prejudiced perception with respect to its objective consequences.

2.7 Absence of a stable and accurately perceived utility function

C4: Individuals do not form reform preferences based on a stable and accurately perceived utility function. People may not correctly predict how reform impact on their utility even if there is no uncertainty on the consequences of a reform.

An even more fundamental challenge for homo oeconomicus approaches are those behavioral insights which point to the absence of a coherent and accurately perceived utility function. A key assumption of mainstream economics is that individuals behave as if they knew their utility function and, hence, could predict how a certain objective outcome will impact on their utility.[3] The behavioral literature points out that this assumption is falsified in many real life situations (Kahneman and Sudgen, 2005; Kahneman and Thaler, 2006): The current emotional state influences the forecasts of the pleasure from certain goods: Hungry shoppers shop tend to buy food more aggressively compared to those who have just eaten before entering a shop. A key finding is also that people underestimate their ability to adapt to changing circumstances in very different contexts. Be it with respect to a salary increase, a move to a "better" region (e.g. California), divorce or marriage, or even paraplegia: if one compares the ex-ante prediction how these changes affect life satisfaction with the actual ex post outcome, the predictions are systematically exaggerated. People adapt much stronger to new life circumstances than they would predict themselves. Both the pleasure from positive changes and the suffering from negative changes are overestimated. In the terminology of Kahneman and Thaler there is a low correlation between ex ante "decision utility" which drives the choice between alternatives and the ex post "experienced utility" which corresponds to the actual hedonic experience from these alternatives. Since reforms imply changing the institutional environment of voters, false predictions of the resulting utility will play a role in this context as well. If people underestimate their ability to adjust to the changing institutions, the reform resistance ex ante will be larger than the reform resistance ex post (once voters actually experience their utility in the new environment).

[3] One should stress that neoclassical economics does not necessarily assume that everybody knows his utility function. The assumption is rather that people behave as if they maximize a known utility function.

A further phenomenon not consistent with the conventional utility function relates to discounting, i.e. the utility impact of deferred consumption. Deferred consumption is an essential feature of reform processes where often immediate costs (e.g. through cutting of public transfers or subsidies) are traded against future benefits (higher growth, income and employment). Hence, it is crucial how, prior to a reform, this future pattern of reform consequences translates into expected utility. The traditional approach is to assume predictable and stable time preference. However, empirical observations point to time-inconsistent preferences (Frederick et al., 2002): This means that they do not stick to their original intentions with respect to the timing of a certain activity: Students plan to get up early and invest the weekend into exam preparations, when the weekend arrives they do not get up before noon. Obese consumers plan their diet for the New Year and do not stick to this intention when the 1st of January has arrived. In many contexts, people are keen to shift the start of a more "prudent" behavior to tomorrow but would be largely neutral (today) if they had to decide between two consecutive days next year. These time preferences are inconsistent because individuals take optimizing decisions for some time in the future which they then will tend to revert once the envisaged date has arrived.

Some more or less radical deviations from standard modeling have been the consequence (Frederick et al., 2002): A less radical model is hyperbolic discounting: discount rates are assumed to decline with the time distance from the presence. A more radical approach abandons the assumption that the individual is an agent with a uniform set of preferences. Instead, the individual is modeled to consist of "multiple selves" (Thaler and Shefrin, 1981; Schelling, 1984). These selves have different preferences but interact. In the context of saving decisions, Thaler and Shefrin (1981) distinguish between a single "planner" and many "doers" within one individual. While the planner intends to maximize lifetime utility, the doers only exist for one period and are exclusively interested in maximizing utility of this period without any considerations for the consequences for the subsequent doers.

A common consequence of these alternative discounting models for reform policies is that lagged implementation of reforms may be a way to overcome reform resistance: Discounting is much milder with respect to two periods in the future compared to an immediate inter-temporal trade-off. Hence voters may be ready to accept some reform costs in the distant future but not immediately today. Lagged implementation – a credible reform decision today which takes effect at some point in the future – exploits this pattern. Indeed, lagged implementation is often observable (e.g. for Germany with respect to the increase of the pension age or the introduction of the new constitutional debt brake in 2008 taking full effect not before the year 2020 (Heinemann, 2010).

2.8 Insights on reform drivers

While the drivers of reforms resistance are thus highly diverse, many of them may be influenced in a similar way by certain environmental characteristics. Thus, we now turn to the second guiding question in this survey: Which environment is conducive to overcoming reform resistance?

Three dimensions have been identified in the literature as potential reform drivers: crisis, trust and reform in competing countries. The "crisis hypothesis" states that deep economic crisis increases the probability that institutional change can occur. It is supported by numerous studies from case studies or country panel analyses (Abiad and Mody, 2005, Dreher et al., 2006; Duval and Elmeskov, 2005, Helbling et al., 2004; Heinemann, 2004, 2006, Heinemann et al., 2008, Pitlik and Wirth, 2003). Pitlik (2010) identifies a modification of the crisis hypothesis in the context of banking crises which is relevant for the European situation today: Only if these crises occur in a highly regulated market environment they foster market-friendly reforms. If they occur in an unregulated financial market they tend to push regulation. Hence, banking and financial market crises may not necessarily be as conducive for reforms as growth or unemployment crises.

Furthermore, general trust has shown to be fostering the reform ability of countries (Heinemann and Tanz, 2008). The authors show that trust as measured in the World Values Survey has a positive effect on financial, economic, legal and bureaucratic reforms. Apart from that, competitive interactions between governments and thus policy diffusion can positively affect policy change in OECD countries; this is particularly the case for regulatory, trade and monetary policy (Pitlik 2007).

The empirical role of crisis, trust and reform examples in similar or neighboring countries can well be reinterpreted in the light of our overview of possible sources of reform resistance (Table 1). The essential impact of a deep economic and social crisis is not only that it fundamentally weakens all types of status quo biases. It also can help politicians to communicate institutional change as a project not driven by particular interest groups but by mere necessity. Trust is an important driver for reforms because it lowers societal transaction cost on all types of compromises and compensation mechanisms conducive for a successful crisis strategy. And reform examples in comparable and/or neighboring countries can help overcoming information problems of all sorts.

Table 1: Impact of reform drivers

	Crisis …	**Trust …**	**Reforms examples …**
A1: reform loser	helps to identify losers from status quo.	makes compensation promise credible.	can help to identify reform winners.
A2: discounting/limited time horizon	underlines the immediate costs of the status quo.	-	-
A3: uncertainty/risk-aversion	makes the uncertainty of the status quo visible.	makes compensatory insurance schemes more credible.	can reduce uncertainty of reforms.
B1: limited information	gives a strong hint to the suboptimality of the status quo.	reduces costs of information: credibility of experts and/or politicians.	allow learning of reform consequences.
C1: fairness/reciprocity	demonstrates that politicians are not selfish but forced to change institutions.	activates positive reciprocity.	can point to external constraints, hence politicians not selfish but forced to change institutions.
C2: status quo bias/loss aversion	demonstrates that the status quo is no available option any longer.	-	-
C3: biased heuristics	-	reduces costs of information: credibility of experts and/or politicians.	-
C4: underestimation of adaption, hyperbolic discounting	-	-	offers examples how voters' utility actually changes after reforms.

3 Reform problems inherent to the "Southern European Regime"

While this diversity of reform obstacles may be relevant in general, some of them might develop a particular force in the specific environment of Southern Europe (i.e. Greece, Italy, Portugal and Spain). With respect to this country grouping a caveat is necessary from the beginning: It is always a simplification to group different countries with their rich different cultural, historic, political, economic and social facets under one joint heading. Also with respect to the crisis, conditions are highly diverse in these four countries. Greece was early hit and suffered from a dramatic GDP decline since 2010 whereas the impact of the crisis on Italy was more delayed and much milder. And a country like Spain did not, in contrast to Italy and Greece, suffer from a significant public debt problem prior to 2009 but from excessive private debt and a real estate bubble. In spite of differences like these, all four countries undoubtedly have to undergo far-reaching reforms which is a first justification to look for possible common features. A second originates from the comparative political science literature which, in several contexts, identifies certain similarities which make this country group distinct from other European or non-European OECD countries.

A first similarity is related to the welfare state: In comparative analyses of the welfare state, Southern Europe (Portugal, Spain, Italy and Greece) is seen to share common and specific welfare state characteristics. These four countries are regarded to jointly represent the "Southern" or "Mediterranean" welfare state regime (Ferreira, 2007; Rhodes, 1996). This perspective contrasts to earlier approaches like the Esping-Andersen-classification, where Southern European welfare states are rather seen as latecomers to the "conservative-continental" group of countries. What makes the Southern European welfare state distinct is a low level of poverty protection and a low efficiency of social transfers in reducing poverty (Ferreira, 2007). Those living in poverty are often not reached by transfers and social assistance is described as "rudimenary" (Matsaganis, 2003). Nevertheless, welfare state spending has been increasing strongly but with the remaining lack of a comprehensive anti-poverty strategy. While systematic poverty protection is weak certain social programs are even "overdeveloped" (Matsaganis, 2003: 642) which holds for pensions in Italy and Greece in particular. The particular protection of the old and the relative neglect for citizens in poverty is related to a strong weight of pensioners in the trade unions. Southern European trade unions are not only characterized by a narrow traditional alignment to certain political parties of the left (Fulton, 2011) but also by a strong influence of pensioners and public sector employees: For example, almost half of the members of Italian trade unions are retired and all major Italian trade unions have their majority of members in the public sector (Namuth, 2013). Pensions are not generous in general because even the pension systems introduce new inequities: In Greece, pension rules favor the self-employed over wage earners, public over private employees, middle-aged contributors over younger ones, standard over non-standard workers, and men over (most) women (Matsaganis, 2002).

The absence of a stringent welfare state protection of the subsistence level is paralleled by two elements which offer a specific type of protection: clientelism and a traditionally strong (but weakening) role of the family also as provider of emergency protection. One symptom of clientelism is the privileged recruitment into the public sector. Political appointments after an election are of a very high number by international standards in Portugal, Spain and Greece (Sotiropoulos, 2004). In Greece, waves of appointments even took place after a re-organisation of the cabinet of the same government. Patronage in public sector job offerings also relates to normal public sector jobs: Parties offer jobs to their voters in all four countries. In these recruitments competitive entrance requirements are bypassed (Sotiropoulos, 2004, Christodoulakis 2000, Graham 1986). Families also could substitute the lacking welfare state poverty reaction to some extent in the past (Matsaganis, 2003): they acted as redistributive system to the advantage of family members in need or provided social services like child, old age and sick care. However, the usual trends – lower marital stability, fewer children, higher mobility – have weakened the protective effectiveness of families, although the family is still of crucial social importance as it is impressively being demonstrated in the current crisis.

A further common feature of Southern Europe is a deficient public administration in general and poor tax administration effectiveness in particular. With respect to all available indicators on administrative capacity the four southern European countries perform poor or very poor in international rankings (Pitlik et al., 2012). In addition, corruption is a problem more wide-spread than common in other EU or OECD countries: According to the Corruption Perception Index (Transparency International: www.icgg.org) Greece and Italy (ranks 57 and 55 in 2008) are on particular poor positions for western democracies, but also Portugal and Spain (ranks 32 and 28) are well behind other Western European countries. Furthermore, these countries are among the OECD positions with respect to the size of the shadow economy (Buehn and

Schneider, 2012). Estimated shares amount to approximately one quarter of official GDP. The large size of the informal sector is also seen as indication for a lacking legitimacy for the existing rules (Ferreira, 2008).

How do all these features impact on these countries' reform ability? Clearly, these country peculiarities first of all point to the strong relevance of the classical A1 type explanation (reform losers). Particular privileges under the status quo related to patronage and clientelism create very strong vested interests. Those who owe their job and fortune to the party patronage of the old system risk a lot with a reform push towards a more meritocratic system. Time discounting problems (A2 type) are highly relevant as well given that pensioners are among the main beneficiaries of the old system. With increasing age it is unlikely that the reform benefits (higher growth and income potential for the active population) which materialize at some time in the future will still outweigh the immediate costs (e.g. of severe pension cuts). The gerontocracy-problem is not only present in the society as a whole but also in important interest groups (trade unions) given the high share of pensioners among their members. The poor poverty protection effectiveness of the Southern European welfare state exacerbates reform problems of the A1 and A3 type (uncertainty/risk aversion): so far, there is no system in place which could credibly guarantee a certain protection against the risks of fast institutional change and against the loss of protection from the erased patronage system. In this sense, the absence of effective minimum income protection in the Southern welfare state regime is a reform obstacle in itself: the system does not even guarantee protection from severe poverty for the losers of reform.

Clearly, a most relevant type of reform obstacles under the Southern European condition is C1 (fairness/reciprocity): The combination of party patronage, prevalence of corruption, and inefficient public administration undermines trust in the acting politicians and bureaucrats. This is a severe handicap in any reform process and can even set in motion a vicious cycle of eroding trust and reform failure (Exadaktylos and Zahariadis, 2012): There is, for example, the indication that Greek taxpayers already in the past reacted with increasing evasion activities to consolidation measures. These measures are perceived to hit particularly "the honest or those (taxed at source) unable so easy to evade" (Rhodes, 1996: 17). Hence, the reform attempts by themselves exacerbate the perception of an unfair system which continues to defend vested interests. This reduces the chances for reform success (e.g. stabilization of tax revenues with increasingly non-cooperative and "retaliating" tax payers). Thus, a further shrinking trust in the impartiality of the reform strategy and the reform capacity of the government is likely to increase both reform resistance and reform costs.

The depth of the crisis in countries like Greece, Spain or Portugal should, nevertheless, strongly activate pro-reform mechanisms overcoming C2-type obstacles: It is out of the question that the institutional status quo of the pre-2010 era would still be an available option. Currently, the status quo bias inherently present in human thinking on change should be deeply weakened. Put these pro-reform effects are confronted with resistance which can be expected to be particularly severe in groups of the population (e.g. civil servants) whose cooperation is of high importance for the success of reforms.

4 Reform ability country profiles of Southern Europe in a EU comparison

The reform obstacles present in the Southern European regime have been discussed in a qualitative way above. Some quantification is necessary also to correct some of the necessary generalizations of the preceding section and to paint a more differentiated picture of the four countries. Furthermore, quantifications can put their reform related characteristics into a comparative European perspective. We are thus able to give more differentiated profiles of reform ability and also to present an indicative overall "reform ability index".

For that purpose, we assign proxy indicators to several of the major classes of reform obstacles which have been developed and substantiated qualitatively in the Southern European context. Table 2 summarizes the assignments and sources.

The A1 type of reform obstacles are depicted by indicators which describe a welfare state's ability to protect its citizens from poverty and sharp inequality (at-risk-of poverty rate, Gini coefficient, ratio between top and bottom quintile). With the background of the lacking protective power of the Southern welfare state regime, this choice is motivated by the fact that an effective poverty-protection could cushion reform losers.

A2 type proxies cover both the gerontocracy problem that older voters may constitute reform blocking vested interests at least with respect to reforms targeting at privileges of the older generation (old age dependency ratio, fertility). Moreover, we add a measure of population-individual discounting originating from a recent large-scale international survey (Wang et al., 2011).

Uncertainties related to far reaching institutional change (A3 type of obstacles) are a particular challenge for societies which a high degree of uncertainty avoidance for which we make use of the Hofstede indicator (Hofstede et al., 2010).

A straightforward way to measure information limitations is to make use of educational attainment indicators. In addition to general PISA scores on reading and mathematical skills we also include an indicator of economic literacy (taken from Jappelli, 2010) given the economic complexities of crises and reforms.

Table 2: Reform ability proxies

Class	Proxy	Source	Weight proxy	Weight class
A1: Reform losers, poverty protection	At-risk-of poverty rate 2010	Eurostat	0.067	0.2
	Gini coefficient 2011	Eurostat	0.067	
	Income top quintile/bottom quintile 2010	Eurostat	0.067	
A2: Discounting	Choosing to wait	Wang et al. (2011)	0.067	0.2
	Old-age-dependency ratio 2009	Eurostat	0.067	
	Fertility 2009	Eurostat	0.067	
A3: Uncertainty	Hofstede Uncertainty Avoidance Index	Hofstede et al. (2010)	0.2	0.2
B1: Information	Pisa reading score 2009	Klieme et al. (2010)	0.067	0.2
	Pisa mathematics score 2009	Klieme et al. (2010)	0.067	
	Economic literacy	Jappelli (2010)	0.067	
C1: Trust, reciprocity	Trust in political parties	Eurobarometer 72.4 (Gesis, 2012)	0.067	0.2
	Trust in EU	Eurobarometer 72.4 (Gesis, 2012)	0.067	
	Trust in regional or local administration	Eurobarometer 72.4 (Gesis 2012)	0.067	

The perception of unfair decision and administrative procedures is a serious burden for deciding and implementing reforms successfully. We measure this perception through trust indicators related to different institutions (from Eurobarometer): national political parties, public administration (local and regional) and the European Union. Through the inclusion of the trust in the European Union indicator we acknowledge that trust in European institutions could to some extent compensate for a lack of trust in national institutions in a situation where Europe has a strong impact on the course of reforms.

These indicators enable us to derive reform ability profiles which substantiate some of the qualitative findings for Southern Europe summarized before and puts them into comparison with other EU countries which shows the strong contrast between the South and the rest. Thus, the cobweb diagram in Figure 1 adds Ireland to the Southern European crisis countries. This comparison clarifies how superior the Irish features are with respect to better information, readiness to accept uncertainty and a long-term perspective. Southern European countries jointly perform very poor in all dimensions. On a low level Portugal benefits from some more trust compared to the other countries (which is due to a better confidence in public administration). Italy is an interesting case with respect to its underlying trust scores: very low levels of trust in domestic institutions are contrasted by a relatively high level of trust in the EU (which is not the case at all in Greece or Spain). Figure 2 compares Ireland with the top RAI performers Denmark and Finland who beat Ireland with much more effective poverty protection, trust and information (the latter particularly pronounced for Finland).

Figure 3 finally portrays the profiles of the four largest EU member countries. It visualizes the reform impeding factors for Italy but also clarifies that a country like France only beats Italy in two out of five classes (discounting and information). UK has a particular profile with its strong relative strength in accepting uncertainty. Germany's profile is more balanced with middle positions along all classes.

Figure 1: Reform ability profiles: crisis countries

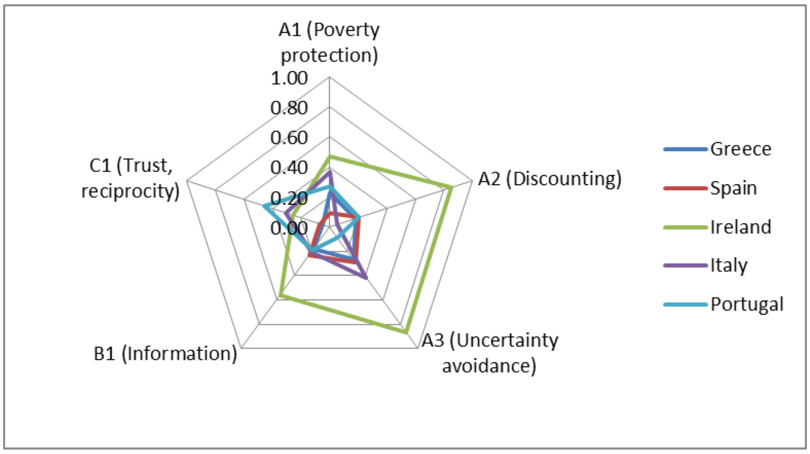


Figure 2: Reform ability profiles: Ireland and high RAI performers

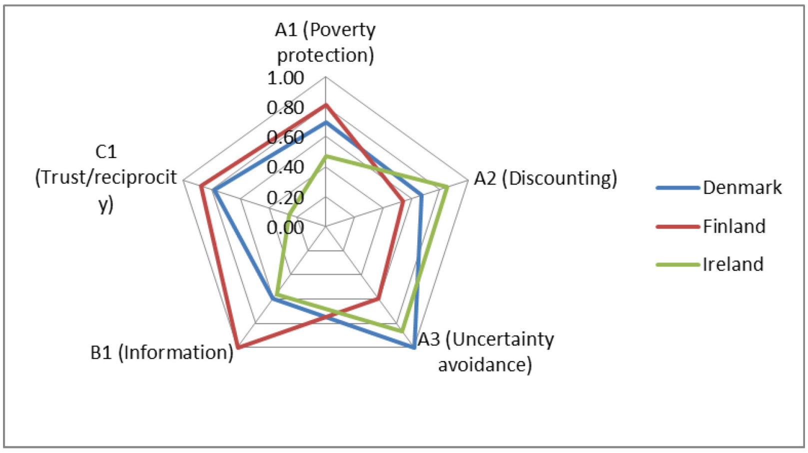
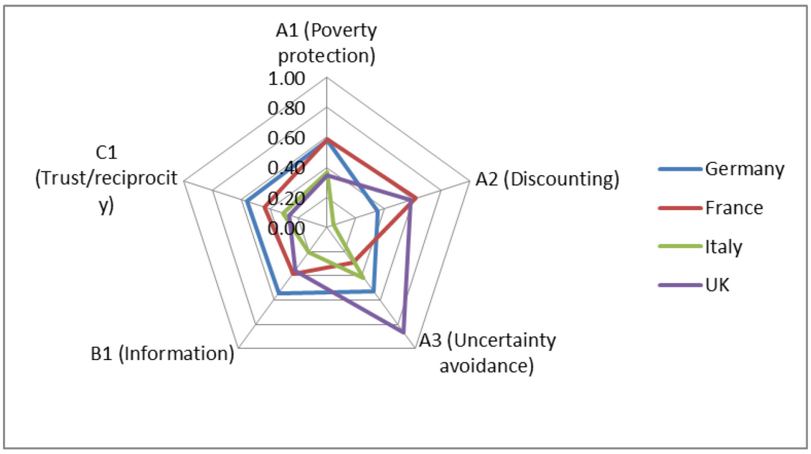
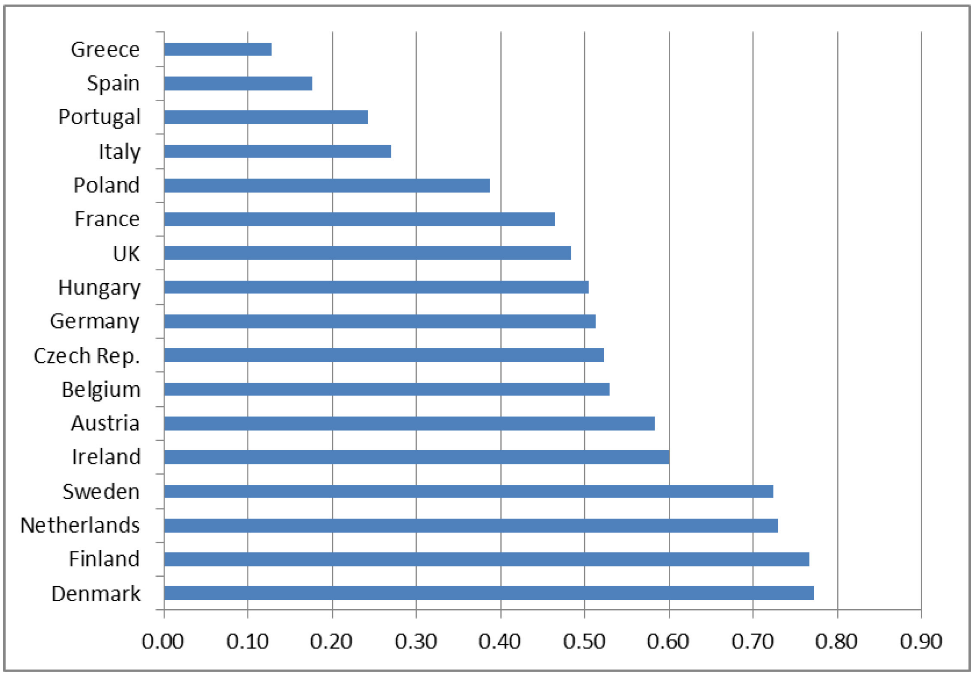


Figure 3: Reform ability profiles: large EU countries



For illustrative purposes, we also integrate these indicators into one overall "reform ability index". For that purpose, all variables are linearly transformed to continuous indicators between 0 and 1 where 0 (1) represents the least (most) reform friendly observation in the country cross section. For the aggregation we apply equal weighting both within and between each class of reform obstacles. Figure 4 presents the resulting Reform Ability Index (RAI). Due to the standardization the interpretation of the indicator values is as follows: A country which performed best (worst) in all proxies would have an overall indicator value of 1 (0).

Figure 1: Aggregate Reform Ability Index



Southern European characteristics strongly point to a particularly difficult environment for reforms by EU comparison. This supports the qualitative finding of the preceding section. The ranking is highly robust to weighting variations since the crisis countries are among the poorest performers in each single of the classes as the country profiles above have shown.

5 Microeconometric analyses

The preceding analysis was based on country aggregate information. By nature, such an approach cannot provide any insights on within-country heterogeneity and the drivers of reform acceptance on the individual level. Therefore, a micro-econometric analysis is conducted as a next step which provides important complementary insights. The analysis asks to which extent some of the potential reform drivers such as trust or fairness perceptions are actually correlated with reform acceptance on the individual level. Here, we pay a particular attention to the reform disposition of outsiders. Those excluded from the labor market are those who have to bear particularly high costs of delayed institutional adjustments. Hence, these groups should be among the pro-reform pressure groups, in theory. We will ask to which extent this is really the case or which other individual characteristics, views and perceptions unrelated to the outsider-status may be more important.

We base our testing on Eurobarometer survey results. Specifically, we have chosen Eurobarometer 72.4 which was in the field in autumn 2009 (Codebook: Gesis, 2012).[4] This particular Eurobarometer has particularly helpful characteristics for our purpose: It includes as a special aspect social change and values which offers useful questions to measure the individual inclination to accept reforms. The timing is ideal for our purpose since it is conducted in the year in which the industrialized world experienced the deepest post-war recession and which was the eve of the upcoming European debt crisis. Thus, the responses are on the other hand not yet influenced by the acute and often panic-arousing events of the escalating debt crisis. This backs a certain confidence that the survey results reveal preferences which are not just the mirror of some dramatic current events. On the other hand, during the survey's field work the financial crisis had already revealed the vulnerability of the status quo and started to push reform debates.

As our dependent variable (for all variables with descriptive statistics, definition and Eurobarometer variable code see Appendix) we have chosen a question which asks for a very general association with the term "reform" ("*Could you please tell me, whether*

[4] European Commission, Brussels: Eurobarometer 72.4, October-November 2009, TNS OPINION & SOCIAL, Brussels [Producer]; GESIS, Cologne [Publisher]: ZA4994, dataset version 3.0.0, doi: 10.4232/1.11141.

the term brings to mind something very positive, fairly positive, fairly negative or very negative”). For robustness checks, we also employ a similar associative question related to “*liberalization*” and a question targeting for the need of reform (agreement with “*our country needs more reforms to face the future*”).

Besides standards individual characteristics (gender, age, children in household and martial status) we were able to identify several questions which proxy some of the important reform relevant dimensions. The first dimension concerns the role of perceived fairness and reciprocity (C1 type of reform obstacles): We include trust in political parties and trust in the EU (“*tell me if you tend to trust it or tend not to trust it*”). Thus we are able to make a distinction between (a lack of) trust in national and/or EU institutions. For the national sphere, trust in parties is more general and less related to a specific individual party preference compared to the standard “trust in government”-question. We add as a further proxy for the perception of procedural fairness a question on satisfaction with the country’s democracy (“*how satisfied are your with the way democracy works in our country?*”). A related variable is also the agreement with the statement that equality is an important value (i.e. whether respondents mention equality being asked for the “*three most important values for you personally*”).

As an information proxy (and, hence, related to B1 types of reform obstacles) we make use of a factual knowledge question: this question asks for the number of EU member countries and we are able to distinguish between participants giving a correct or wrong answer.

Because the crisis hypothesis according to which difficult economic situations increase the likelihood of reforms has been empirically successful on the macro-level we put it to a micro-test and include a perceptional indicator on the economic situation of the own country (“*how would you judge the situation of the national economy?*”).

To identify outsiders we employ two alternative proxies: occupational status and the ability to make long-term planning. Compare to income proxies this question has a higher response rate and, nevertheless, reveals information on possible financial constraints

In a descriptive analysis (Table 3) we ask to which extent “outsiders” think differently on reforms. There is only one outsider-dimension which supports the theoretical prediction that outsiders as losers of the status quo should be reform-supporters: This only holds for the student outsider proxy (both for all EU countries and for a sample limited to Southern Europe). In contrast to that, both the unemployed and those unable to make long-run planning are, if anything, less supportive for reforms. Only multivariate testing can reveal to which extent reform inclination is correlated to the outsider status as such or rather to other individual characteristics.

Table 3: t-test on equality of means – reform seen positive (from 0 to 4 with increasingly positive view)

	1	0	t-statistic	p-value
	All countries			
Student or unemployed	2.87	2.88	0.92	0.359
Student	2.94	2.88	-3.65	0.000
Unemployed	2.82	2.89	4.58	0.000
Not able to make plan for the future	2.80	2.94	14.53	0.000
	Southern European countries			
Outsider	3.01	2.99	-0.48	0.629
Student or unemployed	3.07	2.99	-1.82	0.069
Unemployed	2.96	3.00	1.08	0.282
Not able to make plan for the future	2.98	3.03	2.23	0.026

Our multivariate testing is based on the estimation of an ordered probit appropriate for the ordered answer scale of our reform acceptance questions. Table 4 reports results of different specifications based on the complete Eurobarometer sample (i.e. including responses from EU-27 plus Turkey, Croatia and Macedonia). All estimations presented included country fixed effect to filter out unobserved time-invariant country effects.

Specifications (1) and (2) still leave out proxies on beliefs, preferences and information but concentrate on the isolated impact of outsider status. Specifications (3) and (4) augment the remaining controls to find out to which extent the outsider effect is robust. Signs differ for students and unemployed with the former more and the latter less enthusiastic about reforms. Neither the student, unemployed nor combined dummy is robustly significant. However, the inability to make plans for the future also increases the uneasiness about reforms.

Among the significant proxies related to reform obstacles all signs are as expected with one exception. The exception is the crisis perception proxy: increasing awareness of a bad economic situation in the macroeconomy lowers the enthusiasm for reforms. In line with theory better information, higher trust and satisfaction with democracy foster reform acceptance. The size of effects can be read from the average marginal effects reported: The procedural fairness variable is particularly large. Someone who is satisfied with the way democracy works in his country has a 4.7 percentage points higher probability to place himself in the top answer scale on reform acceptance. For those, who trust in political parties, this marginal effect amounts to 2.9 percentage points. Among the other individual characteristics there is a robust gender effect with female participants more reluctant to embrace reforms (between 1.6 and 1.9 percentage points lower probability to choose top answer scale).

Table 4 reports identical specifications but the sample is now limited to Southern Europe (Italy, Greece, Portugal, Spain and Cyprus) with the lower number of observations explaining less significant results. In addition to trust in political parties, trust in EU is added in specification (5). The procedural fairness proxy is robustly and strongly correlated with reform support: In Southern Europe, respondents who think that the democratic system works well in their country are more reform inclined (marginal effects range between +5.0 and +5.9 percentage points).Trust in parties does not play a significant role whereas trust in EU does with a very large marginal effect (+10.0 percentage points). Moreover, those who see equality as an important value are more pro-reform. Neither the knowledge proxy nor the crisis perception indicators are significant. Again, an insider status is clearly not associated with a more pro-reform stance. Signs of insider proxies are largely negative but with one exception do not reach significance. The lower reform enthusiasm of women in the overall sample is not significantly reconfirmed for Southern Europe.

Table 5 includes checks for alternative reform proxies: a positive view of "liberalization" and the agreement to the need of reforms for one's country. The liberalization-question is more specific since it points to reforms of a supply-side character whereas the question on "reforms" in general may also activate associations with other dimensions of institutional and societal change.

The liberalization-related dependent variable confirms the role of trust and procedural fairness for the acceptance of reforms whereas the equality related proxy loses significance. It does not come as a surprise that liberalization is not necessarily seen as a reform area promoting equality.

The need-for-reform proxy produces a very different picture which underlines that the individual perception of reform necessity must not be equated with individual reform support. The signs for satisfaction with democracy and trust in political parties are reverted. This is not implausible since problems with these dimensions indicate the need for change. It is striking that for this dependent variable there is no a significantly positive correlation with the outsider status (either student or unemployed). Thus, while outsider groups – possibly driven by the experience from their individual situation – are more sensitive for the need of change they do not, however, translate these views into a more active reform support. Trust in EU has a robustly positive sign and a considerable size across all specifications on our reform inclination proxy including the need variable.

Of course, this micro-evidence must be interpreted with caution. From a regression analysis of these cross-sections one must not jump to conclusions about causal inference. Thus, the reported significant effects do not necessarily inform us about the true impact channels. Furthermore, the 2009 survey is not yet informative how the escalation of the crisis in the subsequent years may have change the picture e.g. through a further erosion of trust. Nevertheless, the picture emerging points to the following key insights:

Individuals who trust in their country's political system and perceive a satisfactory performance of their democratic decision making process are more open for reforms. This finding is consistent with C1-types of reform resistance: The impression that reform decisions are legitimized by a working democracy activates positive reciprocity and may thus work in favor of their acceptance. Conversely, this is a hint to the potential of vicious cycles: If crises shatter the confidence not only into the economic but also the political system of a country this will further reduce the likelihood of successful reforms.

Trust in European institutions can be a substitute for a crisis of confidence regarding national institutions. This is an interesting result given the prominent role of EU coordination in the current reform process. The downside of this observation is that reform courses may be in a deadlock if both national and EU institutions lose acceptance as neutral moderator of complex adjustment processes.

Interestingly, the "crisis-hypothesis" firmly supported by aggregate empirical tests (see above 2.8) does only partially show up in our individual data. There appears to be a significant correlation between the individual perception of a difficult economic situation and the perceived need for reforms. Yet, this does not translate into immediate reform support.

With respect to the outsider issue our results show that hardly anywhere in Europe reforms are really pushed by those groups who are among the particular losers of the standstill. This is a severe political-economic challenge since those who are privileged by the status quo lobby hard for the defense of their interests. Hence, the anti-reform lobbies fail to be neutralized by their natural outsider-counterparties.

Table 4: Reform support all countries – regression results

Ordered probit regressions with answer to reforms "very negative" (1) to "very positive (4) as dependent variable, Southern European countries, average marginal effects for outcome (4)				
Independent Variables	(1)	(2)	(3)	(4)
Beliefs, preferences, information:				
Trust in political parties			0.029***	0.029***
			[0.008]	[0.008]
Satisfaction with democracy			0.047***	0.047***
			[0.005]	[0.005]
Perception of economic problems own country			-0.020***	-0.020***
			[0.004]	[0.004]
Correct knowledge number EU members			0.017**	0.017**
			[0.008]	[0.008]
Equality important value			-0.009	-0.010
			[0.006]	[0.006]
Outsider-proxies:				
Student or unemployed	-0.001		0.002	
	[0.004]		[0.005]	
Student		0.014		0.006
		[0.008]		[0.009]
Unemployed		-0.010**		-0.000
		[0.005]		[0.005]
Not able to make plans for future	-0.043***	-0.041***	-0.026***	-0.026***
	[0.009]	[0.009]	[0.007]	[0.008]
Other individual characteristics:				
Age	-0.000	-0.000	-0.000	-0.000
	[0.000]	[0.000]	[0.000]	[0.000]
Children	0.000	0.002	-0.000	0.000
	[0.004]	[0.004]	[0.004]	[0.004]
Female	-0.019***	-0.019***	-0.016***	-0.016***
	[0.004]	[0.004]	[0.005]	[0.005]
Married	0.004	0.005	0.003	0.004
	[0.004]	[0.004]	[0.004]	[0.004]
Regression diagnostics:				
Observations	27,304	27,304	25,239	25,239
Pseudo-R^2	0.0325	0.0326	0.0465	0.0465

Country dummies included, standard errors in brackets, standard errors clustered at countries.

Table 5: Reform support Southern Europe – regression results

Ordered probit regressions with answer to reforms “very negative” (1) to “very positive (4) as dependent variable, Southern European countries, average marginal effects for outcome (4)

Independent Variables	(1)	(2)	(3)	(4)	(5)
Beliefs, preferences, information:					
Trust in political parties			0.043	0.043	0.015
			[0.035]	[0.035]	[0.035]
Trust in EU					0.100***
					[0.037]
Satisfaction with democracy			0.059***	0.059***	0.050***
			[0.013]	[0.013]	[0.012]
Perception of economic problems own country			-0.004	-0.004	-0.004
			[0.003]	[0.003]	[0.004]
Correct knowledge number EU members			-0.034	-0.034	-0.029
			[0.031]	[0.031]	[0.027]
Equality important value			0.034**	0.034**	0.032**
			[0.016]	[0.016]	[0.014]
Outsider-proxies:					
Outsider	-0.013		-0.011*		
	[0.008]		[0.006]		
Student or unemployed		0.007		-0.000	-0.001
		[0.015]		[0.018]	[0.017]
Unemployed		-0.026		-0.017	-0.010
		[0.019]		[0.014]	[0.015]
Not able to make plans for future	-0.014	-0.012	-0.000	0.001	0.011
	[0.020]	[0.020]	[0.017]	[0.017]	[0.011]
Other individual characteristics:					
Age	-0.001	-0.001	-0.001	-0.001	-0.001
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Children	0.009	0.011	0.005	0.005	0.010
	[0.007]	[0.008]	[0.008]	[0.008]	[0.008]
Female	-0.013	-0.013	-0.012	-0.012	-0.005
	[0.013]	[0.013]	[0.014]	[0.014]	[0.012]
Married	0.008	0.010	0.009	0.010	0.005
	[0.009]	[0.008]	[0.011]	[0.010]	[0.011]
Regression diagnostics:					
Observations	4,246	4,246	4,029	4,029	3,741
Pseudo-R^2	0.0335	0.0337	0.0488	0.0489	0.0533

Cyprus, Greece, Italy, Portugal and Spain, country dummies included, standard errors in brackets, standard errors clustered at countries.

Table 6: Reform support Southern Europe, alternative reform proxies – regression results

Ordered probit regressions with alternative reform readiness proxies as dependent variable, both on answer scale (1) to (4) with increasing acceptance, Southern European countries, average marginal effects for outcome (4)		
Independent Variables	(1) „liberalization“	(2) „need for reforms“
Beliefs, preferences, information:		
Trust in political parties	0.033**	-0.078**
	[0.016]	[0.031]
Trust in EU	0.093***	0.078***
	[0.017]	[0.014]
Satisfaction with democracy	0.028***	-0.095***
	[0.009]	[0.016]
Perception of economic problems own country	-0.016	0.039**
	[0.011]	[0.019]
Correct knowledge number EU members	-0.011	-0.009
	[0.010]	[0.017]
Equality important value	-0.002	0.030**
	[0.023]	[0.014]
Outsider-proxies:		
Student	0.025	0.063***
	[0.017]	[0.023]
Unemployed	-0.016	0.043***
	[0.019]	[0.011]
Not able to make plans for future	-0.002	-0.013
	[0.006]	[0.018]
Other individual characteristics:		
Age	-0.001***	0.000
	[0.000]	[0.001]
Children	0.008	-0.012
	[0.010]	[0.012]
Female	-0.005	0.004
	[0.004]	[0.009]
Married	0.002	0.018
	[0.007]	[0.017]
Regression diagnostics:	3,608	3,661
Observations		
Pseudo-R^2	0.0320	0.0430

Cyprus, Greece, Italy, Portugal and Spain, country dummies included,
Standard errors in brackets, standard errors clustered at countries.

6 Conclusions

This analysis has put some light at the complexities involved in understanding reform resistance. The insights are both of a general and a specific nature where the latter is focused on the current Southern European situation.

On the general level, the theoretical reasoning and the empirical jointly suggest that a theory of reform resistance is severely flawed if it is simply based on the view of reform-resistance driven by narrow self-interest. The micro-evidence, in particular, underlines the role of (procedural) fairness considerations. Voters need a minimum confidence into their democratic institutions in order to accept the uncertainties involved in far-reaching institutional change. Interestingly, trust in European institutions can to some extent be a substitute for trust in national institutions. Further handicaps for reforms can originate from high societal discount rates in ageing societies, from poor economic knowledge or from behavioral phenomena which tend to favor the status quo. Finally, the status quo bias is so strong because those outsider-groups who are most likely among the winners of change, do not form pro-reform pressure groups but are hardly different from the population in general in their caution against change.

The specific insights related to the crisis countries confirm the relevance of these general reflections. The EU member countries in Southern Europe are characterized by features which have been identified to be reform-relevant in general: high intertemporal discounting and uncertainty avoidance, a poor information level of the population and deeply shattered trust in national institutions. Moreover, a low effectiveness in poverty-protection is a severe obstacle since the welfare state fails to offer credible insurance against the individual risks of reforms.

These findings are not only helpful to understand the difficulties and constraints of reform strategies. They may also back the development of more convincing crisis strategies. At least for those countries where the trust in national elites, public administration and the democratic system is almost fully eroded, a strong European involvement in guiding the reform process may help to foster acceptance. Of course, this only holds as long as the EU institutions have a trust advantage over national institutions – which empirically seems to be the case for some Southern European countries. Furthermore, there is a clear priority for a particular reform of the Southern European welfare state which should accompany the otherwise required cutback of benefits and privileges. This priority relates to a system of an effective poverty protection. Without a credible minimum insurance system it is unrealistic to expect that important groups of the population are willing to give up their old privileges. Finally, an important challenge is to win the support of current outsiders whose reform supporting potential is so far not being realized.

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Appendix - Table: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	Variable Code *	Definition
Reforms positive	27851	2.88	0.76	1	4	v383	1 to 4 with increasingly positive view
Liberalization positive	25534	2.78	0.75	1	4	v381	1 to 4 with increasingly positive view
Need for reforms	26600	2.96	0.84	1	4	v372/V373	1 to 4 with increasing agreement for need of reform
Trust in political parties	28710	0.19	0.39	0	1	v213	0: tend not / 1: tend to trust
Trust in EU	26934	0.59	0.49	0	1	v216	0: tend not / 1: tend to trust
Satisfaction with democracy	29096	2.41	0.86	1	4	v271	1: not at all to 4: very satisfied
Perception of economic problems own country	29330	3.02	0.74	1	4	v85	1: very good to 1: very bad
Correct knowledge number EU members	30238	0.33	0.47	0	1	v266	0: false or don't know / 1: correct
Equality important value	30238	0.19	0.39	0	1	v409	0: equality not / 1: equality mentioned as important value
Student or unemployed	30238	0.18	0.38	0	1	v690	0: neither student nor unemployed / 1: student or unemployed
Student	30238	0.08	0.27	0	1	v690	0: no student / 1: student
Unemployed	30238	0.10	0.29	0	1	v690	0: not unemployed / 1: unemployed
Not able to make plans for the future	29548	0.42	0.49	0	1	v337	0: more long-run perspective / 1: live day by day
Age	30238	47.61	18.22	15	96	v585	in years
Children	30238	0.28	0.45	0	1	v593, v595	children until 14 in household
Female	30238	0.54	0.50	0	1	v584	0: male / 1: female
Married	30162	0.54	0.50	0	1	v584	0: not-married / 1: married

*Variable codes refer to Gesis (2012)

The interrelation of informal institutions and governance quality in shaping Welfare State attitudes

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The interrelation of informal institutions and governance quality in shaping Welfare State attitudes*

Abstract

This paper addresses empirically determinants of individual support for the Welfare State. We examine the interrelation of informal institutions with the perceived quality of a country's institutional framework. As a proxy for informal institutions, we concentrate on three core beliefs (trust in other people, perceived control over one's own life, and religiousness) which reflect different aspects of the way people feel about internal and external constraints in managing their own lives. To analyze preferences we follow a comprehensive concept of the Welfare State, measuring attitudes toward its two basic roles, (income) redistribution and government intervention. For this purpose the paper uses survey data from the World Values Survey/European Values Study as well as different indicators for governance quality.

Our results indicate that people who interpret their life course as being not at their own disposition report a substantially more positive attitude toward income equalization and government interventions. A higher quality of public administration and low confidence in major private companies amplify preferences for redistribution and intervention of people under such an external locus of control. Social trust is generally associated with higher support for redistribution and government intervention only if perceived quality of administration is high and confidence in companies is low. People who assert themselves as religious are less favorable toward income equalization. While variation in administration quality does not appear to have an impact on the relationship between religiousness and income equalization preferences, religious people are substantially less supportive of redistribution and government intervention especially if confidence in major companies is high.

JEL codes: D74, D78, P35

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Executive Summary

European Welfare States face a double reform challenge: to address new social risks as a consequence of globalization, de-industrialization, and demographic change on the one hand, and to cope with a serious public finance crisis on the other. The literature on Welfare State reforms frequently deals with (formal) institutional barriers to change, i.e. on the political supply side. However, it usually neglects an important aspect on the demand side. Perceptions of the general public are a crucial factor for the acceptance and legitimacy of Welfare State reforms.

Besides individual self-interest, Welfare State attitudes are shaped by stable cultural and social norms, conventions, moral values, or personal traits. The paper identifies key informal institutions (core beliefs) determining personal support for the Welfare State, and analyzes the interrelation with the perceived quality of a country's formal institutional framework. The concept is in accord with Douglass North´s conception of emphasizing the importance of compatibility between formal and informal institutions. The main case is that people are willing to confer an important role to government only if that is in line with their core beliefs. To analyze preferences we follow a comprehensive concept of the Welfare State, measuring attitudes toward its two basic roles, (income) redistribution and government intervention. For this purpose we use survey data for 37 EU/OECD-members from the World Values Survey/European Values Study as well as different indicators for governance quality.

We concentrate on three informal institutions, which are typically said to be highly persistent: social trust, belief in control over one's own life, and religiousness.

A priori, the effect of trust in other people ('generalized' or 'social' trust) is not clear. On the one hand, social trust may reduce transaction costs of Welfare State provision and limit free rider-problems; thus wasteful expenditures on redistributive policies are reduced and people may therefore have a more positive view on the Welfare State in general. On the other, people with higher generalized trust are in favor of less strict regulations and state control as they do not necessarily perceive a need to regulate. Our empirical results indicate that social trust is generally associated with higher support for redistribution and government intervention only if perceived quality of administration is high and confidence in companies is low.

As social trust is probably not the most appropriate concept to an analysis of people´s attitudes to the Welfare State, since it matters only in case of conditional effects, we would rather suggest employing the concept 'locus of control'. The main idea is based on the construct of general expectancies for internal versus external control of reinforcement from psychology,

developed by Rotter (1966). We consider 'internal locus of control' or 'belief in oneself', characterized by strong features of individualism such as self-confidence, initiative and optimism, to be associated with a reduced support for the Welfare State. An external locus of control is characterized by the conviction that outcomes of their actions are not consequences of own effort and skills, and is associated with stronger pro-Welfare State attitudes.

Our results indicate that in line with our expectations control over one's own life is a major driving force of individual Welfare State attitudes. People who perceive a high internal locus of control believe in their own ability to control their life course and to influence the world around them. They interpret their life course as being at their own disposition and that personal choices are at a main cause of individual success or failure. Our tests unambiguously show that people who interpret their life course as being not at their own disposition report substantially more positive attitudes toward income equalization and state interventions. A higher quality of public administration and low confidence in major private companies amplify preferences for redistribution and intervention of people under an external locus of control.

On the one hand, religion can be understood as a substitute for a state provided social system and thus as a factor reducing demand for Welfare State provisions. On the other, religious people who are not convinced about their abilities to control their lives entirely can appreciate government interventions as an additional compensatory mechanism in terms of inequalities. Our empirical results indicate that people who assert themselves as religious are less favorable toward income equalization. While variation in administration quality does not appear to have an impact on the relationship between religiousness and equalization preferences, religious people are substantially less supportive of both redistribution and government intervention especially if confidence in major companies is high.

As regards policy relevant conclusions, it is a widely accepted fact that informal institutions are highly persistent and can only hardly be transformed. The frequency of changes of general ways of thinking is no fewer than in order of decades. If one wants to affect Welfare State attitudes as a precondition for the acceptance of a fundamental change, one must address the people's core beliefs. Probably the most meaningful strategy to do this is to focus on education systems and complementarily on social policy in a long term perspective. In a society with a high share of independent, self-confident, active citizens it is easier to introduce reforms which require a substantial overhaul of the Welfare State with a stronger focus on personal responsibility and provision.

1 Introduction

European Welfare States face a double challenge: On the one hand, governments are confronted with a rising demand to address social risks from globalization, de-industrialization, demographic change and changes in labor conditions (Rodrik, 1998; Iversen and Cusack, 2000). On the other hand, Welfare State retrenchment, comprising both substantial cutbacks of benefits, services, and labor market-regulations, is often required to improve competitiveness and to consolidate public finances (Pierson, 2002).

Political Economy has contributed to a better understanding of various impediments to structural reforms. Persistence of inefficient policies is often explained by formal institutional arrangements that generate gridlock and veto positions of powerful political players. Successful policy change is frequently attributed to a crisis-type culmination of economic problems leading to a substantial shift of the political equilibrium (Rodrik, 1996; Pitlik and Wirth, 2003; Heinemann, 2004; Starke 2006; Vis and van Kersbergen, 2007). This literature however usually neglects an important aspect on the 'demand side': Perceptions of the general public are a crucial factor for the acceptance and legitimacy of Welfare State reforms. Lack of support for far-reaching reforms and persistence of unsustainable social security systems may then also be explained by established mass opinions, if important factors shaping these attitudes are also constant over time (e.g. Brooks and Manza, 2006).

Research on public opinion formation is flourishing (e.g. Feldman, 2003), and a growing number of contributions focus on determinants of individual and collective attitudes toward redistribution (e.g. Fong, 2001; Corneo and Grüner, 2002; Blekesaune and Quadagno, 2003; Bénabou and Tirole, 2006; Alesina and Giuliano, 2009; Aghion et al., 2010; Dallinger, 2010; Jaeger, 2013; Margalit, 2013). Attitudes certainly depend on individual self-interest, but research clearly reveals that political and economic preferences are also shaped by cultural and social norms, conventions, moral values, codes of behavior and personal traits (e.g., Feldman, 1988; Feldman and Steenbergen, 2001; Guiso, Sapienza, and Zingales, 2006; Luttmer and Singhal, 2011). Highly persistent informal institutions and core beliefs could hence be at the heart of explanations for a lack of willingness to Welfare State reforms.

A potential drawback of this strand of literature is that with only few exceptions (Algan, Cahuc, and Sangnier, 2011; Rothstein, Samanni, and Teorell, 2011; Svallfors, 2012) the perceived efficiency of government, which should also be important for individual preference formation, is disregarded. Even if core beliefs and social norms are inherently stable their impact on

Welfare State preferences may still be conditional on satisfaction with general governance quality and public service provision.

This paper addresses direct determinants of a support for the Welfare State, and examines the interrelation of informal institutions with the perceived quality of a country's institutional framework. We concentrate on three core beliefs (trust in others, perceived control over one's own life, and religiousness), considered to be especially important for Welfare State attitude formation. These core beliefs reflect to a certain extent different degrees in the way people feel about internal and external constraints in managing their lives. For this purpose we use survey data from the World Values Survey/European Values Study as well as different indicators for and measures of governance quality.

To analyze preferences we follow a comprehensive concept of the Welfare State, measuring attitudes toward its two basic roles, (income) redistribution and government intervention. The idea is not to investigate and derive 'demand driving factors' for specific Welfare State functions (say, provisions for health care, disability, unemployment, or old age), but to assess a broader view of the public on the appropriate role of government. The paper hence aims to contribute to a general understanding of those factors which shape the scope and depth of Welfare State reforms in a broad sense.

The paper is organized as follows. Section 2 develops a conceptual framework, defines relevant concepts, and briefly reviews the literature on the role of informal institutions for preference formation, economic behavior, and economic success. This section also develops the main hypotheses as regards Welfare State attitudes and thus sets the stage for empirical analyses. Section 3 proceeds with a discussion of data and measurement issues, as well as a descriptive analysis of stylized facts. In section 4 we perform the empirical tests. Section 5 summarizes and concludes.

2 Informal institutions and Welfare State attitudes

2.1 The basic idea

The notion that institutions channel the behavior of individuals and - as a consequence - also matter for economic performance of nations has gained a lot of attention over recent decades. Institutions have been intensively discussed for a long time as so called deeper causes of economic development. In that respect, many authors acknowledge North's definition as "... rules of the game in a society or, [...] the humanly devised constraints that shape human interaction" (North, 1990: 3). North (1990: 4) further notes that these constraints include both "formal written rules as well as typically unwritten conduct of behaviour that underlie and supplement formal rules", i.e. formal *and* informal institutions. Compatibility between formal and informal institutions is desirable for successful economic development. The simple reason is that people must be able to understand formal rules to behave according to them. Moreover, they should willingly accept and support the formal rules in place.

Many papers concerned with the relationship of institutions and economic success yet deal in fact only with genuine economic and political institutions, and numerous papers stress the essential role of *formal governance* structures for development and growth (e.g., Knack and Keefer, 1995; Mauro, 1995; Hall and Jones, 1999; Rodrik, Subramanian and Trebbi, 2004; Engerman and Sokoloff, 2003; Acemoglu, Johnson and Robinson, 2004; Djankov, 2009; Acemoglu and Robinson, 2012; Bjørnskov, 2012; Rode and Coll, 2012).

Besides inevitable problems of measurement, analysis of informal institutions suffers from ambiguous definitions and terminology. For example, Parlevliet (2007: 45) identifies informal rules with taboos, customs, traditions and social norms. Raiser (1997: 2) interprets informal institutions as a collection of social norms, conventions and moral values. Claudia Williamson (2009: 372) refers to informal institutions as private constraints stemming from norms, culture and customs that emerge spontaneously. In contemporary research, the terms 'culture', 'social capital' and 'informal institutions' are used as strongly related and overlapping concepts.[1]

Culture-based explanations for economic phenomena can already be found in seminal works of Adam Smith, John Stuart Mill and Karl Marx. Perhaps the most famous contribution dealing with economic effects of culture – The Protestant Ethic and the Spirit of Capitalism – by Max

[1] In this paper, we prefer the term informal institution as the most general and predominantly economic concept which enables to include the highest number of partial terms and conceptions, although in the literature on Welfare State issues, the term culture is comparably or even more widespread.

Weber (1930) is more than a century old. Since the early 1990s (particularly Putnam, 1993), a wave of new approaches emerged which re-attracted attention to the role of culture for economic development (Guiso, Sapienza and Zingales, 2006; Tabellini, 2010; Williamson and Kerekes, 2011; Mathers and Williamson, 2011; Shoham and Malul, 2012) or in shaping formal political and economic institutions (Licht, Goldschmidt, and Schwarz, 2007; Tabellini, 2008). Tabellini (2008: 259) identifies culture as "beliefs about the consequences of one's action, where such beliefs are purposefully manipulated by earlier generations or by deliberate experimentation."[2] Guiso, Sapienza and Zingales (2006b: 2) focus on persistence and define culture as "... customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation."[3]

In line with this definition, we interpret informal institutions as particular ways of thinking and codes of behavior. The simple idea, then, is that inherited basic beliefs impact on one's attitudes and (economic) decision-making and thus increase the predictability of individual behavior. Core beliefs about oneself and the relation of the individual to society will almost certainly shape attitudes toward the formal institutions of the Welfare State and personal preferences for its main functions, redistribution and provision of services:

The main case of the paper is that people are willing to confer an important role to government only if that is in line with their core beliefs.

A crucial problem in that respect is that despite growing research interest we still do not have a clear understanding *which* beliefs and traits have a decisive impact on economically relevant behavior. A generally accepted economic or psychological model that transforms social values and beliefs into attitudes and human behavior does not yet exist.[4] In the next subsections we elaborate on the concept in more detail, referring to three informal institutions that are probably important for Welfare State preferences, i.e.

- a belief in trustworthiness of other people (generalized social trust),

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[2] Following Tabellini (2008), a more traditional understanding defines culture as "social conventions and individual beliefs that sustain Nash equilibria as focal points in repeated social interactions or when there are multiple equilibria."

[3] The alternative concept of 'social capital' was discussed almost exclusively by sociologists. Putnam (1993: 167) defines it as "features of social organizations, such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated action." Another popular definition is provided by Knack and Keefer (1997: 1251), as "trust, cooperative norms, and associations within groups."

[4] Hence, the search for empirical regularities is often guided primarily by common sense. Such a pragmatic approach also enables to cover behavioral practices that can hardly be separated from norms, values or beliefs.

- a belief in control over one's own life, and
- a belief in a higher moral or spiritual authority (religiousness).

The willingness to delegate important responsibilities for income equalization and provision of certain services to politicians and bureaucrats probably also depends on the perceived problem-solving capacity of the government. Using data for 29 European countries from the European Social Survey Welfare State module, conducted in 2008, Svallfors (2012) for example finds that the quality of government has a significant impact on public opinion about taxes and spending. People who perceive government institutions as efficient and fair have a more positive attitude toward both higher taxes and higher government expenditures. We label that our base

Hypothesis 0:

People are more willing to give the state a stronger role if government is perceived as non-corrupt, competent and impartial.

However, it is not clear a priori to which extent a strong support of the Welfare State determined by certain core beliefs is reduced when perceived quality of service provision is low and governance structures are weak.[5] For example, a well-run, high quality public administration supposedly mitigates a possible denial of redistribution and government intervention that is based on certain core beliefs of individualism. Taking into account the relationship between informal and formal institutions,

The second case the paper makes is that the impact of core beliefs on Welfare State attitudes is conditional on the perceived quality of governance structures.

2.2 Social trust

In the literature on informal institutions (and culture) trust belongs to the most popular and widely used concepts. Yet, the concept is not without ambiguities. Roth (2009: 104) summarizes three different conceptions: thick trust, interpersonal (or generalized) trust and institutional (or systemic) trust. Thick trust is generated by family networks, interpersonal trust is based on interactions among people in modern societies who do not know each other,

[5] Svallfors (2012) reports that government quality also conditions the impact of egalitarianism on attitudes to taxes and spending: if government is high egalitarianism has a clearly stronger impact on these attitudes.

and institutional trust is related to confidence of people in formal (government) institutions. Interpersonal trust is the most frequently used concept; we use this concept as well, however, but prefer to call it social trust (see also Bergh and Bjørnskov, 2011).

The literature focusing on the relationship between more generally interpreted informal institutions (or culture) and economic development uses (social) trust as a proxy for measure of informal institutions. A higher level of trust in a country is considered to be conducive to growth, as a consequence of easier cooperation and lower transaction costs in the economy (e.g. Greif, 1994; De Groot, Linders, Rietveld and Subramanian, 2004; Bjørnskov, 2006).[6] In a seminal paper, Knack and Keefer (1997) show that among different concepts of social capital only the social trust variable is associated with growth, and countries with a high trust level grow faster. La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997), Whiteley (2000) and Zak and Knack (2001) confirm this result. However, evidence is weakened by Beugelsdijk, de Groot and van Schaik (2002), as regards robustness, and by Berggren, Elinder and Jordahl (2008).[7] A more recent strand of literature (Knowles and Weatherston, 2006; Williamson, 2009; Tabellini, 2010; Williamson and Kerekes, 2011) combines World Value Surveys question on social trust together with questions on life control (see below), respect for others and a negative valuation of obedience to measure informal institutions. Williamson and Kerekes (2011) report that these four distinct components encourage secure property rights and, more generally, work as rules governing interaction between individuals, including facilitated market production.

While within the economic development literature social trust is often treated as a part of a broader set of informal institutions or more generally defined culture, recognition of social trust aspects in Welfare State research is even more prominent. Besides broader explanations of Welfare State origins based on (combinations of) cultural, political and social factors (Fong, 2001; Corneo and Grüner, 2002; Alesina and Giuliano, 2009; Dallinger, 2010; Jacobsen 2011; Luttmer and Singhal, 2011), there is a line of research focusing particularly or even exclusively on the importance of social trust as a determinant of Welfare State size. Naturally, this literature points out Scandinavia, since Nordic countries dispose both of high social trust levels and of vast and generous welfare states. However, the question about the direction of causality remains unsettled. On the one hand, Barr (2004) or Kumlin and Rothstein (2008) argue that a

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[6] Bjørnskov (2012) summarizes five potential transmission channels between social trust and growth: schooling, governance, investments, international trade and government. He provides evidence that social trust drives economic development mainly by affecting the quality of governance and schooling.

[7] Roth (2009) even doubts the impact of trust on growth. Using a panel research design instead of a pure cross-section strategy which is common in this strand of literature, Roth emphasizes that economic growth is negatively related to an increase in trust.

more extensive Welfare State generates higher level of social trust. On the other, a rather recent line of research (Algan, Cahuc and Sangnier, 2011; Bergh and Bjørnskov, 2011; Bjørnskov and Svendsen, 2012), emphasize causality from trust to welfare state design. A key assumption in this line of research is that aggregate social trust levels are highly stable over time because of hereditary codes of behavior.[8]

Following the notion of historically stable social trust, we can emphasize the channels through which it impacts on Welfare State size and type. Bergh and Bjørnskov (2011: 16) summarize three main mechanisms relating a *country's trust level* and Welfare State size: Firstly, social trust limits problems caused by free riders and, thus wasteful expenditures on redistributive policies are reduced. Secondly, it affects the trustworthiness of the government bureaucracy, and hence enables less-detailed regulations potentially resulting in a more efficient private sector. Thirdly, it reduces costs being related to cheating on taxes and seeking transfers to which people are not entitled. Bjørnskov and Svendsen (2012) mention three more features to being important for sustainability of welfare states that are affected by a higher level of social trust: political confidence, legal institutions protecting property rights, and a low level of bureaucratic corruption. Following this line of reasoning we postulate

Hypothesis 1A:

Higher social trust in general reduces inefficiencies associated with Welfare State expansion. People who believe that 'anonymous others' can be trusted therefore are supposed to express more positive attitudes toward the Welfare State. A lack of generalized trust could be the cause of a more skeptical attitude toward government interference and income equalization.

Trust effects are also stressed by Aghion, Algan, Cahuc and Shleifer (2010) who analyze a link via quality of government regulations. Contrary to Bergh and Bjørnskov they argue that individuals distrusting others are more likely to demand stronger and more intense regulation

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[8] Scandinavian countries had disposed of high social trust levels already before establishment of extensive welfare states in the 1950s and 1960s. This strand of literature applies various theories fully or partially supporting this crucial assumption. Tabellini (2008) introduced the "pro-noun drop" variable into trust research arguing that the rule that forbid dropping personal profound is positively related to respect for individual rights, hence, to trust as well. Bjørnskov (2007) provides evidence that there is a considerably higher level of trust in monarchies. Following this conclusion, Bergh and Bjørnskov (2011) argue that in contemporary monarchies, people with higher trust levels were able to find a way to democracy without violent, hence, without a complete abolishment of the old institutional arrangement. Moreover, Bergh and Bjørnskov (2011) offer another explanation: people in countries with cold winters were historically more dependent on the trade with not-known people, therefore, they had to trust to strangers more than people in countries with warmer climate. Uslaner (2008) and Algan, Cahuc and Sangnier (2011) provide empirical evidence supporting the assumption of historically stable levels of social trust, which is based on modes of immigrants' behaviour in host countries.

of economic activities in order to reduce an arising transactions uncertainty. People with higher generalized trust are in favor of less strict regulations and state control as they do not necessarily perceive a need to regulate. We can formulate the subsequent

Hypothesis 1B:

Social distrust produces a stronger demand for government intervention, thus, in general, for more extensive regulation as a whole. If mutual trust is lacking, people demand more government interference in the economy.

Note that Hypothesis 1B is only related to government interventions and regulations, and does not necessarily hold for redistribution issues.

How does perceived government efficiency affect the two different trust-Welfare State attitude relationships? In general we would expect that a better perceived governance quality will shift the trust-Welfare State attitude toward less skeptical views.

Hypothesis 1C:

If Hypothesis 1A is true, then social trust should lead to a more positive Welfare State attitude if government is perceived to be efficient than if it is perceived to be inefficient.

If Hypothesis 1B is true, social distrust should lead to an even higher demand of regulation if government is perceived to be efficient than if it is perceived to be inefficient.

2.3 Internal control and life control perception

While social trust is a belief that is directed toward other people in general, we now turn to a belief that is directed toward one's self. As a starting point it can be assumed that preferences for a less important role of government are to a large extent influenced by features and behavioral practices such as self-confidence, initiative, optimism, activeness and belief that one is able to control important matters in one's own life. To be more general, we identify a general way of thinking which is characterized by strong features of individualism. Individual beliefs and traits which form attitudes toward the appropriate role of government are strongly related to a notion of self-control. Recent research by Tabellini (2008, 2010), and Gorodnichenko and Roland (2011) has shown that dissemination of individualistic values and beliefs in a region or in a country is strongly associated with long-term economic growth; Hansen (2013) associates individual economic success with stronger individualistic values.

The main idea is based on the construct of general expectancies for internal versus external control of reinforcement from psychology, developed by Rotter already in 1966. Rotter summarizes that (1990: 489) "internal versus external control refers to the degree to which persons expect that a reinforcement or an outcome of their behavior is contingent on their own behavior or personal characteristics versus the degree to which persons expect that the reinforcement or outcome is a function of chance, luck, or fate, is under the control of powerful others, or is simply unpredictable." People who perceive a high internal locus of control believe in their own ability to control their life course and to influence the world around them. They interpret their life course as being at their own disposition and that their personal choices are at the main cause of individual success or failure. On the other side of the spectrum, people who have a high external locus of control believe that control over events is largely outside their sphere of influence.

Rotter's construct became widely popular in psychology and in political science or public health as well. However it remains still relatively neglected in economics.[9] Some recent papers nevertheless refer to this concept. A high level of life control represents individualism or individualistic attitudes. In the long run, belief in oneself is formed by factors as culture, family structures, education system and personal experience.

Verme (2009), for instance, uses Rotter's construct to explain how people evaluate freedom of choice. So called "internals" believe that they have control of their lives and that outcomes of their actions are consequences of own effort and skills, and thus appreciate more freedom of choice as a source of an increment in happiness.

An analogical concept could be identified by Bavetta and Peragine (2006) and particularly by Bavetta, Bottero and Navarra (2008). These authors label their approach 'autonomy freedom', and distinguish between objective and subjective freedom. While objective freedom is about having opportunities to choose from, subjective freedom is related to one's autonomy or, in other words, to control over one's own life. Thus their approach is in fact fully in accord with the locus of control conception.

An inverse in terms of terminology, yet parallel concept is 'fatalism', being used by D'Orlando, Ferrante and Ruiu (2010) and Ruiu (2012). D'Orlando, Ferrante and Ruiu (2010) delimit main culturally-based beliefs determining the demand for labor market regulation. They point out

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[9] A somehow related concept is that of self-confidence which is "[i]n most societies … widely regarded as a valuable individual asset." Bénabou and Tirole (2002: 6).

the role fatalism, characterized by a weak confidence in the link between effort and economic success. Moreover, it can be linked (2010: 10) "with people's propensity to believe that their destinies are ruled by an unseen power – Fate – rather than by their will."

Individuals who have the impression that they have no control over their own lives, and the strong belief that individual success or failure does not depend on personal effort may be willing to demand more ex post-redistribution and are expected to have a stronger emphasis on government service provision and regulation.[10] This is certainly in line with the notion of Alesina, Glaeser, and Sacerdote (2001) that people with a strong belief that the main cause of high income is pure luck are more favorable toward state redistribution. Tabellini (2008) and Williamson and Kerekes (2011) argue that people who feel that individual choices determine their economic success, i.e. people who think that they exercise personal influence on outcomes in life (self-determination), will show greater respect for other people's property rights. As a consequence they will also prefer individual decision making to collectivism and government interventionism. In that respect, the perception of control over your own life course not only expresses the idea that personal effort is rewarding, but that lesser emphasis is placed on the role of the state as a coercive unit (Tabellini, 2008). Hence, we derive

Hypothesis 2A:

People who believe that they have control of their own life course and that personal life is managed autonomously on one's own, have weaker preferences for redistributive government and coercive state intervention.

and, taking into account perceptions of government quality,

Hypothesis 2B:

People who have a strong 'belief in oneself' tend to be more skeptical about government activities if (individually) perceived government quality is weak.

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[10] A comprehensive summary of these originally psychological conceptions, including a discussion of economic implications, is provided by Bénabou and Tirole (2002). Bénabou and Tirole (2006) derive a formal model of collective beliefs and motivated cognitions that helps explain why people want to share the view that hard work and good deeds will ultimately bring a better life.

2.4, Religiousness, external control and beliefs in government

Religion has been an integral part of life and culture for centuries over all regions of the world. It has found its role in theories of economic development since Max Weber (1930) who introduced the advantages of protestant ethic (diligence, enterprise, austerity, asceticism etc.) for prosperity. While Weber´s concept became frequently discussed in sociology, the topic of religion remained neglected in growth literature for many decades. A modern but already classical paper on the relationship between religion and economic development is Barro and McCleary (2003). The authors base on the idea that belief in God impacts individual traits such as thrift, work ethic and honesty, which in turn can foster economic growth. Using data from World Values Survey and International Social Survey Programme, they find empirical support for the thesis that economic growth responds positively to the extent of beliefs (outputs), and, on the other hand, negatively to church attendance (input).

The informal institution 'belief in oneself' or 'perception of life control' corresponds to the *internal locus of control* belief within Rotter's concept. Belief in oneself is associated with features as self-confidence, optimism, willpower and so on. To provide a general theory of the link between informal institutions and attitudes toward the Welfare State, one should however also aim to identify further general beliefs as being an alternative to self control beliefs. Based on the concept of a locus of control, we may delimit patterns of thinking and behavior being universal enough and fitting into the category of *external control* of reinforcement.

One implication of a predominantly external locus of control is that in case of a negative event people may simply hope that unfortunate external circumstances are going to change, sooner or later. Unlike the concept of fatalism, which is from our point of view a bit vague, we may think of alternative modes of thinking being possibly relevant for contemporary (developed) societies. A positive attitude toward the Welfare State captures to a certain sense the idea that government shall intervene if external circumstances are unfortunate. However, religion constitutes at least one alternative core belief. A strong belief in 'divine control' as a particular manifestation of a locus of external control can have a different association to Welfare State attitudes than simply 'Fate'. Both a belief in government and a belief in God ("religiousness"[11]) are based on the faith that outcomes of own activities are determined by external factors, at least to a certain degree. For that reason these two beliefs are relatively close to each other compared with an individualistic belief in oneself. However, outcomes of actions might still be interpreted as the consequence of one's own effort and skill, even if one is a religious person.[12]

The relationship between the locus of control and religiousness has been subject of a number of psychological and sociological studies. Schieman (2008) observes that individuals who believe in divine control have significantly lower levels of personal control. Schieman also finds a stronger negative association between belief in divine control and personal control for individuals who report lower levels of subjective religiosity and attendance in religious services.

We may yet not simply conclude that people with a higher level of religiousness automatically have more intense Welfare State preferences similar to people with a stronger locus of external control. The reason is that religious people need not rely automatically on government as their 'fate' is possibly determined by a higher divine authority. In that respect the role of religion may be as one of an arrangement of social insurance. Clark and Lelkes (2005), for example, argue that religion serves as an insurance against unfavorable life events. In terms of mental feelings, religious people suffer less in case of unemployment, marital separation and so on. A similar argumentation can be found in Scheve and Stasavage (2006), who claim that individuals who are religious are predicted to prefer lower levels of social insurance than secular individuals. Religiousness in general, i.e. one that is not related to particular religious denomination, is associated with weaker income equalization attitudes, as religious belief and social spending can serve as two alternative mechanisms of insurance. Stegmueller, Scheepers, Rossteuscher and de Jong (2011) find that both Catholics and Protestants strongly oppose income redistribution by the government. A cleavage between religious and secular individuals is far more important than difference in attitudes between religious denominations, thus supporting a more general 'religion as substitute for the Welfare State'-idea.

On the one hand, religion can be understood as a substitute for a state provided social system and thus as a factor reducing the demand for Welfare State provisions. On the other, religious people who are not convinced about their abilities to control their lives entirely can appreciate government interventions as an additional compensatory mechanism in terms of inequalities among people. Along this line, Habel and Grant (2011) argue that people demand both 'more religion' and 'more government' during times of existential insecurity, although that does not necessarily mean that belief in God and belief in government are complementary. Moreover,

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[12] We owe this point to our reviewer Martin Rode.

Habel and Grant show that both attitudes are driven by a set of similar factors. Berggren and Bjørnskov (2012) additionally remark that there appears to be a general "… deference to authority in religious circles […], which suggest that the legal apparatus and the government more generally are seen as desirable, stabilizing features of an unsafe existence."

Against the background of these contradictory factors, it is unclear which force is dominating:

Hypothesis 3A:

The impact of religious beliefs on Welfare State attitudes is a priori unclear. Whether religiousness is associated with a stronger support of Welfare State provisions, or whether religion is seen as a substitute for Welfare State provisions is ambiguous.

If religion and government are close substitutes, religious people are expected to demand more insurance from government, if government is perceived as relatively efficient. Provided that religiousness is associated with a stronger belief in authority, improved governance quality should also be associated with a higher demand for Welfare State provisions. If religion and government are, however, seen as two totally distinct features, then even a high quality government may not impact on Welfare State attitude of a religious person.

Hypothesis 3B:

Improved governance quality leads to a more positive attitude toward redistribution and Welfare State services. If religion and government are seen as two totally distinct mechanisms of insurance, then any improvement of government quality does not affect Welfare State attitudes of a religious person as compared to a non-religious person.

3 Data, measurement and model

3.1 Measuring Welfare State attitudes

A straightforward way to assess the view of voters-citizens on policy issues is to refer to opinion polls. Measuring political attitudes has been a subject of many public opinion surveys with different country and time coverage.[13] The surveys frequently incorporate data on individual opinions about redistribution, government intervention and social security.[14] As we aim to examine universal Welfare State support, we focus on more general preferences toward the appropriate role of government in view of the general public.

We employ four distinct survey questions from the World Values Survey and the European Values Study (WVS/EVS) to assess individual (and public) attitudes toward the Welfare State. WVS/EVS is currently the most comprehensive research project on human values. As a large-scale, cross-national and longitudinal research program, covering in total 102 countries/regions in survey waves that have been conducted between 1981 and 2010, WVS/EVS contains data on how respondents think about family, work, religion, politics, and society. The surveys thus provide insights into ideas, beliefs, preferences, attitudes, values, and opinions of citizens all over Europe, and in many other countries in the world. For the purpose of our analysis we restrict the sample to 37 OECD- and European Union members (see Appendix).

The questions chosen belong to a group of survey items reflecting preferences of respondents about society. All items cover slightly different but related aspects of the desired role of government. They have been polled for the first time in the 2nd WVS/EVS waves, starting in 1989. Since then, these questions have been raised regularly during the following waves, though not always in all countries. The basic attitude question is formulated as

"Now I'd like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree

[13] Among the most important survey studies are EuroBarometer (EB), European Social Survey (ESS), International Social Survey Programme (ISSP), and the World Values Survey/European Values Study (WVS/EVS).
[14] Some questions have been repeatedly part of various survey waves, but occasionally, special reports provide more detailed information on attitudes toward specific policies, e.g. health care or pensions. For example, opinions on social welfare sub-systems have been part of various EB special issues. ESS Round 4, which had been conducted in 2008, includes a comprehensive module on welfare attitudes, comprising specific questions on particular social benefits, public health care, or old age related policies.

completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between."

The respective items include statements on (1) preferences for a reduction of income inequality, (2) state vs. private ownership of firms, (3) government vs. private responsibilities to provide for, and (4) beneficial versus harmful effects of competition.[15] For ease of interpretation, we re-coded responses from the original 1 to 10 Likert-scale to a 'normalized' scale ranging from 0 to 1, such that preferences for stronger government involvement in the economy (more redistribution, state ownership, and government responsibility, less competition) receive higher values. The items shall now be described in more detail.

Income equalization (question e035)

The respective survey item reads "*Incomes should be made more equal vs. We need larger income differences as incentives*". Answers apparently reflect opinions about a potential redistributive role of the state. The item does not, however, include an assertion about preferred (political) means of reducing income differences, via higher social benefits, minimum wages, or other forms of state interventions.

A problem at hand is that the statement is not quite clear about a reference point. On the one hand, this item could be interpreted as assessment of desired change, i.e., whether income equality should be increased (or decreased) relative to the actual distribution. On the other hand, people consider the item as a question about their desired level of equality. There is no straightforward way to assess directly whether respondents answered to a 'change' or a 'level'-question. Indirectly one may conclude that in a responsive democracy it should be expected that over the longer run desired changes become smaller. Examining the data, that does not seem to be the case. Therefore we assume that respondents make statements about their preferred level of income inequality. However, it cannot be ruled out completely that some people refer to changes of current policy when answering the question.

State ownership (question e036)

The item reads: "*Private ownership of business should be increased vs. Government ownership of business should be increased*". Responses to this question are concerned with the role of government in the provision of goods and services, and the mechanism for the allocation of resources via state or markets in general. As such, it is an important statement about the

[15] A question whether the state should give more freedom to firms or should control them more tightly has only been posed in EVS and only in the two recent waves. It has thus not been taken into account.

desired mode of production in an economy. In a broader sense, expressed opinions can serve as a measure of ideological preferences for capitalism vs. socialism (Bjørnskov and Paldam, 2012).

Clearly, framing of the state ownership question raises the problem of interpretation as 'desired level' vs. 'desired change', too. Implicit reference level may be the current situation in a country, as well as a hypothetical ideal state. We follow Bjørnskov and Paldam (2012) in their interpretation of the item as a level variable, meaning that the response shows a general positive or negative inclination toward state owned firms.

Government responsibility (question e037)

The third question considered here also refers to a desired role of the state in the economy. It is concerned with the 'mix' of individual vs. government responsibility. The respective item reads: "*People should take more responsibility to provide for themselves vs. The government should take more responsibility to ensure that everyone is provided for*". The item may also be interpreted more narrowly as concerning attitudes toward an insurance role of governments to provide basic goods and requirements. In line with our argument for the two previous questions, we favor an interpretation of the statement as a desired level variable instead of a desired direction of change.

Competition attitude (question e039)

The final item considered here concerns beneficial or harmful effects of competition as a mechanism of allocating scarce resources. The corresponding WVS/WVS statement is "*Competition is good. It stimulates people to work hard and develop new ideas vs. Competition is harmful. It brings out the worst in people*". An individual conviction that competition is harmful implicitly assumes that something, e.g. more intense government regulation, must be done against seemingly detrimental effects.

All items are eventually related to the question, how scarce resources in a society should be distributed (see also Jakobsen, 2011: 327). However, the income equalization question is the one which is concerned explicitly with ex post-distribution (results-oriented), while the three other items are associated with attitudes toward mechanisms and fields of government intervention (process-oriented).

Against this background we argue that *government responsibility*, *state ownership* and *competition attitude* assess similar attitudes for or against active government involvement in the process of resource allocation, while *income equalization* is a measure of preferences for redistributive goals.[16]

A simple matrix of Spearman's rank order correlations (Table 1) at the individual level confirms for a total of 143,924 observations that

- all attitude measures are positively correlated at a 1%-level of significance, but
- the relationship between *income equalization* and the three other measures is weaker than the correlation among *government responsibility, state ownership and competition* attitude. This supports the idea of a difference between "ex post"-preferences and "process-oriented" preferences.

Table 1: Spearman rank order correlation of Welfare State preferences

	income equalization	state ownership	government responsibility	competition attitude
income equalization	1			
state ownership	0.1015*	1		
government responsibility	0.1248*	0.2688*	1	
competition attitude	0.1252*	0.3217*	0.1964*	1
government intervention	*0.1548**	*0.7605**	*0.6588**	*0.6714**

Note: significant at * 1%-level. Correlation at individual level; 143924 observations in 37 countries

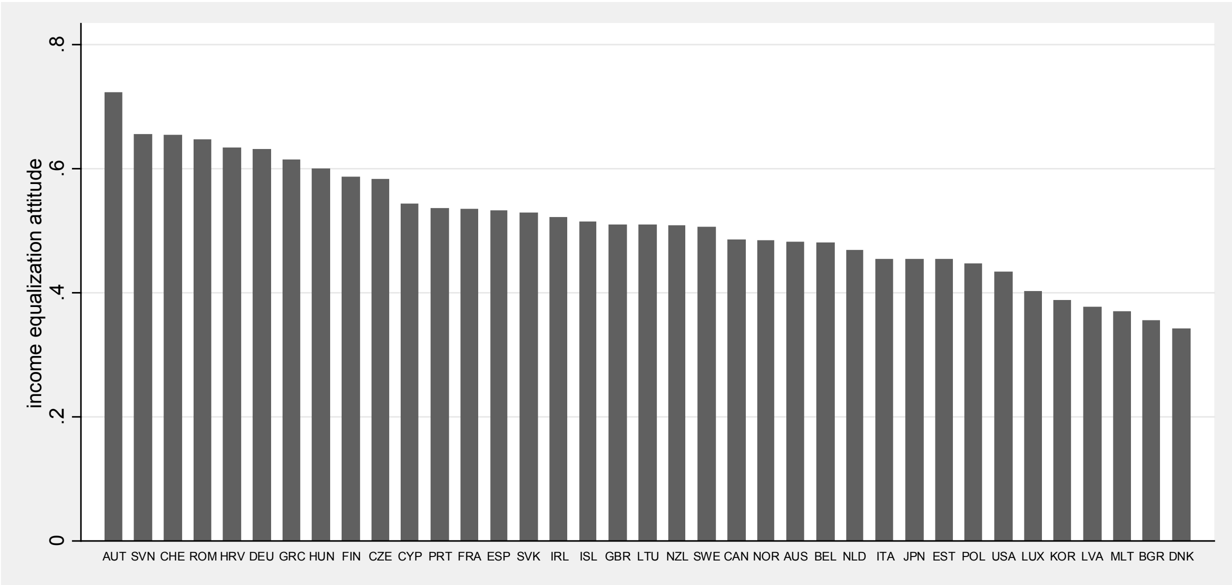
To make following analyses more tractable, we calculated the first principal component of *government responsibility*, *state ownership* and *competition attitude* measures to come up with a single measure for *government intervention*.[17] We normalized the newly created variable on a 0-1 scale, higher values indicating stronger preferences for intervention. Spearman rank correlation of *government intervention* with its constituent variables and with *income equalization* is also displayed in Table 1. By construction, *government responsibility*, *state ownership* and *competition attitude* are strongly correlated with *government intervention*, (Spearman's rho between +0.65 and +0.76). On the contrary, *income equalization* and *government intervention* are only weakly but positively connected (Spearman's rho = +0.15).

[16] Based on (much more) detailed data from the Welfare State module of the European Social Survey 2008, Roosma, Gelissen and van Oorschot (forthcoming) argue for a framework that is composed of seven different Welfare State dimensions. In their terminology, our approach covers the 'goals' and the 'range'-dimensions. Further dimensions cover outcomes and efficiency/effectiveness dimensions.

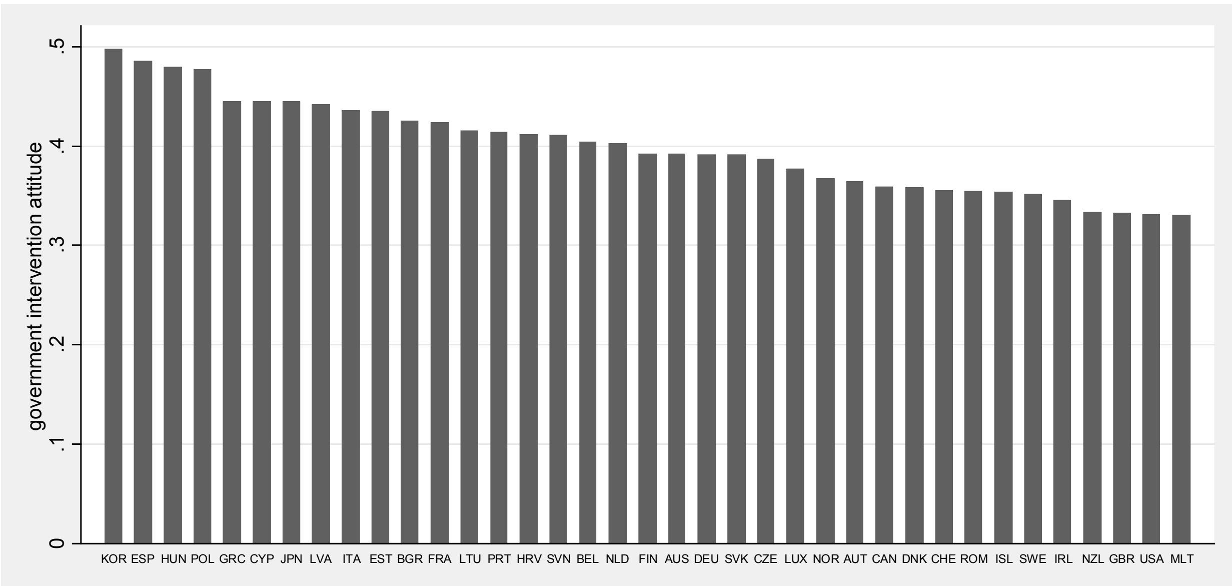
[17] Calculated factor scores are: Government responsibility (0.44), State ownership (0.51) and Competition attitude (0.47).

Figure 1: Welfare State attitudes across countries in the 2000s

Panel A: Income equalization attitudes



Panel B: Government intervention attitudes



Source: own calculations based on WVS/EVS

Welfare State attitudes differ substantially across the 37 countries in our sample. Figure 1, Panel A, illustrates country means of *income equalization* attitudes over the decade 2000-2009.[18] Panel B displays country means of *government intervention* preferences over the same time period. For more detailed country information see Annex A1.

In the 2000s, the highest scores for *income equalization* are observed for Austria (0.72), the lowest scores for Denmark (0.34). The average score over all 37 countries is 0.51. Preferences for *government intervention* are highest in South Korea (0.50); the lowest score (0.33) is shared by New Zealand, the United States, United Kingdom and Malta. The overall mean score is 0.40. Hence, on average, attitudes toward government interference in the market economy are less pronounced than preferences for income redistribution.

We observe a substantial though not overwhelming stability of country averaged preferences over time. Decade means of income equalization attitudes between the 1990s and the 2000s correlate with r = +0.69; decade means of government intervention attitudes correlate with r = +0.71.

Simple t-tests do not reveal substantial differences across Welfare regimes or countries with different legal origins over the decade 2000-2009.[19] With respect to *income equalization*, there is some weak evidence that eight countries belonging to a 'Continental' Welfare regime on average have slightly more intense preferences (0.56) than the 29 countries which belong to a different 'regime' (0.50).[20] Inter-group differences are somewhat more pronounced for *government intervention attitudes*. Group mean differences show that countries belonging to Liberal Welfare regimes (and those with a Common law or a Scandinavian legal origin) observe lower preferences for interventions than other country groups. Moreover, government intervention preferences are slightly more pronounced in countries with a former socialist system.

[18] For countries participating in more than one survey during this period, we report the mean of the respective surveys. Country-year averages are calculated using geographic and gender weights.
[19] Results are available on request.
[20] The eight 'Continental regime' countries are Austria, Belgium, France, Germany, Greece, Italy, Spain and Portugal. Australia, Canada, Ireland, Japan, New Zealand, the U.S., the U.K. and the Switzerland belong to the Liberal regime. Denmark, Sweden, Finland, Norway, Iceland, and the Netherlands form the Socialdemocratic regime. Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia form the group of CEEs. Cyprus, Luxembourg, Malta and Korea are 'unclassified'.

3.2 Measuring informal institutions

Preferences for government intervention and redistribution reflect views of on the desirability of certain policies and formal arrangements. These opinions are most probably determined by individual self-interest, but certainly also shaped by behavioral norms and beliefs of a respondent. In line with our hypotheses, we consider three core beliefs, for which data are provided by WVS/EVS.

Trust in people (question a165)

Research on the impact of informal institutions on development has largely focused on the effects of trust toward unspecified other people, hence 'generalized' or 'social' trust. The related survey question is formulated as "*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?"* The two response categories are "most people can be trusted" and "can't be too careful". We re-coded the original coding such that an answer "most people can be trusted" gets assigned a value '1', and '0' otherwise. The variable *trust* can be interpreted as general expectation about the behavior of other people, or as an indicator of moral values and trustworthiness (Tabellini, 2008: 261).

Perception of life control (question a173)

A further aspect which is possibly of substantial importance for individual Welfare State attitudes is the degree to which respondents believe to have self-control with respect to their general life course. This is captured in the WVS/EVS by the question "*Some people feel they have completely free choice and control over their lives, while other people feel that what they do has no real effect on what happens to them. Please use this scale [between] "none at all" and ... "a great deal" to indicate how much freedom of choice and control you feel you have over the way your life turns out.*" We re-coded the original 1-10-Likert scale to a 0-1-scale with higher values indicating a stronger feeling of own *life control*.

Religiousness (question a006)

Finally, we also include a survey question whether religion is an important feature of one's life. The considered variable refers to the centrality of religion in the individual sphere. The related WVS/EVS-question is "*For each of the following aspects, indicate how important it is in your life. Would you say religion is: very important, rather important, not very important, unimportant.*" We recoded the original 4 steps to a 0-1-scale, higher values indicating more importance assigned to religion.

Figure 2 illustrates cross-country variation of the three variables representing informal institutions over the 2000-2009 decade. While *trust* in people (Panel A) and *religiousness* (Panel C) show substantial cross-country variation, the perception of own *life control* (Panel B) appears to be more evenly distributed in the cross-section of 37 countries.

The most 'trusting societies' (Denmark, Norway, Sweden and Finland) all belong to the Nordic countries; the least trusting people (on average) are located in the South and in the East of Europe. Individual life control perception is especially high in Iceland and New Zealand, while it is relatively small in Italy, Bulgaria and Japan. Religiousness is (on average) high in Romania, Malta, Cyprus, Greece and in the USA; it is comparably low in the Czech Republic, Japan, Estonia, and Sweden. One characteristic feature of informal institutions is their persistence. Indeed, country averages of *trust* and *religiousness* are highly stable over decades. Simple correlation between decade averages of countries in the 1980s, 1990s and 2000s, of *trust* never falls below r = +0.8; in case of *religiousness* it is r = +0.94.[21] The variable *life control* shows a little less stability (on average); the correlation between country means of the 1980s and the 2000s is yet still r = +0.75 and never falls below r = +0.63 (1980s v. 1990s).

Table 2 displays Spearman rank correlations of core beliefs at the individual level. We considered all observations in the sample of 37 countries, for which data on Welfare State attitudes are also available (132,565 observations).

Table 2: Spearman rank order correlation of core beliefs (informal institutions)

	trust in people	life control	religiousness
trust in people	1		
life control	0.1135*	1	
religiousness	-0.0404*	0.0211*	1

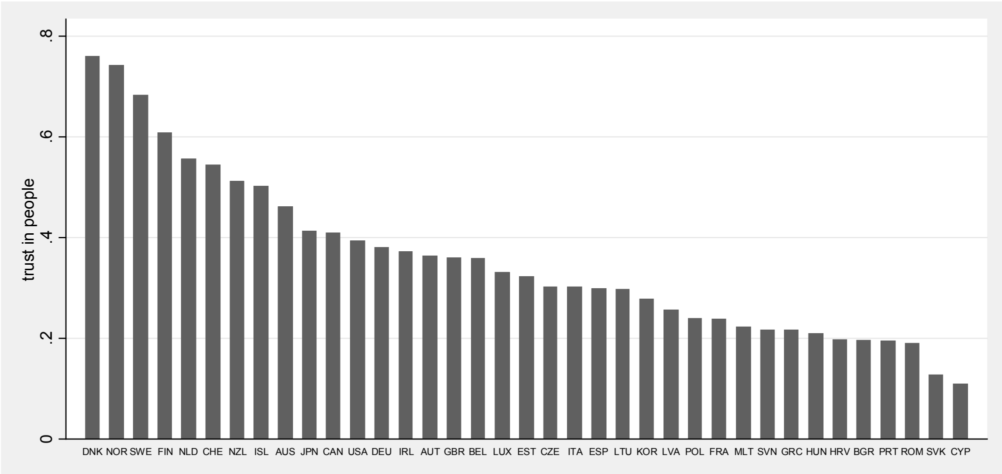
Note: significant at * 1%-level. Correlation at individual level; 132,565 observations in 37 countries

While life control and trust in people are reasonably strong and positively related (rho = +0.11), religiousness is only very weakly related to the two other core beliefs. Due to the high number of observations, all correlations are nevertheless significant at a 1%-level.

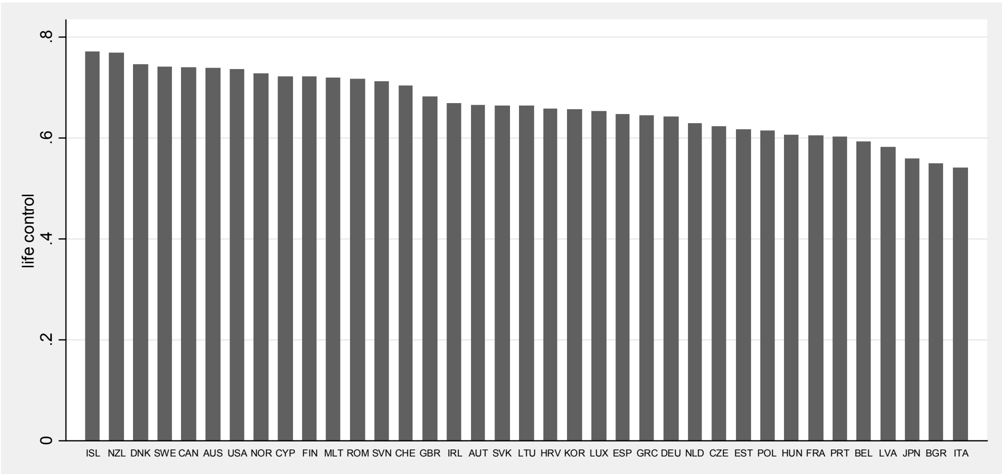
[21] Note that for *religiousness* we have data only for the 1990s and the 2000s. In the 1980s this survey question has only been posed in Switzerland and Poland.

Figure 2: Informal institutions across countries in the 2000s

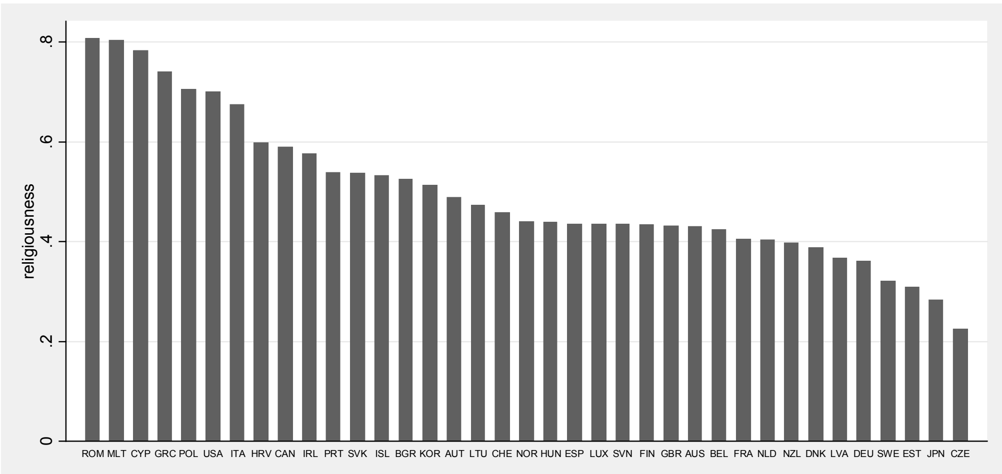
Panel A: Trust in people



Panel B: Life control



Panel C: Religiousness



Source: own calculations based on WVS/EVS

3.3 Measuring governance quality

Alternative approaches to assess governance quality use a large variety of different measures, ranging from democracy and corruption indices, indicators for speed and reliability of public administration, to measures for government effectiveness and regulatory quality. In the present paper, we make use of two different approaches to judge governance quality in a country: the first measure is based primarily on expert judgments and a second measure is based on individual respondents' perceptions of public sector governance quality.

Legal quality

According to Rothstein and Teorell (2008), governance quality is best described as "impartiality of institutions that exercise government authority". In that respect, the Fraser Institute's index of *legal quality,* a component of the comprehensive Economic Freedom of the World-index (EFW, Gwartney, Lawson, and Hall, 2012), is a good proxy. The compound legal quality-index provides measures for legal enforcement of contracts, property rights security, independence of the judiciary, business costs of crime, and impartiality of the court system, from different international data sources.[22] We re-coded the original index 0-10 scale to a 0-1-scale, higher values reflecting a higher quality.[23]

Confidence in administration (WVS/EVS questions e069)

The *legal quality*-index is based on 'objective' expert judgments for average governance quality. Individual perceptions of public sector quality may nevertheless differ. As we use micro data in our empirical strategy, we prefer to employ individual perceptions of governance quality too.

An obvious candidate in that respect is survey data on confidence in public institutions. The WVS/EVS dataset contains a standard confidence question that reads "*I am going to name a*

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[22] These include the World Economic Forum's Global Competitiveness Report, International Country Risk Guide (PRS Group) and the World Bank's Doing Business data.

[23] The *legal quality*-index is also highly correlated with other popular measures of governance quality. For example, for 37 countries in our sample in 2010, the simple correlation between *legal quality* and World Bank's indices for Government Effectiveness (+0.88), Regulatory Quality (+0.83), or Rule of Law (+0.90), and Transparency International's Corruption Perception index (+0.92) never falls below 0.8. We opted for the *legal quality* index as World Bank data series are only available on from 1996, while Economic Freedom of the World data are available (in principle) for most countries since 1970. As legal quality data for 1991-94 and 1996-99 are not available, we imputed missing values by linear interpolation. Data from 2000-2010 are available on a yearly basis. An alternative measure employed (in robustness tests) is the International Country Risk Guide indicator of Quality of Government (*icrg*). *icrg* is also a compound index, constructed as the mean value of ICRG measures for "Corruption", "Law and Order" and "Bureaucratic Quality", standardized on a 0-1 scale, where higher scores indicate higher governance quality. The simple correlation between *legal quality* and *icrg* in 2010 is r = +0.9.

number of organisations. For each one, could you tell me how much confidence you have in them: is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all?" Among the listed institutions are civil service, government and parliament. We use confidence in civil service as a proxy for the individual assessment of administrative quality (*confadmin*).[24] We re-coded the variable to a 0-1 scale such that higher values indicate higher confidence.

Suitability of institutional confidence indicators to assess governance quality is controversially debated (e.g. Newton and Norris, 2000; Bouckaert and van de Walle, 2003; Christensen and Laegreid, 2005; van de Walle, 2007). Confidence in public institutions may depend to a certain degree on trust in other people. Empirical evidence for such an individual-level correlation between social trust and institutional trust is however ambiguous (Newton and Norris, 2000; Zmerli and Newton, 2008). Yet, confidence in institutions is clearly related to the *perceived* quality of the respective organization. Van Ryzin (2011) finds that fairness and equity of the administrative process has a stronger effect on trust of civil servants than outcomes.

Country means of confidence in public administration and expert's assessment of governance quality appear to coincide. Figure 3 illustrates decade 2000-2009 means of the EFW's *legal quality* measure and the respective decade averages of country means of *confadmin*. We observe a strong and significant positive relation between both indicators. Yet, expert and citizen judgment do not match perfectly. For Estonia, Latvia, Slovenia and Korea confidence in administration is (on average) much higher than expert's assessment of governance quality, for Germany and the Netherlands, expert assessment is more positive than confidence.

Confidence in major companies (WVS/EVS questions e069)

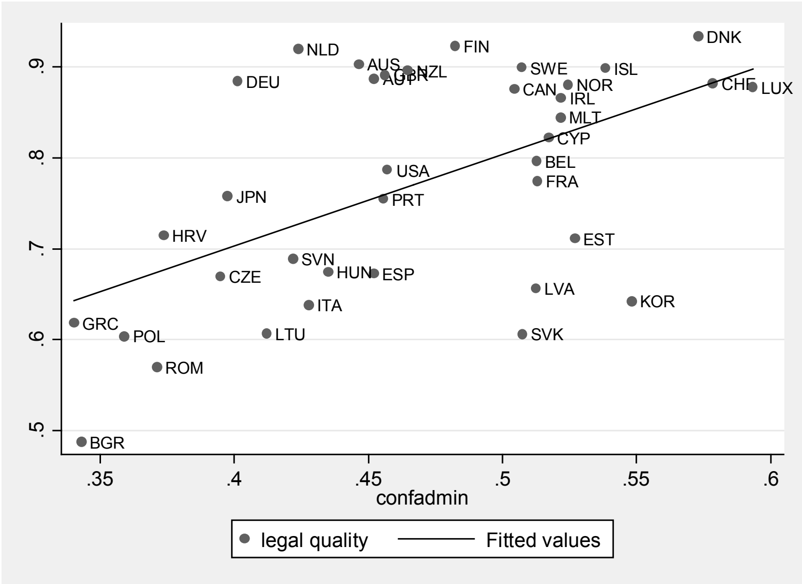
Strong confidence in the public administration does not necessarily go hand-in-hand with a more positive view on government activities. Confidence in different institutions is often correlated positively, and confidence in administration may be embedded in a larger 'generalized trust attitude'. As regards our research questions, co*nfidence in major companies* is of overwhelming importance. If people do not trust big companies we expect them to be more supportive of government intervention and Welfare State provisions.

Figure 4 displays the connection between confidence in administration and in major companies at the country level in the 2000s. The relationship is positive and strong, the simple

[24] In less than 3 percent of all cases we had to impute data for *confadmin*. Imputed data were obtained as predicted values from a regression of confidence in civil services on confidence in government and in parliament, country and year fixed effects. Our results do not change if we employ only non-imputed data, however.

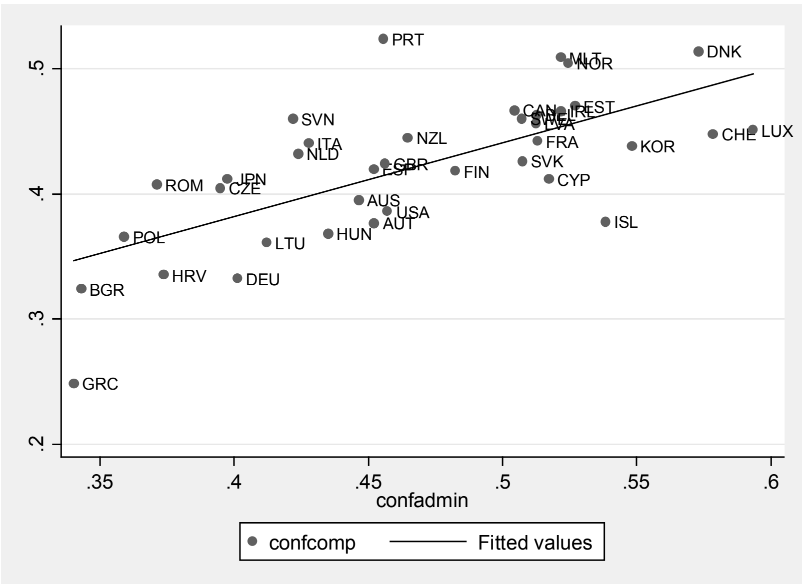
correlation amounts to r =+0.69. The simple correlation between *confidence in administration* and *confidence in major companies* is r = +0.36, which is quite strong for individual level data. Figure 4, for example shows that (on average) confidence in administration was quite low in Greece in the 2000s; but confidence in major companies was even smaller.

Figure 3: Relationship between legal quality and perceived confidence in administration



Source: Own calculations, based on Gwartney, Lawson and Hall (2012) and WVS/EVS

Figure 4: Relationship between perceived confidence in administration and in major companies



3.4 Estimation method and model

The aim of the paper is to explore the determinants of individual Welfare State preferences, or, to be more precise: attitudes toward government intervention and redistribution. Attitudes reflect personal assessments of the desirability of certain policies and/or formal institutional arrangements and are probably shaped by various factors, namely

(1) *individual self-interest*, which is corresponding to the question whether a person is a factual, perceived or (probably in the future) expected beneficiary of provided services;

(2) *governance quality*: perceived or actual efficiency and effectiveness of the Welfare State's formal institutions: support for government intervention and redistribution is expected to be less pronounced if provision of services and transfers is associated with economic waste and high cost;

(3) *informal institutions*: cultural and social norms, conventions, moral values, codes of behavior, and beliefs about the way the world actually works, and – in a normative perspective – how it should work. These informal institutions are often at the center of explanations of stable attitudes and resistance to Welfare State reforms.

In this respect, our basic hypotheses postulate that besides factors representing narrow self-interest, attitudes also depend on personally internalized social norms (informal institutions), as well as on country-wide factors, including macro-economic environment and the efficiency of the Welfare State administration of a respective country. This makes our research question a typical case for a multilevel data analysis (Steenbergen and Jones, 2002).

In general, multilevel (contextual, hierarchical) models conjecture that individual behavior is a function of both individual-level ('level 1', 'micro level')) and non-individual variables of a higher level ('level 2', 'macro level')), e.g. a region, a social group or a country, to which the individual belongs. Using data at the individual level increases the number of observations considerably, and increases substantially the precision of estimates as compared to simple cross-country analyses based on country-averaged values.

Formally, we model Welfare State attitudes (WS_{ij}) of individual i in country j depending on internalized informal institutions (I_i), additional individual covariates (X_i), country-wide measures of governance quality Q_j and additional country-wide covariates Z_j We then have an estimation equation[25]

(1) $$WS_{ij} = \beta_0 + \beta_1 I_i + \beta_2 X_i + \beta_3 Q_j + \beta_4 Z_j + \varepsilon_i .$$

The multi-level structure of the data generates problems for estimation, as level 1-observations are probably not independent within a country (level 2-units). Moulton (1990) demonstrates that in such a setting standard errors of all estimated parameters – especially for explanatory variables on the country-level – show a serious downward bias. A standard approach, then, is to estimate Ordinary Least Squares OLS, and correct estimated standard errors for clustering afterwards.

Similarly, or even more, important is the problem how to deal with heterogeneity in the cross-country dimension. Several methods to estimate such models are discussed in the pertinent empirical literature (e.g. Steenbergen and Jones, 2002; Primo, Jacobsmeier, and Milyo, 2007). To avoid the less satisfactory option of country-by-country regressions of (1), thus completely ignoring cross-country differences and contextual factors, we opted for a Least Squares Dummy Variable-model (LSDV) with indicator variables for all countries to get rid of unobserved heterogeneity. In a sample of j = 1, 2, 3, … , k countries, equation (1) becomes

(1a) $$WS_{ij} = \beta_0 + \beta_1 I_i + \beta_2 X_i + \beta_3 Q_j + \beta_4 Z_j + \alpha_1 D_1 + \alpha_2 D_2 + \alpha_3 D_3 + \cdots + \alpha_{k-1} D_{k-1} + \varepsilon_i$$

Country fixed effects D_j account for unobservable characteristics that impact on support for Welfare State policies in a country and do not vary over time. They thus capture persistent institutional and socio-economic differences across countries that drive attitudes toward the Welfare State.

Contextual factors may also be modeled such that we take into account the possibility that the effect of informal institutions on Welfare State attitudes depends on the level of governance quality. We therefore estimate a cross-level interaction of the form

(2) $$WS_{ij} = \beta_0 + \beta_1 I_i + \beta_2 X_i + \beta_3 Q_j + \beta_4 (I_i \times Q_j) + \beta_5 Z_j + \varepsilon_i .$$

The (marginal) impact of informal institution I_i on Welfare State attitude WS_{ij} is then given by

(3) $$\frac{\partial WS_{ij}}{\partial I_i} = \beta_1 + \beta_4 Q_j ,$$

[25] For ease of exposition the time-dimension in our data (different survey waves) shall be neglected here in the notation. In the estimation of this "pseudo-panel", we include survey wave dummies to address potential unobserved heterogeneity over time.

if we condition on level 2-measures of governance quality Q_j.

Perceived governance quality can also be measured at an individual level (see section 3.3). Compared to employing level 2-indicators of administrative quality Q_j this has the big advantage that from a theoretical perspective individual perceptions of government quality R_i should matter more for personal Welfare State attitudes than external expert's judgments. The relevant estimation equation, then, becomes

(2a) $$\mathrm{WS_{ij}} = \beta_0 + \beta_1 \mathrm{I_i} + \beta_2 \mathrm{X_i} + \beta_3 \mathrm{R_i} + \beta_4(\mathrm{I_i} \times \mathrm{R_i}) + \beta_5 \mathrm{Z_j} + \varepsilon_i,$$

and the marginal effects of informal institutions are

(3a) $$\frac{\partial \mathrm{WS_{ij}}}{\partial \mathrm{I_i}} = \beta_1 + \beta_4 \mathrm{R_i}.$$

Individual-level covariates X_i are derived from the WVS/EVS, representing self-interest in government involvement.[26] We include the following control variables:

- A gender dummy (*female*), taking the value 1 if the respondent is female: We expect females to have a more positive attitude toward income equalization and government provision than males, as they can rationally expect to rely more often on special Welfare State services and benefits.
- *Age* of the respondent[27]: We expect younger people to be more optimistic as regards government involvement and redistribution when we control for other individual interest variables.[28] Effects of age on attitudes toward redistribution are however ambiguous in earlier studies.
- Dependency on Welfare State provisions is probably higher for some groups of the population. From self-interest hypothesis we expect people who depend on provided services to have a more positive view of the Welfare State. To capture these effects, we include a dummy variable for being *retired* to control for self-interest of pensioners, and a dummy for *unemployed* individuals which probably rely to a certain extent on unemployment benefits and social transfers. While one can assume *retired* respondents to support income redistribution and equalization, it is not necessarily the case that

[26] Self-interest cannot always be separated from ideological convictions, see, inter alia, Pitlik et al. (2011).
[27] Age is divided by 10 only for better readable presentation of the results.
[28] This may be driven less by personal self-interest but captures the notion of a way of younger persons beliefs, which can be best described by a quote from former French Premier Georges Clemenceau (1841-1929): "Not to be a socialist at twenty is proof of want of heart; to be one at thirty is proof of want of head."

they are also in favor of government interventions. Unemployed people, however, may not only be supportive of more income equalization in the form of unemployment benefits, but they may also be in favor of more government action to fight and reduce unemployment. In addition, subjective *health status* of a respondent is also included, as a bad physical condition is usually associated with dependency on government services and benefits. The *health status* variable is coded on a 0-1 scale, higher values indicating a worse self-assessed personal health status.

- Dummies for relative *income* position based on self-reported household income into three income groups (high, middle, low). The middle income earners are the reference group. High income earners are expected to demand less government intervention as they can better provide for themselves; they also bear a higher share of the burden of redistribution toward lower income groups.
- Dummies for *educational* level achieved, classified into three groups (high, middle, low) with medium level as reference group. Highly educated people may probably support less involvement even if it is controlled for income level because they can expect to depend less on government support in general.

Macro control variables Z_j include the following: [29]

- A country's *unemployment rate* from AMECO database. It can be expected that a higher unemployment rate is associated with both a more positive attitude toward income equalization and government intervention. One reason is that perceived individual risk of becoming unemployed will increase. A second reason is that higher unemployment may go hand-in-hand with (perceived) economic inequality, which is often seen as an economic rationale for government intervention and redistribution.
- Real *GDP per capita* (in purchasing power parities, log-form) from the Penn World Tables 7.1 (Heston, Summers, and Aten, 2012) is included to capture effects from development status. Often, redistribution and other forms of government involvement are seen as a 'superior' public good that are demanded more intensely at higher levels of economic development.

Summary statistics of all variables are in the Appendix. The results of our estimates will be presented in the following section 4.

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[29] Provided that data have no time dimension, fixed country effects would be perfectly collinear with macro (level 2)-covariates. Our data yet do contain a time dimension, and country dummies therefore do not absorb the entire cross-country variation at a macro-level.

4 Results

4.1 The base model of governance quality and Welfare State attitudes

We start presentation of results in this section with a base model that is including all micro- and macro- covariates, and several measures of governance quality. This is to test *Hypothesis 0* of a positive relationship between perceived governance quality and Welfare State attitudes. In the base specifications measures for informal institutions are omitted.

Table 3 illustrates results of our baseline regressions of *income equalization* attitudes (columns 1-3) and *government intervention* attitudes (columns 4-6). Bold figures show unstandardized coefficients, and those in square brackets are standardized beta coefficients. The third line for each covariate displays p-values calculated from standard errors corrected for clustering.

Our individual control variables behave as expected from previous literature. Results are highly stable throughout all model specifications. Therefore, we only very briefly report the results here, and skip further discussions in the following tables.

Females have stronger preferences both for income equalization and for government intervention. This result is in line with numerous previous studies (e.g. Blekesaune and Quadagno, 2003; Alesina and Giuliano, 2009; Reeskens, Meulemans and van Oorschot, 2012).

While *age* is negatively related to equalization and intervention, being *retired* or *unemployed* has a positive association with both dependent variables. This is in line with expectations as people who depend on Welfare State provisions are more likely to support redistribution and government intervention.

Less educated respondents prefer more equalization and intervention, while higher educated people prefer less (reference group: middle education level). Respondents with a subjectively assessed *bad health* status are, as expected, more favorable toward income equalization and government intervention. People with a (self-reported) low *income* have a much more positive view of income equalization as well as government intervention than middle income and high income earners.

Table 3: Governance quality and Welfare State attitudes

dep. variable	income equalization attitude			government intervention attitude		
	(1)	(2)	(3)	(4)	(5)	(6)
quality indicator:	*no*	*legal*	*confadmin*	*no*	*legal*	*confadmin*
quality indicator		**0.517**	**0.048**		**0.097**	**0.041**
		[0.195]	[0.039]		[0.058]	[0.053]
		0.009	0.000		0.325	0.000
confcomp		**-0.105**	**-0.120**		**-0.086**	**-0.100**
		[-0.086]	[-0.099]		[-0.112]	[-0.130]
		0.000	0.000		0.000	0.000
female	**0.029**	**0.028**	**0.028**	**0.030**	**0.030**	**0.030**
	[0.047]	[0.046]	[0.045]	[0.078]	[0.078]	[0.077]
	0.000	0.000	0.000	0.000	0.000	0.000
age	**-0.002**	**-0.002**	**-0.003**	**-0.006**	**-0.007**	**-0.007**
	[-0.012]	[-0.012]	[-0.014]	[-0.056]	[-0.058]	[-0.061]
	0.090	0.101	0.052	0.000	0.000	0.000
retired	**0.018**	**0.018**	**0.018**	**0.009**	**0.010**	**0.009**
	[0.024]	[0.023]	[0.023]	[0.019]	[0.020]	[0.019]
	0.000	0.000	0.000	0.004	0.002	0.003
unemployed	**0.048**	**0.042**	**0.044**	**0.039**	**0.037**	**0.038**
	[0.036]	[0.032]	[0.033]	[0.046]	[0.044]	[0.045]
	0.000	0.000	0.000	0.000	0.000	0.000
bad health	**0.067**	**0.056**	**0.059**	**0.076**	**0.068**	**0.070**
	[0.050]	[0.041]	[0.043]	[0.089]	[0.079]	[0.081]
	0.000	0.000	0.000	0.000	0.000	0.000
income low	**0.023**	**0.023**	**0.023**	**0.019**	**0.019**	**0.019**
	[0.027]	[0.027]	[0.027]	[0.036]	[0.036]	[0.035]
	0.001	0.000	0.000	0.000	0.000	0.000
income high	**-0.046**	**-0.045**	**-0.045**	**-0.024**	**-0.024**	**-0.024**
	[-0.054]	[-0.054]	[-0.054]	[-0.045]	[-0.045]	[-0.045]
	0.000	0.000	0.000	0.000	0.000	0.000
education low	**0.017**	**0.015**	**0.015**	**0.024**	**0.024**	**0.024**
	[0.023]	[0.020]	[0.019]	[0.050]	[0.050]	[0.050]
	0.038	0.046	0.059	0.000	0.000	0.000
education high	**-0.038**	**-0.040**	**-0.038**	**-0.012**	**-0.012**	**-0.012**
	[-0.048]	[-0.051]	[-0.049]	[-0.024]	[-0.025]	[-0.025]
	0.000	0.000	0.000	0.006	0.004	0.002
unemployment	**1.077**	**0.829**	**1.104**	**0.289**	**0.182**	**0.243**
	[0.123]	[0.093]	[0.124]	[0.052]	[0.032]	[0.043]
	0.040	0.151	0.052	0.095	0.270	0.170
GDP per capita	**0.171**	**0.065**	**0.186**	**-0.040**	**-0.067**	**-0.042**
	[0.278]	[0.102]	[0.292]	[-0.105]	[-0.169]	[-0.106]
	0.091	0.638	0.098	0.327	0.133	0.294
N	126455	117311	116986	114757	107854	107616
R-sq. (adj.)	0.089	0.094	0.093	0.126	0.139	0.141
country FE	yes	yes	yes	yes	yes	yes
wave FE	yes	yes	yes	yes	yes	yes

Fixed effects OLS with standard errors adjusted for clustering at the country level. For each estimate, standardized beta-coefficients are reported in square brackets, followed by the cluster-robust p-value. Constant, country and survey wave effects not reported.

As regards the macroeconomic controls, our results show that a higher *unemployment rate* in a country is associated with a stronger support for income equalization, which is in line with previous studies (e.g. Blekesaune and Quadagno, 2003; Dallinger, 2010).[30] The effect is particularly strong: A one standard deviation increase of the unemployment rate is related to a 0.12 standard deviation increase of the *income equalization* attitude measure. The relationship of unemployment rates to *government intervention* attitudes is, however, not significant at conventional levels. *GDP per capita* (in logs) is positively related to income equalization attitudes at a 10%-confidence level. The association to intervention attitudes is yet not significant, and – if anything – it is negative.

We also checked for possible effects of country-wide income equality, as measured by the Gini-coefficient of after tax-and-transfer household incomes. There is no indication that this plays a role for Welfare State preferences in our estimates. However, this may be due to the fact that we included country fixed effects, and Gini-coefficients are a very slow moving macro-variable.

Including governance quality indicators in specifications (2)-(3), and (5)-(6) respectively, we always find a positive relationship of improved quality to income equalization and government intervention attitudes. The indicator *legal quality* refers to a macro measure of governance quality from the Economic Freedom of the World-data set (EFW). The coefficient of *legal quality* in the income equalization attitudes-estimates is +0.52 (2). The beta coefficient indicates that a one standard deviation increase of the respective index value increases income equalization attitudes by 0.2 standard deviations. The effect is strong and significant at a 1%-confidence level. In contrast, *legal quality* is not significantly related to government intervention attitudes (5). As *legal quality* is highly correlated with GDP per capita (r ~ 0.8), it is not surprising that average income per head loses statistical significance when *legal* is included. However, the quality index is more robustly related to Welfare State attitudes than per capita GDP.

In equations (3) and (6), individual confidence in administration (*confadmin*) replaces the expert judgment on *legal quality* as explanatory variable for Welfare State attitudes. In both regressions we find the expected results: A higher personal confidence in administration is related positively to attitudes toward income equalization and government intervention. The relationship is always significant at a 1%-level, and thus confirms the notion that people are

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[30] Using data from the European Social Survey, Jaeger (2013) does not find a significant effect of cross-country differences in unemployment rates on the demand for income redistribution.

more willing to hand over competences to the state if the administration is assumed to be more efficient.

We now turn to confidence in major companies. The main idea behind including this variable is that reduced (increased) confidence in public administration only leads to negative (positive) Welfare State attitudes if confidence in private companies does not move in the same direction. A public administration that is perceived as highly inefficient does not necessarily mean that respondents disapprove of government interventions and income equalization if confidence in major private companies is even lower.

The negative and highly significant coefficient of personal confidence in major companies (*confcomp*) throughout all specifications illustrates that individual assessment of Welfare State policies for income equalization and government intervention attitudes not only depends on the perceived quality of the public administration but also on the opinion on major private companies. The effect is not only statistically significant but also economically strong: A one standard deviation decrease in the confidence in major companies increases support for income equalization by ca. 0.1 (equations 2 and 3), and support for government intervention by ca. 0.12 standard deviations (equations 5 and 6). This corroborates findings of Aghion et al. (2010) who report a lack of trust in companies positively related to preferences for a stricter regulation of the economy.

Summing up so far, our base regressions provide evidence that improved (objective or subjectively perceived) governance quality is positively related to income equalization and government intervention preferences. Confidence in administration and distrust in major private companies jointly contribute to a more positive view of Welfare State interventions. The effect of distrust in major companies appears to be even more important for Welfare State attitude formation.

4.2 Social trust, governance quality and Welfare State attitudes

In this section we examine the impact of generalized social trust and its interplay with governance quality on attitudes toward income equalization (Table 4) and government intervention (Table 5). The set of control variables included is identical to the base regressions

(Table 3). As estimates for micro- and macro-controls are particularly stable, we do not report the figures.[31]

As regards *income equalization* attitudes generalized *trust* shows the expected positive sign. People who have trust in other persons report a more positive view on income equalization (1), a result that is in line with *Hypothesis 1A*. Controlling for a country-level indicator for administrative quality (*legal quality* in equation 2) or individual confidence in administration (*confadmin*, 4) does not change results. Again, both governance quality measures show a positive relationship to income equalization attitudes. Economically, however, trust in people is only very weakly related to equalization preferences.

Adding interaction terms of the quality measure with social trust gives somehow inconclusive results. In equation (3), the macro-level indicator *legal* is interacted with *trust*; the interaction effect is yet insignificant (p-value = 0.524). Hence, the small positive effect of trust on income equalization attitudes does not depend on the observed level of legal quality.

However, we prefer not to use the expert assessment of governance quality but personal assessments instead. Interacting *trust* with the individual quality measure *confadmin* (equation 5) we find the expected positive sign of its coefficient: the higher personal confidence in administration, the stronger is the positive effect of increased trust on income equalization preferences, holding constant the level of confidence in major companies. With a p-value of p = 0.126 the interaction effect is close to conventional significance levels.

Panel A of Figure 5 displays marginal effects of social trust on income equalization preferences, conditional on the level of confidence in administration (*confadmin*). It shows that social trust has no significant effect on preferences if *confadmin* is smaller than 0.4, as the 10%-confidence level band includes the zero-line.[32] If personal confidence in administration exceeds a score of 0.4, the impact of increased trust on equalization attitudes becomes statistically significant and positive. At a the highest level of confidence in administration, a person that has trust in other people (on average) has a more positive view of income equalization of +0.017 compared to someone who does not trust other people.

[31] Results are, of course, available on request.
[32] Standard errors are calculated according to Brambor, Clark, and Golder (2006).

Table 4: Social trust, governance quality and attitudes toward income equalization

dep. variable:	**income equalization attitude**					
	(1)	(2)	(3)	(4)	(5)	(6)
quality indicator:	*no*	*legal*	*legal*	*confadmin*	*confadmin*	*confrel*
trust in people	**0.010**	**0.010**	**0.025**	**0.009**	**0.001**	**-0.041**
	[0.016]	[0.015]	[0.198]	[0.014]	[0.001]	[-0.065]
	0.011	0.011	0.329	0.023	0.931	0.004
quality indicator		**0.519**	**0.526**	**0.046**	**0.040**	**0.134**
		[0.195]	[0.039]	[0.037]	[0.033]	[0.062]
		0.008	0.008	0.000	0.000	0.000
trust X quality			**-0.020**		**0.017**	**0.094**
			[-0.025]		[0.022]	[0.080]
			0.524		0.126	0.000
confcomp	**-0.101**	**-0.104**	**-0.104**	**-0.119**	**-0.118**	
	[-0.083]	[-0.085]	[-0.083]	[-0.098]	[-0.098]	
	0.000	0.000	0.000	0.000	0.000	
N	113618	112675	112675	112377	112377	112377
R-sq. (adj.)	0.096	0.094	0.094	0.092	0.092	0.091

Fixed effects OLS with standard errors adjusted for clustering at the country level. For each estimate, standardized beta-coefficients are reported in square brackets, followed by the cluster-robust p-value. Individual control variables: Gender, income level, education level, health status, employment status not reported. Constant, country and survey wave effects not reported.

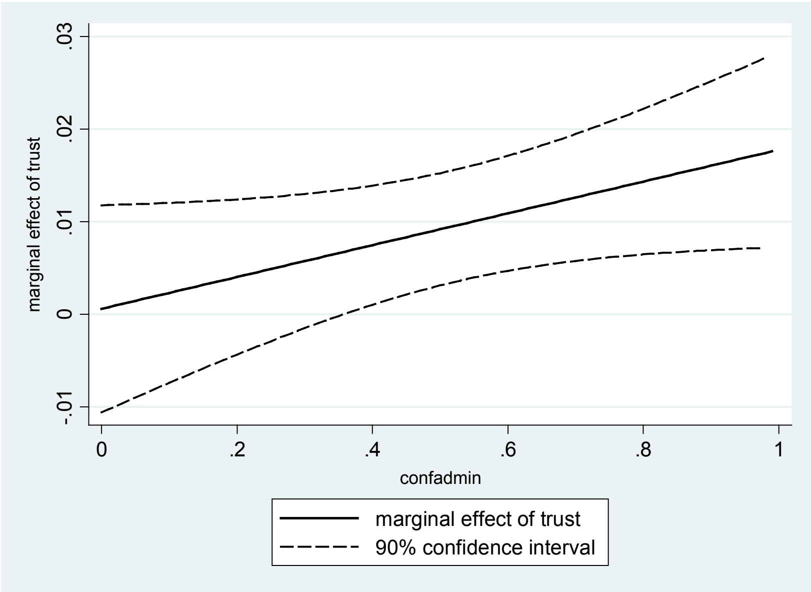
Table 5: Social trust, governance quality and attitudes toward government intervention

dep. variable:	**government intervention attitude**					
	(1)	(2)	(3)	(4)	(5)	(6)
quality indicator:	*no*	*legal*	*legal*	*confadmin*	*confadmin*	*confrel*
trust in people	**0.000**	**0.000**	**-0.035**	**-0.001**	**-0.007**	**-0.045**
	[0.000]	[0.000]	[-0.086]	[-0.003]	[-0.018]	[-0.113]
	0.950	0.995	0.092	0.624	0.101	0.000
quality indicator		**0.087**	**0.071**	**0.040**	**0.036**	**0.111**
		[0.052]	[0.042]	[0.052]	[0.046]	[0.082]
		0.373	0.478	0.000	0.000	0.000
trust X quality			**0.044**		**0.013**	**0.084**
			[0.090]		[0.019]	[0.114]
			0.083		0.062	0.000
confcomp	**-0.084**	**-0.085**	**-0.085**	**-0.099**	**-0.099**	
	[-0.109]	[-0.111]	[-0.111]	[-0.129]	[-0.128]	
	0.000	0.000	0.000	0.000	0.000	
N	104715	103824	103824	103609	103609	103609
R-sq. (adj.)	0.137	0.138	0.139	0.140	0.140	0.138

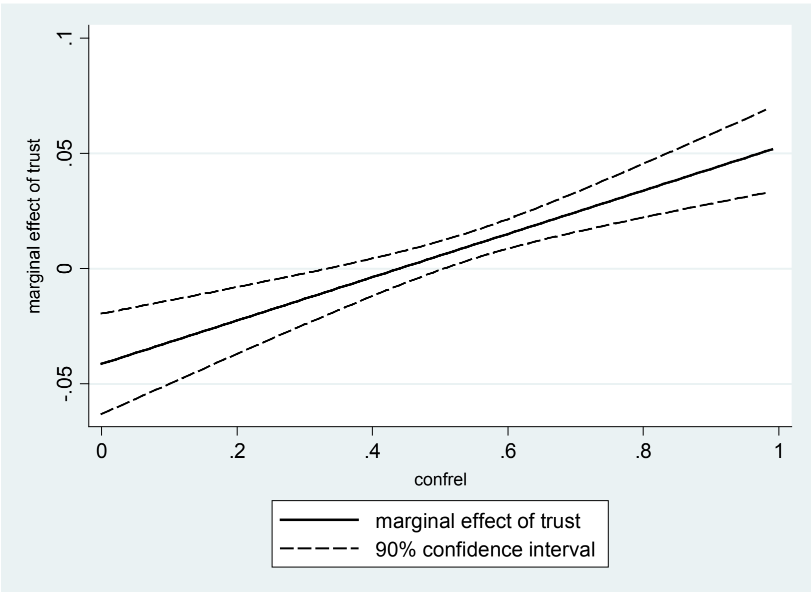
Fixed effects OLS with standard errors adjusted for clustering at the country level. For each estimate, standardized beta-coefficients are reported in square brackets, followed by the cluster-robust p-value. Individual control variables: Gender, income level, education level, health status, employment status not reported. Constant, country and survey wave effects not reported.

Figure 5: Marginal impact of social trust on income equalization attitude conditional on absolute (panel A) and relative confidence in administration (panel B)

Panel A (equation 5)



Panel B (equation 6)



In this exercise, confidence in companies was being held constant. Taking into account the 'relative' nature of the assessment of public administration versus private companies, we created a variable *confrel* which measures (at an individual level) the difference between confidence in administration and confidence in major companies ("relative confidence"). *confrel* is normalized to a 0-1-scale; values higher than 0.5 imply a more positive view of the public administration, whereas a score between 0 and 0.5 indicates a relatively more positive view of private companies. Hence, a variation of *confrel* shows combinations of confidence in administration and in major companies.

Equation (6) in Table 4 and Panel B of Figure 5 illustrate that such a 'relative' confidence in administration and companies clearly matters for the impact of generalized social trust. At very low levels of *confrel*, social trust is negatively related to income equalization attitudes. If the level of *confrel* exceeds a value of approximately +0.5, i.e., respondents have a higher confidence in public administration than in major companies, increased generalized trust also leads to a more favorable view of income equalization.

These results are clearly in line with our Hypothesis that a higher perceived quality of the public administration is crucial for the positive income equalization attitudes of respondents who trust other people. Provided that these 'generally trusting respondents' however also hold the belief that the civil service cannot be trusted, or that they have a substantially higher confidence in major companies, they report less support for income equalization.

In Table 5 we examine the relationship between social *trust* and *government intervention* attitudes. In estimates without interaction effects (columns (1), (2) and (4)) we find no association between trust in people and preferences for government intervention. Higher confidence in major companies is always related negatively to intervention attitudes. Governance quality, when it is measured with the macro-level indicator *legal,* also seems unrelated to intervention preferences. If quality is measured by confidence in administration (*confadmin*), the effect is highly significant and positive.

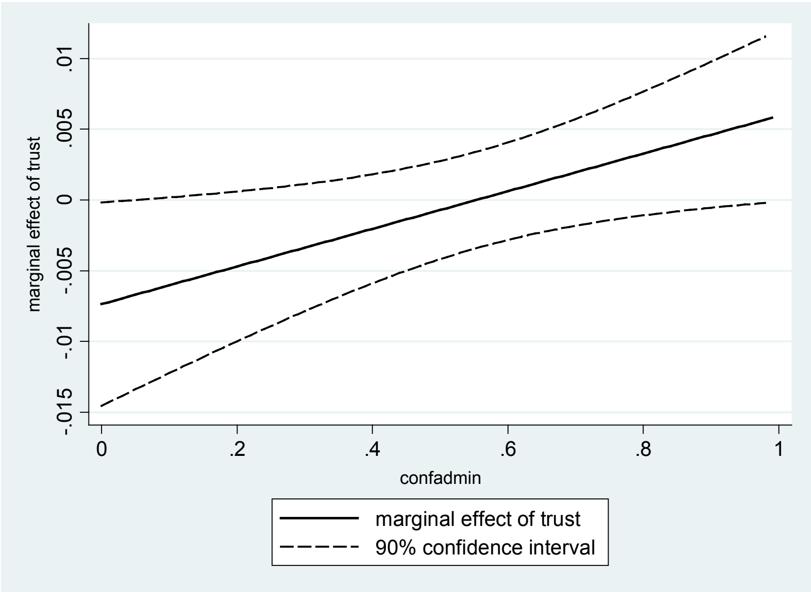
Results change slightly when we take into account the effects of trust conditional on governance quality (columns 3, 5 and 6). The interaction effects are positive and statistically significant at a 10%-level. That means that increased trust is positively associated with preferences for government interventions only at reasonably high levels of governance quality. A strong effect of the interaction of trust with the measure of relative confidence in administration (*confrel*) indicates that indeed again the perception of both government and private companies matters.

Figure 6 (Panels A and B) displays marginal effects of social trust, depending on the absolute and relative confidence in administration. Both graphs show the positive conditional impact of higher governance quality on the trust-interventionism relationship. However, Panel A also indicates that the trust-intervention attitudes association is never significant at a 10%-significance level when quality is measured by absolute confidence in administration (*confadmin*). Employing the relative confidence indicator *confrel*, Panel B shows that higher social trust is related to a more positive view of government intervention, provided that the government is perceived as relatively more confidential than major companies.

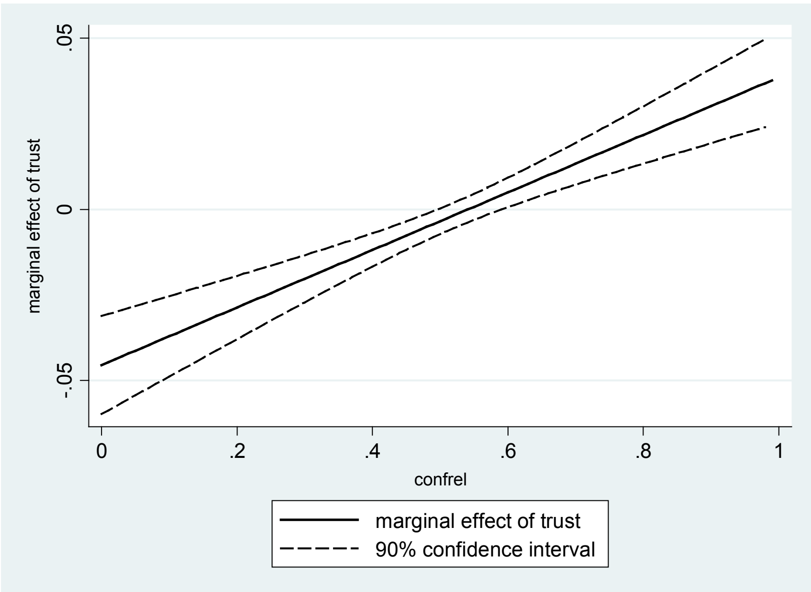
While 'distrusting companies' appears to have a strong positive effect on the individual preference for interventions, the very small coefficients of our trust variable indicate that social trust does not have a substantial economic impact on government intervention attitudes. At least in our sample of developed European Union and OECD-countries, the results of our empirical analysis are at odds with Aghion et al. (2010), who report that general distrust is related to an increased demand for government regulations.

Figure 6: Marginal impact of social trust on government intervention attitude conditional on absolute (panel A) and relative confidence in administration (panel B)

Panel A (equation 5)



Panel B (equation 6)



4.3 Life control, governance quality and Welfare State attitudes

A further informal institution that is of special interest here is the belief of having control over your own life course, or, on the opposite, a feeling of fatalism. The impression of having substantial autonomy in making important decisions concerning one's own life captures the extent of individual subjective freedom (Bavetta and Guala, 2003).

The findings of our assessment of the relationship between life control and income equalization attitudes are reported in Table 6. Throughout all model specifications, *life control* is negatively related to preferences for income equalization at a 1%-level of significance. In the baseline estimates without interaction effects the standardized beta coefficients are between -0.072 and -0.078, which is five times the value of the social trust beta coefficients from Table 4. This resembles results from a recent paper by Bavetta and Navarra (2012: 48) who claim that "... individuals enjoying high levels of free choice and control over life outcomes ask for lower levels of income transfers."

Are the effects of life control perception dependent on the quality of governance structures? In equation (3) we employ an interaction term with the EFW-measure *legal quality*. As expected, the interaction shows a positive coefficient, i.e., an improved governance quality reduces the negative impact of individual life control perception on income equalization attitudes. The effect is close to significance at a 10%-level. Again, individual measures of perceived governance quality perform similarly. While confidence in administration (*confadmin*) as 'stand alone' is positively related to income equalization preferences (equation 4), the interaction with life control is not significant at conventional levels (equation 5). Confidence in administration relative to major companies (*confrel*) once more shows a stronger effect (see also Figure 7). As the confidence in companies-variable (*confcomp*) shows a highly significant negative relation to income equalization preferences in all specifications, we can conclude that the interaction effect is mainly driven by this variable.

Table 6: Life control, governance quality and attitudes toward income equalization

dep. variable:	**income equalization attitude**					
	(1)	(2)	(3)	(4)	(5)	(6)
quality indicator:	*no*	*legal*	*legal*	*confadmin*	*confadmin*	*confrel*
life control	**-0.092**	**-0.093**	**-0.190**	**-0.093**	**-0.100**	**-0.136**
	[-0.071]	[-0.072]	[-0.147]	[-0.072]	[-0.078]	[-0.105]
	0.000	0.000	0.003	0.000	0.000	0.000
quality indicator		**0.555**	**0.468**	**0.050**	**0.039**	**0.118**
		[0.206]	[0.174]	[0.041]	[0.032]	[0.055]
		0.005	0.014	0.000	0.004	0.000
life control X quality			**0.127**		**0.017**	**0.077**
			[0.086]		[0.011]	[0.039]
			0.107		0.389	0.036
confcomp	**-0.097**	**-0.100**	**-0.100**	**-0.116**	**-0.116**	
	[-0.080]	[-0.082]	[-0.083]	[-0.096]	[-0.096]	
	0.000	0.000	0.000	0.000	0.000	
N	115349	114428	114428	114121	114121	114121
R-sq. (adj.)	0.100	0.098	0.098	0.097	0.097	0.095

Fixed effects OLS with standard errors adjusted for clustering at the country level. For each estimate, standardized beta-coefficients are reported in square brackets, followed by the cluster-robust p-value. Individual control variables: Gender, income level, education level, health status, employment status (not reported). Macro control variables: unemployment rate, GDP per capita (not reported). Constant, country and survey wave effects not reported.

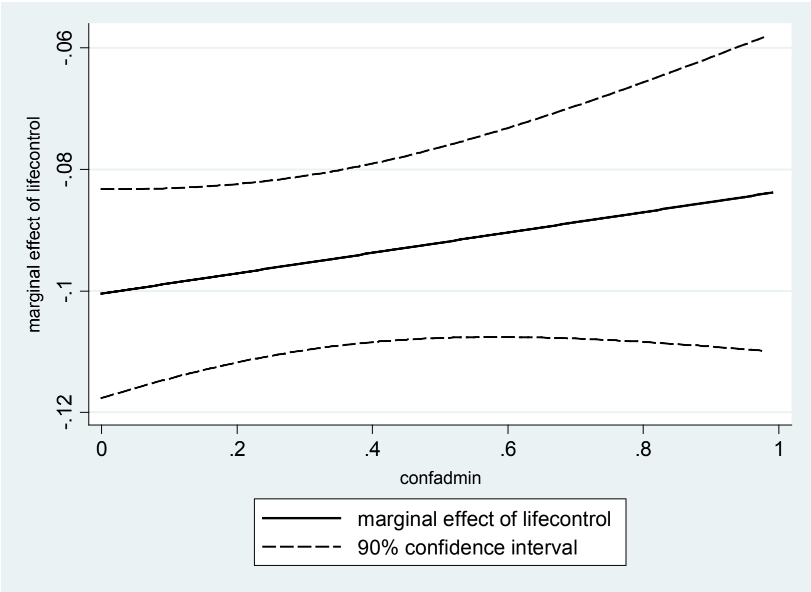
Table 7: Life control, governance quality and attitudes toward government intervention

dep. variable:	**government intervention attitude**					
	(1)	(2)	(3)	(4)	(5)	(6)
quality indicator:	*no*	*legal*	*legal*	*confadmin*	*confadmin*	*confrel*
life control	**-0.071**	**-0.072**	**-0.108**	**-0.072**	**-0.092**	**-0.112**
	[-0.087]	[-0.087]	[-0.131]	[-0.088]	[-0.112]	[-0.136]
	0.000	0.000	0.029	0.000	0.000	0.000
quality indicator		**0.121**	**0.088**	**0.043**	**0.014**	**0.095**
		[0.071]	[0.052]	[0.056]	[0.018]	[0.069]
		0.222	0.442	0.000	0.188	0.000
life control X quality			**0.047**		**0.045**	**0.072**
			[0.050]		[0.048]	[0.058]
			0.442		0.000	0.009
confcomp	**-0.081**	**-0.083**	**-0.083**	**-0.097**	**-0.097**	
	[-0.106]	[-0.108]	[-0.108]	[-0.127]	[-0.127]	
	0.000	0.000	0.000	0.000	0.000	
N	106329	105454	105454	105226	105226	105226
R-sq. (adj.)	0.143	0.144	0.144	0.146	0.146	0.143

Fixed effects OLS with standard errors adjusted for clustering at the country level. For each estimate, standardized beta-coefficients are reported in square brackets, followed by the cluster-robust p-value. Individual control variables: Gender, income level, education level, health status, employment status (not reported). Macro control variables: unemployment rate, GDP per capita (not reported). Constant, country and survey wave effects not reported.

Figure 7: Marginal impact of life control perception on income equalization attitude conditional on absolute (panel A) and relative confidence in administration (panel B)

Panel A (equation 5)



Panel B (equation 6)

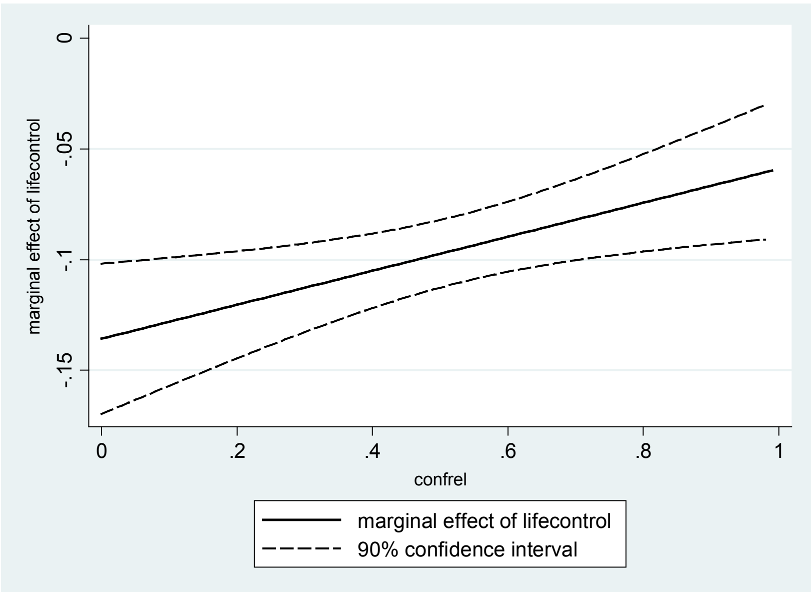
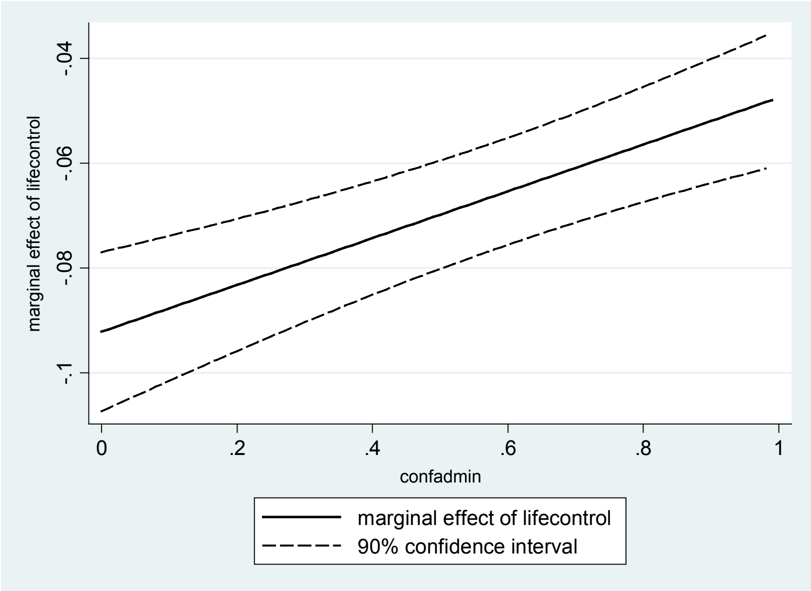


Table 7 depicts the results for the government intervention attitude estimations. The baseline effect of the *life control*-variable shows again a highly significant and strongly negative relationship to Welfare State preferences. Significance never drops below a 5%-level. Governance quality measures have the expected positive signs, but only the individual measures *confadmin* and *confrel* are statistically different from zero. Also, interaction terms for individual measures suggest a strong conditional effect of governance quality: perceived life control is always negatively related to government intervention attitudes, but a better perceived governance quality appears to mitigate this negative impact, although it never disappears completely (see also Figure 8). According to equation (5), for example, the marginal effect of an increase in *life control* perception on government intervention attitude is -0.092 if confidence in administration is totally absent, while the effect is still -0.047 if the respondent has highest confidence in administration.

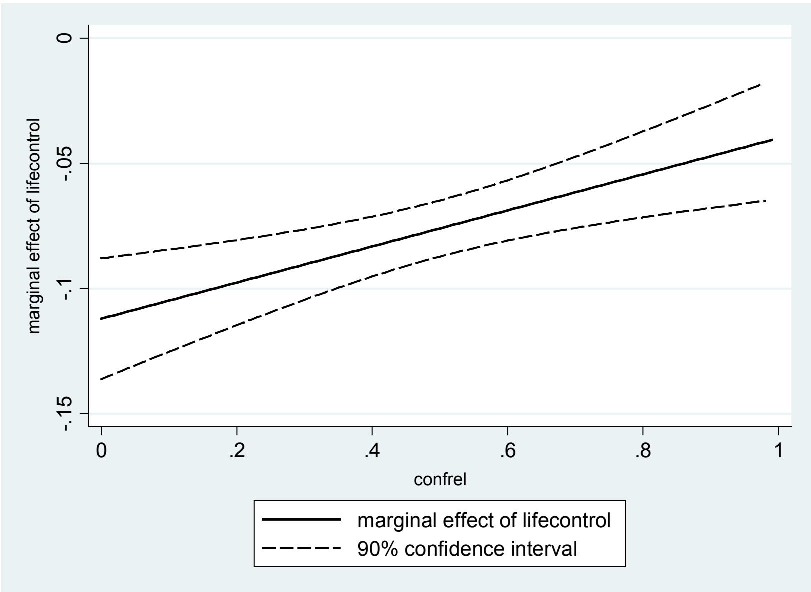
Summing up in a nutshell, belief in control over one's own life is a powerful predictor of individual Welfare State attitudes. People who believe to control their own life course a significantly less supportive of income equalization and government intervention than people who have a strong feeling that they have no control over their lives. The negative impact of life control on income equalization and government intervention attitudes are mitigated if the government is perceived to be (relatively) more efficient.

Figure 8: Marginal impact of life control perception on government intervention attitude conditional on absolute (panel A) and relative confidence in administration (panel B)

Panel A (equation 5)



Panel B (equation 6)



4.4 Religiousness, governance quality and Welfare State attitudes

According to the substitution hypothesis, being a religious person may reduce individual preferences for income redistribution, as religion can possibly serve as an alternative for government insurance schemes (Scheve and Stasavage, 2006). In terms of locus of control-theory we can, however, interpret religiousness also as one (possible) characteristic of external control. Hence, from this point of view one may expect religious people to have a more positive view on income equalization and government intervention.

Estimation results shown in Table 8 only partly confirm this idea. People who claim to find religion an important factor in their own lives also appear to have a reduced inclination to income equalization, as 'stand alone estimates' without interaction effects in equations (1), (2) and (4) show. The effects are, however, not significant at conventional levels, or only very weakly related to income equalization attitudes (4). On the other hand, our measures of governance quality are constantly positive at a 1%-level of significance (equations 2-6).

Interaction terms of *religious* with *legal quality* (and *confadmin*) are not different from zero in a statistical sense (p-values of 0.51 and 0.3, respectively). Hence we observe no effect of religiousness conditional on governance quality. This is certainly in line with the idea that religiousness is a kind of 'absolute' belief.

Interestingly in equation (6), employing *confrel* as quality measure, we obtain a negative interaction effect, see also Panel B in Figure 9. While increased religiousness has a positive relationship to income equalization attitudes if relative confidence in administration is low, the association turns negative when relative confidence is high. Certainly, these effects are driven almost exclusively by highly significant effects of personal confidence in major companies on attitudes toward income equalization. Only religious people with (relatively) little confidence in private companies appear to view religion as a substitute for social insurance by the government.

Turning to the interrelation between religiousness and government intervention attitudes (table 9 and figure 10), our estimates indicate that there is no significant effect. When we include an interaction term with *confrel*, we find a similarly puzzling relationship as for income equalization attitudes. Religiousness has a positive association with government intervention attitudes if relative confidence in administration is low, the interrelation turns negative when relative confidence is high: Again the effect appears to be driven by confidence in major companies and less by confidence in administration.

We repeated the estimates, using the WVS/EVS survey variable "Belief in God" instead of religiousness; the sample size slightly shrinks but results are essentially confirmed. The results also do not depend on the assumed cardinality of the religiousness variable. We re-estimated the whole set of regressions, replacing *religiousness* by a dummy variable which was assigned a '1' if the respondent claimed that religion is very important for her/him, and a zero otherwise.[33] We found that the religious-dummy is not significantly related to both income equalization and government intervention attitudes. Adding interaction terms with *confrel*, we find again that very religious people are more favorable toward income equalization and government intervention when they have only little confidence in a superiority of the public administration as compared to companies. Again, this result is mainly driven by strong effects of confidence in major companies.

In general it appears that the relationship between religiousness and attitudes toward Welfare State provisions is much more complex and possibly also driven by many other intervening variables.[34] This is nothing unusual. For example, employing a different measure of religiosity, the WVS/EVS question whether respondent were brought up religiously at home, Guiso, Sapienza, and Zingales (2003) find that the "correlation between religiosity and attitudes toward the market is [...] complex. People raised religiously are less willing to trade off equality for incentives and are less in favor of private property. The correlation changes sign, however, when it comes to people attending religious services on a more regular basis: they are more willing to trade off equality for incentives and in particular, they favor more private ownership."

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[33] Results not reported but are available from the authors on request.

[34] In addition, we should remind rather vast differences among countries across the world, and in particular, the difference between the USA, where religious people typically demand less government interventions (Republicans), and Europe where voters of Christians parties are usual much less right-oriented especially in case of fiscal and redistributive policies. Chen and Lind (2007) provide a hopeful explanation of this difference. According to them, there are countries which sustain high religiosity, high church-state separation and a reduced Welfare State (e.g. US), and countries with low religiosity, low church-state separation and an expanded Welfare State (e.g. Europe). Chen and Lind assert that the separation between state and church is key (2007: 2): "welfare is not competitive against religious groups when government funding can be distributed to religious groups." Based on the concept of external control of reinforcement and Chen and Lind (2007), we may want to test a further hypothesis: "In Europe, with a relatively low level of church-state separation, we expect that religious people demand relatively more welfare state." We shall leave that to a next paper.

Table 8: Religiousness, governance quality and attitudes toward income equalization

dep. variable:	**income equalization attitude**					
	(1)	(2)	(3)	(4)	(5)	(6)
quality indicator:	*no*	*legal*	*legal*	*confadmin*	*confadmin*	*confrel*
religious	**-0.008**	**-0.006**	**0.017**	**-0.010**	**-0.018**	**0.066**
	[-0.009]	[-0.007]	[-0.020]	[-0.011]	[-0.021]	[0.076]
	0.177	0.250	0.643	0.087	0.074	0.000
quality indicator		**0.515**	**0.533**	**0.048**	**0.039**	**0.247**
		[0.193]	[0.200]	[0.039]	[0.032]	[0.114]
		0.009	0.008	0.000	0.002	0.000
religious X quality			**-0.030**		**0.018**	**-0.157**
			[-0.027]		[0.014]	[-0.103]
			0.509		0.293	0.000
confcomp	**-0.101**	**-0.104**	**-0.104**	**-0.119**	**-0.119**	
	[-0.083]	[-0.085]	[-0.085]	[-0.098]	[-0.099]	
	0.000	0.000	0.000	0.000	0.000	
N	116643	115746	115746	115436	115436	115436
R-sq. (adj.)	0.096	0.094	0.094	0.093	0.093	0.092

Fixed effects OLS with standard errors adjusted for clustering at the country level. For each estimate, standardized beta-coefficients are reported in square brackets, followed by the cluster-robust p-value. Individual control variables: Gender, income level, education level, health status, employment status (not reported). Macro control variables: unemployment rate, GDP per capita (not reported). Constant, country and survey wave effects not reported.

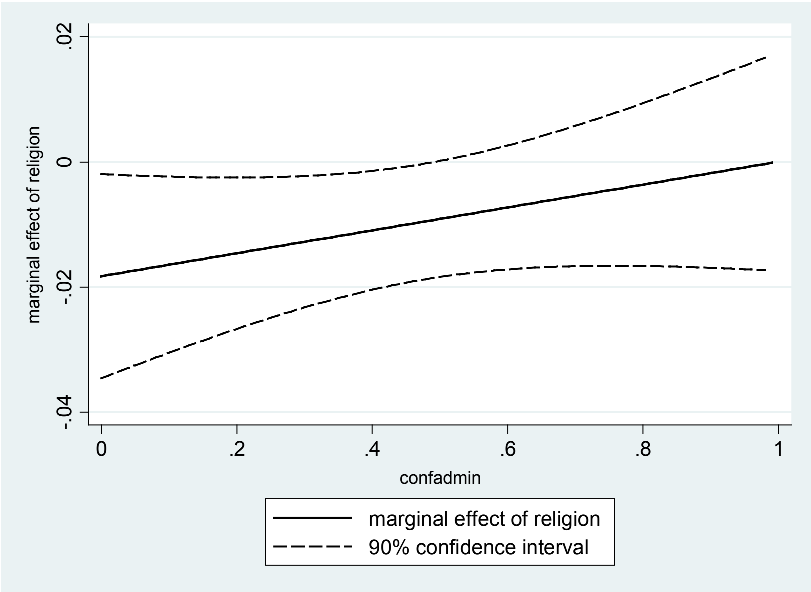
Table 9: Religiousness, governance quality and attitudes toward government intervention

dep. variable:	**government intervention attitude**					
	(1)	(2)	(3)	(4)	(5)	(6)
quality indicator:	no	legal	legal	confadmin	confadmin	confrel
religious	**-0.004**	**-0.003**	**0.057**	**-0.006**	**-0.007**	**0.038**
	[-0.007]	[-0.006]	[0.103]	[-0.011]	[-0.013]	[0.069]
	0.459	0.543	0.095	0.298	0.499	0.024
quality indicator		**0.094**	**0.139**	**0.042**	**0.040**	**0.189**
		[0.056]	[0.083]	[0.054]	[0.052]	[0.139]
		0.337	0.196	0.000	0.003	0.000
religious X quality			**-0.077**		**0.002**	**-0.093**
			[-0.111]		[0.003]	[-0.097]
			0.083		0.857	0.002
confcomp	**-0.084**	**-0.086**	**-0.086**	**-0.100**	**-0.100**	
	[-0.110]	[-0.112]	[-0.112]	[-0.130]	[-0.130]	
	0.000	0.000	0.000	0.000	0.000	
N	107431	106579	106579	106348	106348	106348
R-sq. (adj.)	0.138	0.139	0.139	0.141	0.141	0.138

Fixed effects OLS with standard errors adjusted for clustering at the country level. For each estimate, standardized beta-coefficients are reported in square brackets, followed by the cluster-robust p-value. Individual control variables: Gender, income level, education level, health status, employment status (not reported). Macro control variables: unemployment rate, GDP per capita (not reported). Constant, country and survey wave effects not reported.

Figure 9: Marginal impact of religiousness on income equalization attitude conditional on absolute (panel A) and relative confidence in administration (panel B)

Panel A (equation 5)



Panel B (equation 6)

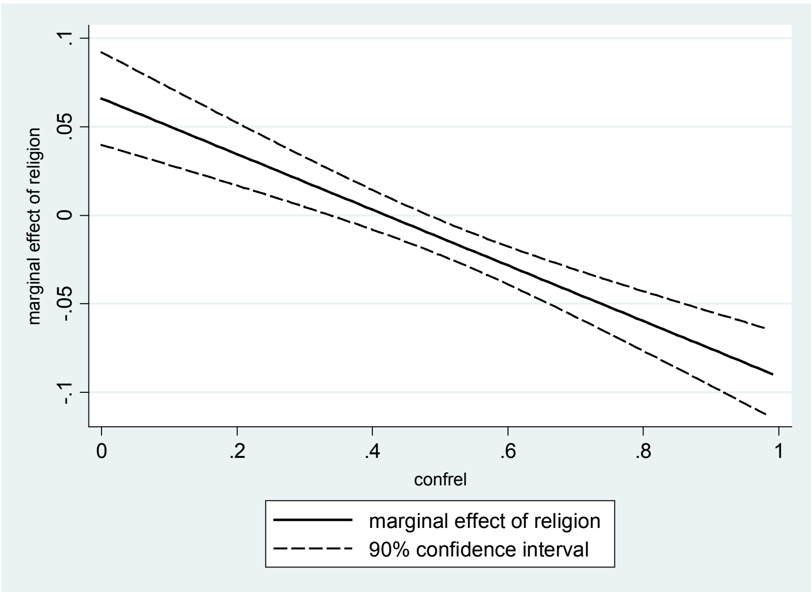
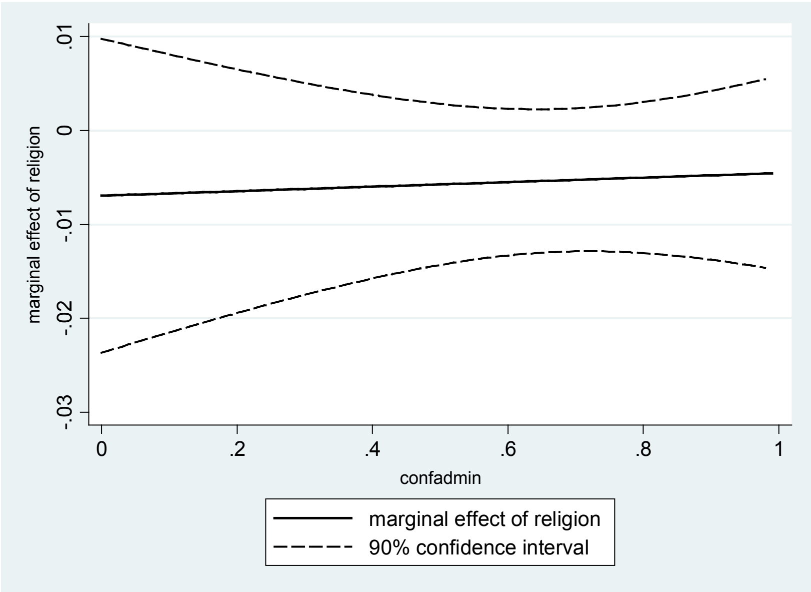
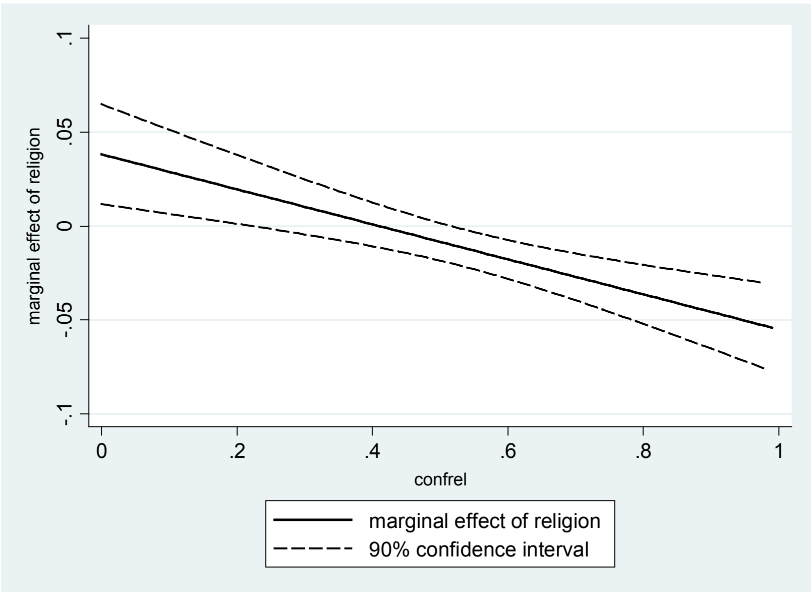


Figure 10: Marginal impact of religiousness on government intervention attitude conditional on absolute (panel A) and relative confidence in administration (panel B)

Panel A (equation 5)



Panel B (equation 6)



4.5 Ideology, governance quality and Welfare State attitudes

Individual views about the proper role of the state are mirrored frequently in political ideologies. Left-leaning people are conjectured to be more pro-income redistribution, more pro-government intervention and more market-skeptical (Lipset 1983). If left vs. right ideological convictions are primarily determined by Welfare State attitudes and beliefs about the proper role of the state, it would not make sense to employ ideological conviction as an additional explanatory variable, as it would only measure a kind of tautology: Left wingers are then - *by definition* - supportive of redistribution, while political right-wingers are not – again *by definition*.

This reasoning however needs some qualifications. Politically more right-leaning people should not a priori be expected to be opposed to more Welfare State services and income redistribution. On the one hand, a classical conservative may be skeptical toward a dominating role of government in the economy, at least as regards detailed state interventions. On the other hand, right-wing voters can similarly be assumed to be in favor of pro-poor redistribution and intervention, as these are often central elements of an economic populism of nationalist parties (Derks, 2004).[35] Seen from this standpoint, to adhere to a politically rightist ideology is not simply a shortcut for all anti-interventionist/anti-redistribution preferences.

To address this possible relationship, we re-estimated all regressions for income equalization and government intervention attitudes and all informal institutions, but including additionally an indicator for self-assessed political position. Political ideology is measured by WVS/EVS question e033, which reads "*In political matters, people talk of 'the left' and 'the right'. How would you place your views on this scale, generally speaking?*" We recoded answers, which were given originally on a 1-10 point scale to a 0-1-scale, where higher values indicate a more left-wing orientation.

To proxy governance quality we employ our *confrel*-measure of perceived administrative quality in relation to perceived confidence in major companies, as this proved to be the most stable and best performing indicator for governance structures in our context.

[35] In an experimental study, Fehr, Naef and Schmidt (2006) for example find that political attitude has virtually no effect on social preferences.

Table 10: Welfare State attitudes and informal institutions: Controlling for political ideology

Dependent variable:	**income equalization attitude**			**government intervention attitude**		
	(1)	(2)	(3)	(4)	(5)	(6)
left ideology	**0.226**	**0.224**	**0.228**	**0.151**	**0.152**	**0.151**
	[0.169]	[0.168]	[0.171]	[0.179]	[0.179]	[0.183]
	0.000	0.000	0.000	0.000	0.000	0.000
core belief:						
trust in people	**-0.038**			**-0.042**		
	[-0.061]			[-0.106]		
	0.004			0.000		
life control		**-0.118**			**-0.101**	
		[-0.091]			[-0.122]	
		0.000			0.000	
religious			**0.075**			**0.043**
			[0.087]			[0.078]
			0.000			0.003
confrel	**0.128**	**0.116**	**0.226**	**0.106**	**0.091**	**0.171**
	[0.060]	[0.055]	[0.106]	[0.079]	[0.067]	[0.127]
	0.000	0.000	0.000	0.000	0.000	0.000
***core belief* X confrel**	**0.082**	**0.068**	**-0.136**	**0.075**	**0.067**	**-0.075**
	[0.072]	[0.035]	[-0.090]	[0.104]	[0.054]	[-0.078]
	0.001	0.078	0.000	0.000	0.011	0.002
N	95610	97062	98128	89713	91038	92048
R-sq. (adj.)	0.118	0.122	0.119	0.172	0.177	0.174

Fixed effects OLS with standard errors adjusted for clustering at the country level. For each estimate, standardized beta-coefficients are reported in square brackets, followed by the cluster-robust p-value. Individual control variables: Gender, income level, education level, health status, employment status (not reported). Macro control variables: unemployment rate, GDP per capita (not reported). Constant, country and survey wave effects not reported.

Controlling for ideology reduces sample size by around 10 percent as self-assessed political position in the right-to-left spectrum has not been a subject question in all surveys. With respect to the ideology variable we find the expected result: people who locate themselves on the political left are more pro income equalization and more pro government intervention. The effects are particularly strong; the standardized beta coefficients are 0.17 to 0.18 and always significant at a 1%-confidence level.

Including a measure for political ideology does not affect any of our results for the informal institutions and interaction effects. Trust in people has a positive impact on income equalization and on government intervention attitudes only at higher levels of perceived (relative) quality of public administration; life control is negatively associated with both Welfare State attitudes, but the effect is mitigated by a higher (relative) quality of administration. Also, the results for religiousness are confirmed. At low levels of perceived governance quality increased religiousness is associated positively both with preferences for income equalization and government intervention; at high (relative) quality, the correlation is negative.

5 Conclusions

The main purpose of the paper was to identify key informal institutions determining a demand for the Welfare State within the context of the perceived quality of a country's institutional framework. Besides narrow individual self-interest, Welfare State attitudes are usually shaped by relatively stable cultural and social norms, conventions, moral values, or personal traits. The paper identifies key informal institutions (core beliefs) determining personal support for the Welfare State, and analyzes their interrelation with the perceived quality of a country's formal institutional framework. This concept is in accord with Douglass North's conception of the importance of compatibility between formal and informal institutions. The main case is that people are willing to confer an important role to government only if that is in line with their core beliefs. To analyze preferences we followed a comprehensive concept of the Welfare State, measuring attitudes as regards its two basic roles, income redistribution and government intervention.

Both the literature focused on the relationship between informal institutions and economic growth, and the literature dealing with cultural factors of Welfare State size point out the importance of social trust. However, from our empirical findings we can draw a conclusion that generalized trust in people is probably not the most appropriate concept for an analysis of people's attitudes toward the Welfare State since it matters only 'conditionally'. According to our results, trust in people is generally associated with a higher support for redistribution and government intervention only if perceived quality of administration is high and confidence in companies is low.

Therefore, we would rather suggest employing the concept locus of control in order to identify main core beliefs as a driver of Welfare State attitudes. Here, we can distinguish between two basic modes: internal and external locus of control. We consider internal locus of control to be a general way of thinking which is characterized by strong features of individualism such as self-confidence, initiative and optimism. Thus, such a belief in oneself is in fact a general informal institution seriously influencing human behavior. Within external locus of control, we propose existence of two general ways of thinking: belief in God and belief in government. Both are characterized by a conviction that outcomes are not consequences of personal effort and skills.

Internal locus of control, being expressed through the variable Life control from WVS, seems to be a powerful determinant in terms of both attitudes toward government intervention and income redistribution. Life control is strongly negatively related to attitudes for income equalization at high levels of statistical significance across all model specifications. Similarly, it shows strongly negative relationship to government intervention attitudes, where significance never drops below a 5%-level. Analyzing conditional effects, among people who do not believe in ability to control their own lives, both a high perceived quality of public administration and low confidence in major companies enhance preferences for redistribution and intervention.

As regards the analysis of external locus of control, we focus particularly on religiousness or belief in God. Nevertheless, results are ambiguous. People who assert themselves as religious are less favorable toward income equalization. This result indicates a proximity to the substitution theory between religion and state as two possible types of insurance against adverse events. Concerning interaction terms, variation in public administration quality surprisingly does not appear to have an impact on the relationship between religiousness and income equalization preferences. However, religious people seem to be substantially less supportive of redistribution and government intervention if confidence in major companies (as compared to confidence in administration) is high.

To test robustness of our results, we also employed a variable for the political ideology of a respondent. However, we are faced with the problem that Welfare state attitudes may be a more or less direct synonym of ideological convictions. Both variables may therefore measure a similar belief. For that reason, we use political ideology only as an additional control variable for sensitivity analyses. We find that, as expected, people who claim to be political 'left-wingers' also report a significantly more positive view on income equalization and government intervention. Nevertheless, results for social trust, life control, and religiousness are not affected by including this additional control.

For sure, an analysis of both modes of external locus of control should remain topics for future research. Regarding religiousness, among others, one may intend to test a hypothesis on the importance of church-state separation inspired by Chen and Lind (2007): European countries with low religiosity and low church-state separation tend to have expanded Welfare States.

Emphasizing the importance of locus of control as the most important informal institution determining Welfare States preferences, we can highlight some policy relevant conclusions toward the sustainability of Welfare States in Europe in a long-term perspective. Assuming that European Welfare States face the mentioned double challenge, it is easy to imply that they need to be reformed. Nevertheless, even as regards formal institutions, it is widely accepted that it is rather difficult to transform them in a substantive way.

Rigidity could be even more problematic in case of informal institutions. E.g. Jütting (2003) claims that the frequency of changes of tradition, social norms and customs is no fewer than in order of centuries; or in times of shocks and crises. More recently, Spolaore and Wacziarg (2013) yet emphasize that with respect to these informal institutions "persistence does not mean perfect, deterministic persistence. [...] while long-term history matters, there is much scope for variations, exceptions and contingencies."

In our paper, we propose belief in control over one's own life as a general code of thinking highly impacting the attitude toward government intervention and income equalization. Belief in oneself, or more generally, most behavioral traits, are determined by a knotty mix of factors being formed mainly in childhood, which are in part genetically and socially transmitted, partially transferable between parents and children and so on (Verme, 2009). Therefore, informal institutions can hardly be changed by operating public policies. If one wants to impact on people's attitudes, and thus, to affect Welfare States demand and acceptance of reforms, probably the most meaningful strategy is to focus on education systems and (complementarily) on social policy in a long term perspective. In a society with a higher share of independent, self-confident, active people it is easier to introduce reforms which require a substantial overhaul of the Welfare State that sets the focus more on personal responsibility and provision.

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Annex Table A1: Welfare State attitudes, country averages 1990s and 2000s

country	code	Income equalization attitudes		Government intervention attitudes	
		1990s	2000s	1990s	2000s
Australia	AUS	0.49	0.48	0.33	0.39
Austria	AUT	0.55	0.72	0.27	0.36
Belgium	BEL	0.47	0.48	0.35	0.40
Bulgaria	BGR	0.44	0.36	0.39	0.43
Canada	CAN	0.36	0.49	0.27	0.36
Croatia	HRV	0.60	0.63	0.36	0.41
Cyprus	CYP	.	0.54	.	0.44
Czech Republic	CZE	0.41	0.58	0.33	0.39
Denmark	DNK	0.39	0.34	0.32	0.36
Estonia	EST	0.36	0.45	0.43	0.44
Finland	FIN	0.55	0.59	0.34	0.39
France	FRA	0.56	0.54	0.36	0.42
Germany	DEU	0.44	0.63	0.32	0.39
Greece	GRC	.	0.61	.	0.44
Hungary	HUN	0.55	0.60	0.42	0.48
Iceland	ISL	0.48	0.51	0.29	0.35
Ireland	IRL	0.42	0.52	0.35	0.35
Italy	ITA	0.45	0.45	0.39	0.44
Japan	JPN	0.49	0.45	0.48	0.44
Latvia	LVA	0.35	0.38	0.41	0.44
Lithuania	LTU	0.47	0.51	0.39	0.42
Luxembourg	LUX	0.37	0.40	.	0.38
Malta	MLT	0.24	0.37	0.37	0.33
Netherlands	NLD	0.43	0.47	0.38	0.40
New Zealand	NZL	0.52	0.51	0.36	0.33
Norway	NOR	0.48	0.48	0.35	0.37
Poland	POL	0.36	0.45	0.45	0.48
Portugal	PRT	0.61	0.54	0.39	0.41
Romania	ROM	0.50	0.65	0.34	0.35
Slovakia	SVK	0.44	0.53	0.44	0.39
Slovenia	SVN	0.58	0.66	0.38	0.41
South Korea	KOR	0.45	0.39	0.40	0.50
Spain	ESP	0.54	0.53	0.45	0.49
Sweden	SWE	0.42	0.51	0.30	0.35
Switzerland	CHE	0.58	0.65	0.25	0.36
United Kingdom	GBR	0.46	0.51	0.38	0.33
United States	USA	0.44	0.43	0.26	0.33
mean		0.46	0.51	0.36	0.40

Source: Own calculations based on Word Values Survey/European Values Study (var. years)

Annex Table A2: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Welfare State attitude					
income equalization attitude	165138	0.490	0.313	0	1
government intervention attitude	147708	0.382	0.197	0	1
Informal institution					
trust in people	162098	0.342	0.474	0	1
life control	162338	0.652	0.241	0	1
religiousness	164784	0.500	0.353	0	1
left ideology	135831	0.510	0.229	0	1
Perceived governance quality					
confadmin	162879	0.454	0.250	0	1
confcomp	148456	0.435	0.256	0	1
confrel	145199	0.510	0.142	0	1
Individual controls					
female	168875	0.533	0.499	0	1
age	168443	45.640	17.225	15	108
retired	165143	0.211	0.408	0	1
health status	141197	0.306	0.231	0	1
income low	168922	0.171	0.377	0	1
income high	168922	0.167	0.373	0	1
unemployed	165143	0.056	0.229	0	1
education low	168922	0.233	0.423	0	1
education high	168922	0.176	0.381	0	1
Macro controls					
legal quality	110	0.774	0.123	0.484	0.952
GDP per capita (log.)	113	10.014	0.542	8.532	11.287
unemployment rate	108	0.068	0.036	0	0.206

Source: World Values Survey/European Values Study, except for *legal quality* (Gwartney, Lawson, and Hall, 2012; *GDP per capita* (Heston, Summers, and Aten, 2012) and *unemployment rate* (Eurostat AMECO database).

Does Social Cohesion Really Promote Reforms?

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Does Social Cohesion Really Promote Reforms?

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Abstract

This paper investigates whether social cohesion makes economic reforms more likely. First, we investigated whether social cohesion is a coherent concept by using a principal-component factor (PCF) analysis covering 16 indicators used to measure social cohesion in the previous literature for 40 different countries. The results suggested that in fact social cohesion is a multidimensional concept, consisting of no less than five orthogonal components or distinct dimensions, which we labeled social divisions, modern values, traditional nationalism, institutional commitment, and fairness as merit. The dimensions are then examined in relationship with economic reform in a panel regression framework. Results show that most dimensions of social cohesion do not in fact influence reform capacity. However, views of fairness based on merit, in contrast to equality, and to some extent social divisions, are found to have a positive effect on economic reforms. The results go against the previous literature, challenging the prevailing view of social cohesion as being unambiguously beneficial to economic reform.

Keywords: social cohesion, welfare state, reform, economic freedom

JEL-codes: D02 • O17 • O43 • P00 • Z13

1 Introduction

The concept of social cohesion has come into fashion in recent years, notably among European policy-makers. The European Union has made it part

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of its treaties (Art. 3 TEU, art 174-175 TFEU), the French and British governments have assigned ministerial responsibility to its promotion, while the Canadian government has sponsored research on the topic (Jenson 1998, Beauvais and Jenson 2002). Moreover, social cohesion has received attention from other international organisations such as the OECD (2011a), the World Bank (2012) and the Council of Europe (2005). Furthermore, as we shall see, research has been produced by academic scholars in sociology, economics and political science.

Why this interest? One reason is a concern about the stability and unity of political society, which is shared by contemporary liberal thinkers such as Rawls, Kymlicka, and Douglas (Kukathas 1996 p.96). For example, Rawls (1971 p.527) refers to a well-ordered society as a "social union of social unions", Habermas meanwhile asserts that a new model of social cohesion is needed and suggests that the sense of community in a democratic community should be founded on the support of a system of constitutionally established rules (1984, 2001). Another reason is the wide-spread view of social cohesion as a way to promote the social acceptance of economic reforms (Ritzen 2000; Easterly et al. 2006; Heller 2009), the general idea being that in socially cohesive societies, with high levels of horizontal and vertical solidarity, it would be easier overcome reform resistance. Economic reforms aimed at enhancing growth and competitiveness are no doubt sorely needed in many welfare states in the ongoing European sovereign-debt crisis.

In fact, efficiency-enhancing reforms are often postponed until an economic or political crisis occurs (Campos et al. 2009). There are several reasons for this postponement, be it because of interest groups with the ability to block institutional changes (Alesina and Drazen 1991; Alesina et al. 2006; Martinelli and Escorza 2007), other political barriers put up by powerful minority groups (Olson 1982; Rodrik 1996) or uncertainty of distributional outcomes of reforms (Fernandez and Rodrik 1991; Cason and Mui 2005). These problems are further aggravated by cognitive biases. According to Kahneman and Tversky (1979), people tend to have a negativity bias in the sense that they react disproportionally negatively to losses in welfare (compared to increases). The status quo tends to work as reference point from which changes are evaluated. As a consequence people have a tendency to be willing to sacrifice more to avoid losses than to make improvements (Baumeister et al. 2001; Rozin och Royzman 2001; Vaish et al. 2008).

If social cohesion can overcome or at least mitigate these reform obstacles, then clearly it is a subject worth studying. This is also what motivates the few previous studies that exist on the link between social cohesion and economic reform (Ritzen 2000; Easterly et al. 2006; Heller 2009). These three studies define social cohesion in a similar manner, and agree on a way to measure the concept that is rather narrow. In contrast, the broader literature on social cohesion shows no such agreement. In fact, while the interest in social cohesion is broad, there is little agreement on what the concept actually means (Bernard 1999). It has even been called a "largely ill-defined term" (Chan et al. 2006, p. 274). This has in turn caused a similar ambiguity concerning how social cohesion should be measured empirically (Bruhn 2009, p. 31, 63), perhaps most notably whether it should be seen as a one-dimensional or a multidimensional concept.

In light of these ambiguities it is difficult to evaluate previous research linking social cohesion to economic reform. This motivates the attempt of this paper to investigate whether social cohesion really promotes reforms. We do this in two steps.

First, we investigate whether social cohesion is a coherent concept by using a principal-component factor (PCF) analysis covering 16 indicators used to measure social cohesion in the previous literature. Data includes information on 30 813 individuals from 40 countries, where a majority (60 %) are members of the OECD, between 1990 and 2009. The results suggest that in fact social cohesion is a multidimensional concept, as no less than five orthogonal components or distinct dimensions emerged from the PCF. Based on their respective loadings on the 16 indicators, we label these dimensions social divisions, modern values, traditional nationalism, institutional commitment, and fairness as merit. Only the first of these dimensions, social divisions, corresponds to the measurements used in the previous literature on the reform link, which further underscores the need for a more thorough analysis. Using a complementary cluster analysis, we find at least five "models of social cohesion", i.e. groups of countries characterized by their varying emphasis on the five dimensions found in the factor analysis.

Second, we study to what extent social cohesion, or rather the components of the concept obtained from the PCF, affects a country's capability of reforms. We do so by regressing economic reforms, quantified as a five-year change in the Economic Freedom of the World Index, on each of the five dimensions, in a panel spanning 1990-2009. We consider estimations with fixed effects and a probit model. Our results indicate that, in fact, most dimensions of social cohesion do not influence reform capacity, and that the relationships that do exist are not what one would expect.

Fairness as merit is found to have a significant and positive effect on economic reforms, regardless of whether we use a fixed effects or probit model. Social divisions is also found to be positive and significant in both models. We also add interaction variables to the model, to assess how the five dimensions of social cohesion shape a country's response to an economic crisis. We could not find any clearcut pattern when interpreting these results, suggesting that social cohesion is of a limited value to undertake reforms in the event of a crisis.

The results go against the previous literature, challenging the prevailing view of social cohesion as being unambiguously beneficial to economic reform. Most notably, the social divisions dimension, which encompasses all the indicators of social cohesion used in the previous literature on the reform link, is shown to have either an insignificant or an unexpected positive effect on economic reforms. That views of fairness as merit is found to have a positive effect is also surprising, given that it is in contrast to the egalitarian view of social cohesion suggested by many authors (Hulse and Stone 2007).

The remainder of this paper is structured as follows. In section 2 we examine existing literature on social cohesion and its link to reforms. In section 3, we demonstrate how principal-component factor analysis of cross-country can be used to disentangle the several dimensions of social cohesion. In section 4, we test whether the dimensions found can explain reforms and if countries who are more socially cohesive are more prone to undertake economic reforms after economic crises. Section 5 summarizes and draws conclusions.

2 Social cohesion: A contested concept

The intellectual origins of the term social cohesion can be traced to Émile Durkheim, who saw it as a question of loyalty and solidarity within a social community: a mechanical solidarity based on likeness, and an organic solidarity based on the interdependence created by division of labor (Moody and White 2003; Green et al. 2009; Dickes et al. 2010). The current meaning of the concept is however a disputed issue. For example, social cohesion has been defined as "societal goal dimensions" (Berger-Schmitt 2002), as an individual commitment to "stick together" within a country (Chan et al. 2006), and as a framing concept of up to six dimensions (Jenson 1998, Beauvais and Jenson 2002).

The ambiguity concerning the meaning of social cohesion motivates the question whether the concept has any substance, despite its current prominence in policy discussions. Bernard (1999) points out that social cohesion "presents the characteristic signs of a quasi-concept", and calls for criticism and deconstruction. His own conclusion - that social cohesion by necessity must be linked to inequality and social justice – has been criticized for focusing on the causes of social cohesion, rather than on the phenomena itself (Friedkin 2004; Chan et al. 2006; Green et al. 2009).

One way out of the confusion is to suggest that there could be several models, or regimes, of social cohesion. A few attempts have been made to identify such regimes, both theoretically and empirically, as demonstrated by table 1.

Table 1: Dimensions of social cohesion

Author	e/t*	N**	Dimensions/regimes of social cohesion
Jenson (1998)	t	5	Belonging/Isolation, Inclusion/Exclusion, Participation/Non-Involvement, Recognition/Rejection and Legitimacy/Illegitimacy
Bernard (1999)	t	6	Character of relation: Formal and Substantial Sphere of activity: Economic, Political and Sociocultural
Berger-Schmitt (2002)	e/t	2	Goal-dimensions: Inequality dimension and social capital dimension
Chan et al (2006)	t	2	Horizontal and vertical
Green et al (2009); Green & Jaanmat (2011)	e/t	4	Liberal, Social Market, Social Democratic and East Asian
Dickes et al (2010, 2011)	e/t	5	Character of relation: Formal and Substantial Sphere of activity: Political and Sociocultural
Janmaat (2011)	e	2	Solidarity and Participation
OECD (2011a)	t	3	Social inclusion, social capital and social mobility
Dimeglio et al (2012)	e/t	4	Participation, Trust and Respect for Diversity /four empirical regimes

Note: *e refers to empirical studies and t to theoretical studies. **N refers to the number of dimensions.

Green et al. (2009), using a combination of factor and cluster analysis on a sample of 20 OECD-countries, find four distinct and internally relatively coherent clusters of social cohesion: a liberal, a social democratic, a social market, and an East Asian regime. Yet in their measure of social cohesion they include such components as wage regulation, level of employment protection, state involvement and size of welfare state, thereby blurring the borders between welfare state regimes and models of social cohesion.

Dickes et al. (2010), building on theoretical constructs of Bernard (1999) and Chan (2006), argue that previous research have failed to empirically verify a multidimensional measure of social cohesion that is comparable between European countries. To fill this gap, data from the 1999 European Values Survey is analyzed using multidimensional scaling as well as confirmatory factor analysis. Their findings show coherence with the theoretical construct used and indicate four components of social cohesion: trust, solidarity, political participation and social participation. These are in turn reduced to a formal/attitudinal (trust and solidarity) and a substantial/behavioral (political and social participation) dimension, with distinct regional patterns.

Janmaat (2011) does not rely on any particular theoretical construct, instead he seek to evaluate to what extent constructs suggested by others could be verified empirically. He discusses whether social cohesion is determined by socio-economic development (the universalist perspective) or by particular geographical, historical and cultural traits (the particularist perspective). Using data for 70 countries from the 1999 World Value Survey, the UN and the World Bank, Janmaat finds two different models of social cohesion, with regionally unique patterns. The first model, called solidarity, is characterized by high trust, low inequality and high social order. The second model, called participation, scores high on political engagement, national pride and (to some extent) tolerance. Janmaat argues that the findings support both the universalist and the particularist perspectives.

Additional disagreement concerns what level of social interaction the concept applies to. It has been argued that social cohesion is primarily a property of local communities (Kearns and Forrest 2000; Rajulton et al. 2007), of nations or countries (Chan et al. 2006; Janmaat 2011), of transnational communities (European Commission 2012), or of any kind of group without reference to size (Friedkin 2004; Moody and White 2003).

Another dimension of the confusion is the fact that social cohesion is sometimes used interchangeably with other concepts, viz. social capital and informal institutions. For example, in a OECD report, Foa (2011) states that social cohesion is a feature of society's informal institutions, which is furthermore said to be examined in the literature on social capital. Stiglitz (2000 p.60) claims that social capital is "partly the social glue that produces cohesion". Easterly et al. (2006) stress that while social capital is increasingly being defined at the micro-level, social cohesion is a more appropriate term when the concern is with features of society as a whole. The view that social capital is a phenomenon at the micro-level while social cohesion is a macro-level concept is also supported by Bruhn (2009, p.63) and Dayton-Johnson (2000, 2003).

Hulse and Stone (2007) do an overview of the literature and suggest that social cohesion as it is usually described takes at least three different meanings. First, it refers to the social relations of everyday life, incorporating some of the ideas around social capital. Second, social cohesion refers to the reduction of differences, cleavages and inequalities between groups of people and between people living in different geographical areas. Third, social cohesion is said to be more than the sum of these two dimensions, incorporating "a distinct cultural dimension, referring to the norms underlying the 'ties that bind' people together and which include a sense of common purpose, shared identity, common values such as tolerance of difference and diversity, and behaviors which reflect these."

The definitional diversity has in turn lead to confusion on how social cohesion should be measured. Table 2 is an overview of the indicators that have been either proposed or used in the previous theoretical and empirical literature. Attempts with a limited scope usually include some measure of interpersonal trust, institutional trust, and identity (Chan et al. 2006; Janmaat 2011). Attempts with a broader scope also include tolerance and common values (Jenson 1998; Green et al. 2009), political and civic participation, and solidarity (Berger-Schmitt 2002; Dickes et al. 2010). More all-encompassing attempts include outcomes or indirect measures of social cohesion such as economic inequality and ethnic fractionalization (Easterly et al. 2006; Heller 2009), poverty (Hadjiyanni 2010; OECD 2011a), social order (Council of Europe 2005; Janmaat 2011), social mobility (Council of Europe 2005; OECD 2011a), equality in access to education (Dickes et al. 2010; Hadjiyanni 2010), equality in education (Berger-Schmitt 2002; Heller 2010), and quality of life (Berger-Schmitt 2002; Hadjiyanni 2010), to mention just the more common ones.

This overview suggests that the definition and measurement of social cohesion is far from settled issues. Granted, there is bound to be much discussion concerning any popular concept, notably in such a vast literature. The three articles that consider the relationship between social cohesion and economic reforms, which we now turn to, nevertheless stand out from the rest of the literature on social cohesion for their unanimity as regards the definition and measurements of social cohesion.

Table 2: Indicators of social cohesion

Indicator	Chan et al. 2006	Green et al. 2009, 2011	Janmaat 2011	Dickes et al. 2010, 2011	Dimeglio et al. 2012	Jenson 1998	Hadjiyanni 2010	Easterly et al. 2006	Heller 2009	Berger-Schmitt 2002	Council of Europe 2005	OECD 2011a, 2011b	European Commission 1996
Interpersonal trust	•		•		•		•	•				•	
Confidence in institutions	•		•	•	•	•					•	•	
Tolerance		•	•		•	•						•	
Common values		•	•			•							
Sense of belonging	•		•			•							
National pride	•		•										
Civil society participation	•	•	•	•	•	•	•			•		•	
Political participation	•	•		•	•	•				•	•		
Political engagement			•	•									
Solidarity/willingness to help	•			•						•			
Fairness (merit/equality)		•											
Freedom vs equality		•											
Gender equality		•	•								•		
Quality of life							•			•			
Perception of health											•		
Social mobility											•	•	
Traditional vs rational/secular values			•										
Survival vs self-expression values			•										
Economic inequality/Gini-coefficient		•	•			•		•	•		•	•	•
Ethnic fractionalization		•						•	•				
Social order: homicide and/or violent crime rates		•	•							•	•		
Reduction of disparities													•
Education									•	•	•		
Social relations				•									
Wage regulation		•											
Employment protection		•											
Welfare state (size)		•											
Social hierarchy		•											
State involvement	•												
Equity: health										•	•		
Equity: employment						•	•			•	•		
Equal opportunities										•			
Dignity of elderly											•		
Income sufficiency							•			•	•	•	
Shared knowledge (of rights)											•		
Pro- and anti-social behavior												•	
Voter-turnout												•	
Family commitment										•			
Citizen commitment										•			
Equality: housing										•			
Equality: transport										•			
Equality: leisure, media. culture										•			
Environment: disparities										•			

2.1 Social cohesion and economic reforms

Even if social cohesion is often seen as a desirable goal in itself (Heyneman, 2000; Green et al, 2009), our main interest in this paper is whether social cohesion promotes or facilitates economic reforms. The intuition is quite straightforward: various forms of solidarity should make it more or less easy to overcome different barriers to reform, and perhaps particularly so in times of crisis. Heller (2009) even argues that the 'crisis hypothesis', i.e. that economic crisis break down gridlocks and facilitate economic reforms (Alesina and Drazen 1991, Fernandez and Rodrik 1991, Drazen and Grilli 1993, and Pitlik and Wirth 2003), lends indirect support to the social cohesion approach. The rationale is that if (little) social cohesion restrains reform capacity, a crisis could undermine reform resistance and hasten institutional change.

Research on the link between social cohesion and economic reform is nevertheless sparse. Ritzen et al. (2000), Easterly et al. (2006), and Heller (2009) investigate the connection between measures of social cohesion and institutional formation and quality. Interestingly enough, there are many similarities to their approaches.

Ritzen et al. (2000) define social cohesion as "a state of affairs in which a group of people (delineated by a geographical region, like a country) demonstrate an aptitude for collaboration that produces a climate for change". Hence, social cohesion influences the "room for maneuver" and at least in part institutional quality, whereby countries with high social cohesion and effective public institutions should display better development outcomes. The authors test this hypothesis using a three-step cross-country regression for institutional quality and economic growth rates. Social cohesion is measured in terms of income inequality and ethnic fractionalization, while institutions are measured in various ways. The results support the hypothesis that social cohesion so defined influences institutional quality which in turn affects economic growth rates.

Easterly et al. (2006) argue that the constraints facing politicians and policymakers to a large extent are determined by the degree of social cohesion in a given country, which they define as "the nature and extent of social and economic divisions within society". In introducing and implementing reforms it is essential to have a certain degree of confidence in place, such that individuals can trust that government policies will compensate short term losses with higher long term gains. In this view, social cohesion shapes attitudes about reforms, and high levels of social cohesion are needed to move away from the status quo.

Like Ritzen et al. (2000), they measure social cohesion in terms of economic inequality and ethnic fractionalization, and perform three-stage cross-country regressions with 82 countries on institutional quality and economic growth rates, with various measures of institutions. The results confirm the hypothesis that social cohesion influences institutional quality, which in turn influences economic growth.

Heller (2009) defines social cohesion as "those attributes that contribute to a breakdown of economic, social and political barriers to reform within a society". Drawing heavily on Easterly et al (2006), Heller argues that social and cultural dynamics influence the ability of policymakers to undertake reforms. Hence, social cohesion could, at least partially, determine institutional quality and maturity. Heller uses a two-equation cross-country regression model, similar to Easterly et al (2006), with 111 countries over eight years. Like Ritzen et al. (2000) and Easterly et al. (2006), she measures social cohesion as economic inequality and ethnic fractionalization, but also adds adult literacy to the list of indicators. Institutional quality is measured by "property rights & enforcement" and "law & order" indices from the Economic Freedom of the World Index and Ease of Doing Business from the World Bank. Heller's findings support the view of Easterly et al (2006) that measures of social cohesion substantially affect institutional development and hence impacts economic growth.

Several things are noteworthy concerning these contributions. First, the definitions of social cohesion proposed by Ritzen et al. (2000) and Heller (2009) are not unproblematic. In their view, especially in Heller's, social cohesion is by definition those attributes that contribute to a breakdown of barriers to reform. Hence, social cohesion will always be, by definition, beneficial for institutional reform. Thus, the notion of social cohesion becomes tautological.

Second, the authors make similar choices as regards measurements and procedures: all three studies use inequality and ethnic fractionalization as measures of social cohesion (Heller (2009) also includes adult literacy). This effectively puts them in the second category suggested by Hulse and Stone (2007). This rather narrow way of measuring social cohesion presupposes a consensus concerning the concept which simply is not there in the broader literature. Nor is it clear why these indicators are used rather than for reasons of data availability.

Third, and in relation to the previous point, all three studies treat social cohesion as a one-dimensional concept, even though much of the existing literature accounted for above suggests that this not the case. These caveats make it difficult to readily assess the findings concerning the link between social cohesion and economic reform. In the following sections we shall try to overcome these problems.

3 Analyzing social cohesion

We will undertake our analysis of social cohesion in two steps. First, instead of stipulating a unique definition of the concept, we adopt a pluralistic approach where we try to capture as many as possible of the meanings of social cohesion suggested in the previous literature. Chan et al (2006, p.280) argue that it is important to strive for minimality in scope when defining social cohesion. While sensible to this view, we wish to let the data decide what should be the minimum scope. We do so by undertaking principal-component factor analysis (PCF) on panel data, including a variety of different indicators that have been used in the previous literature[1]. In the next step, we study to which extent social cohesion, using the components of the concept obtained from the PCF, affects a country's capability of reforms.

If social cohesion is a coherent one-dimensional concept, as the previous authors investigating its relationship with reforms suggest, we would expect to find highly correlated variables that compose one single factor in the PCF. As indicated in a previous section, however, it has been suggested that social cohesion consists of several dimensions or regimes (see e.g. Dimeglio et al. 2012). If true, we would expect to find several independent factors that together can be argued to form a coherent concept of social cohesion.

3.1 Data and indicators

In the PCF we try to include as many of the variables as possible that have been used in the previous literature, as attested by table 1. The vast majority of the variables concern values and beliefs, but also societal and economical indicators. The data used in this part of the empirical analysis are hence drawn from several different databases.

Data regarding individuals' attitudes are drawn from a combined database of the World Values Surveys (WVS) and European Values Surveys (EVS) (World Value Survey Association 2009). The WVS/EVS-database is a large-scale, cross-national and longitudinal survey research program with a global scope. The database consists of five waves of surveys, conducted between 1981 and

[1] Building on the PCF components, cluster analysis was employed to disentangle regimes of social cohesion. The result and the discussion are available in appendix A1.

2008. From these databases we gather the following measurements: interpersonal trust, tolerance, institutional trust (in parliament), fairness based on merit or merit (in contrast to equality), economic equality versus inequality, national pride, political discussions, political demonstrations, quality of life, gender equality, traditional versus rational-secular values and survival versus self-expression values.

Due to limited availability in the WVS/EVS database, civic participation and political participation has been excluded from the analysis. We do not include the variables sense of belonging and social hierarchy in the factor analysis presented below since they did not have any substantial effect on the results. We furthermore choose not to include measures of wage regulation, employment protection, and size of the welfare state. The reason is that they will enter into the left hand side in the regression analysis in section 4. We do however choose to include a quality of life measurement, even though this also can be seen as an outcome variable. This is motivated by Sagiv and Schwartz' (2000) emphasis on the fact that a congruence between people's values and societal value system affects well-being, indicating that quality of life can serve as an indirect measure of social cohesion.

Data on the homicide rate (defined as murders per 100 000 citizens) is taken from the United Nations Office on Drugs and Crime's homicide statistics (2012). The variable measuring average years of schooling are from the International Human Development Indicators, produced by UNDP. The Gini-coefficient comes from the UN University's World Income Inequality Database. The measure of ethnic fractionalization and the measure of democracy (Freedom House / Imputed Polity) comes from the Quality of Government database.

The final sample used in the PCF includes information on 30 813 individuals for 40 countries worldwide, where a majority (60 %) are members of the OECD (see table A.2.1 in the appendix). For a full overview of the variables employed, see table A.2.7 in the appendix.

3.2 Dimensions of social cohesion

PCF reduces the dimensionality of a data set with a large number of interrelated variables, with a minimum of information loss (Jolliffe 2002). The method makes it possible to acquire the most important information from the data set while compressing the data and making it easier to describe. PCF produces a minimum number of orthogonal principal components explaining a maximum amount of the variance in the indicators. Components with an eigenvalue equal to or greater than 1 are retained. The components are rotated to make interpretation easier (Abdi and Williams, 2010).

Results from the rotated PCF are available in table 3. The analysis generates five factor dimensions which in total explain 53.7% of the variation in the data. This effectively excludes the possibility of social cohesion being a one-dimensional concept. We have interpreted and named the factors according to their loadings. In order of explanatory power they are: social divisions, modern values, traditional nationalism, institutional commitment, and fairness as merit. In general the pattern that emerges from the PCF differs from what has been suggested in previous studies. There are however common features between our dimensions and theoretical and empirical construct suggested in the past.

The first factor, which we label social divisions, explains 15% of the variance in the data and has high loadings on three indicators: homicide rate, gini-coefficient, and ethnic fractionalization. These indicators are indirect measures of individuals' attitudes, but even so should be relevant proxies for social divisions. The emphasis on these indicators puts the factor in the intersection between the inequality goal-dimension of Berger-Schmitt (2002) and the social order/social control dimension of Kearns and Forrest (2000). It should be noted that the three studies that previously investigated the link between social cohesion and economic reforms concerned themselves solely with measures with high loadings in this dimension.

The second factor explains 11.5% of the variance and has high loadings on social trust, tolerance, gender equality, life satisfaction, and self-expression values. We label this a modern values factor. These indicators all have to do with post-materialist values that are thought to be essential for stable democratic institutions (Inglehart 2000) and typically appear in economically advanced societies (Inglehart and Baker 2000). The factor overlaps several of the suggested dimensions in the previous literature, such as Berger-Schmitt (2002)'s social capital goal-dimension, Chan et al. (2006)'s horizontal dimension and Jenson (1998)'s belonging/isolation dimension. This modern values furthermore somewhat resembles Durkheim (1883)'s organic solidarity, based on interdependence created by division of labor. It does not, however, readily fit into any of the previous dimensions, but rather constitutes a more precise conception of social solidarity or cohesion based on modern values. It is not any kind of "horizontal solidarity" in a society, but one based on tolerance, gender equality, and self-expression. The correlation between real GDP and country/wave average scores on modern values is high (r=0.67). This suggests an empirical connection between modern values and economic development.

The third factor, which we label traditional nationalism, explains 11.3% of the variance and has a high positive loading on national pride, and a high negative loading on the traditional vs secular variable (which entails an emphasis on family and religious values, and respect for authority). While the modern values dimension resembles Durkheim's (1983) organic solidarity, the traditional nationalism somewhat resembles Durkheim's mechanical solidarity. These attributes are said to be most common in preindustrial societies, and coupled with a lack of political engagement (Inglehart and Baker 2000). The low loadings on political discussions, political demonstrations, and gender equality, combined with a positive score on institutional trust, reaffirm this view. Yet in our sample, the connection to economic development is absent (r=-0.03). This suggests that traditional values can be considerably resilient to the influence of economic development and other mass cultural changes. There is hence no reason why modern and traditional values cannot co-exist in a society, as argued by Huntington (1971).

The fourth factor explains 8.3% of the variance. It contains high loadings on institutional trust, political discussions and political demonstrations. We call this factor institutional commitment. It captures a more vertical dimension of social cohesion, but also has connections to the emphasis of participation in Janmaat (2011), Dimeglio et al (2012) and Jenson (1998) as well as the political dimension in several of the previous studies. It is interesting to note, however, that individuals do not just engage in the political sphere, but also trust the institutions, and therefore quite likely agree with the general political framework of society, much in line with Chan et al (2006)'s vertical dimension of citizen-state relations. This contrasts Janmaat (2011)'s finding of a negative relation between participation and trust in parliament.

The fifth factor, which we label fairness as merit, accounts for 7.7% of the variance. The factor captures attitudes about distributional justice, i.e. whether rewards should be based on merit or performance and an acceptance of larger income inequalities, in contrast to fairness as equality, with the attitude that incomes and rewards should be more equally distributed (Aristotle 1981; Rawls 1972; Barry 1981). High loadings on the variables fairness as merit may be incorporated under the horizontal dimension of Chan et al (2006)'s framework. However, one should emphasize that this dimension is distinct from modern values and traditional nationalism.

Table 3: Principal-component factor analysis

Factor analysis/correlation	Number of obs = 30813
Method: principal-component factors	Retained factors = 5
Rotation: orthogonal varimax (Kaiser off)	Number of params = 70

Factor	Variance	Difference	Proportion	Cumulative
Social divisions	2.39844	0.55819	0.1499	0.1499
Modern values	1.84026	0.03779	0.1150	0.2649
Traditional nationalism	1.80246	0.47801	0.1127	0.3776
Institutional commitment	1.32446	0.09998	0.0828	0.4604
Fairness as merit	1.22447	.	0.0765	0.5369

LR test: independent vs saturated: chi2(120) = 8.5e+04 Prob > chi2 = 0.0000

Variable\Factor	Social divisions	Modern values	Traditional nationalism	Institutional commitment	Fairness as merit	Uniqueness
Interpersonal trust	-0.197	0.4338	0.0291	0.3554	-0.0351	0.6447
Tolerance	-0.0074	0.5868	-0.1737	-0.1513	-0.2541	0.538
Confidence in inst. (parliament)	-0.0246	-0.0587	0.2888	0.5906	-0.2576	0.4973
Fairness (merit/equality)	-0.0851	-0.0528	-0.0373	0.0689	0.667	0.5389
Econ. equality vs inequality	0.067	0.056	0.0236	-0.0427	0.7007	0.499
National pride	0.0914	0.163	0.7708	0.0504	-0.0196	0.368
Political discussions	0.0291	0.0469	-0.1452	0.6046	0.2563	0.5447
Political demonstrations	-0.022	0.2376	-0.309	0.5505	0.0424	0.5427
Quality of life	-0.1692	0.5316	0.3913	-0.1955	0.0871	0.4898
Homicide rate	0.8486	-0.1045	0.0466	0.0576	-0.0445	0.2615
Gini-coefficient	0.846	-0.105	0.1589	-0.0932	-0.0114	0.2392
Ethnic fractionalization	0.7932	0.0526	0.0963	0.0135	0.0672	0.3541
Years of schooling	-0.366	0.1195	-0.0877	0.1948	0.2492	0.744
Gender equality	0.0937	0.5301	-0.299	-0.0856	0.0956	0.6043
Traditional vs rational/secular	-0.2828	0.0036	-0.7986	0.0776	-0.0003	0.2762
Survival vs self-expression values	-0.1454	0.7813	0.2252	0.217	0.0554	0.2675
Explained variance	15%	11.50%	11.30%	8.30%	7.70%	53.7 %

4 Social Cohesion and Economic reform

4.1 Definition of economic reform and descriptive statistics

We now turn to the question of how social cohesion, or rather the dimensions of the concept obtained in the analysis above, affect a country's capability of reforms. As mentioned, previous literature on the reform link has concerned itself solely with indicators pertaining to the social divisions dimension. Along with the realization that social cohesion is a multidimensional concept, however, comes the need for new analysis.

To study this question we include the five dimensions in a regression analysis framework, where we use changes in the Economic Freedom of the World Index (EFW), jointly published by Fraser and Cato Institute, as a proxy for reforms of economic institutions. EFW is a comprehensive measure for institutional quality with respect to a functioning market economy. It is the unweighted average of five components, reflecting a country's institutional quality with respect to size of government, legal structure and security of property rights, access to sound money, freedom to trade internationally, and regulation of credit, labor, and business. These five components are in turn constructed from several subcomponents, in total 42 in recent editions. EFW is normalized on a scale from 0 to 10, where higher values reflect better institutional quality. Today, the index has data points for every five years from 1970 to 2000, and annual data 2001-2009. The most recent editions cover 141 countries. Most countries do however not have time series stretching all the way back; only 54 countries have index-values in 1970.

The evidence points to a positive effect from institutional quality, as quantified by EFW, on important variables such as wealth and economic growth (Berggren, 2003; Doucouliagos och Ulubasoglu, 2006) and that institutional change in a free-market direction stimulates economic growth (de Haan et al. 2006). An increase in EFW can thus be interpreted as an institutional change in a free-market direction, while a decrease is an institutional change in the opposite direction (Pitlik, 2011).

Table 4 shows descriptive statistics for EFW 1980-2009. While the mean has steadily increased since 1980, the standard deviation increased until 1995 after which it has declined.

Table 4: EFW descriptive statistics

year	mean	max	min	sd	N
1980	6.19	8.03	4.27	1.02	28
1985	6.02	8.18	3.11	1.27	30
1990	6.37	8.43	4.00	1.34	31
1995	6.38	8.64	3.72	1.26	39
2000	6.88	8.45	4.70	0.89	39
2005	7.12	8.37	4.74	0.73	39
2009	6.98	8.15	4.23	0.71	39
Total	6.61	8.64	3.11	1.10	245

4.2 Regressions

To investigate whether social cohesion really promotes reforms and assess the importance of the five dimensions, controlling for the crises hypothesis, we begin by a baseline regression specification of the type,

$$\triangle efw_{i,t} = \alpha_0 + \alpha_1 SC_{i,t-1} + \alpha_2 X_{i,t-1} + \varepsilon_{i,t}, \tag{1}$$

where $\triangle efw_{i,t}$ is our proxy for economic reform, measured as a change in EFW from one time-period to another. $SC_{i,t-1}$is a variable vector containing each of the five dimensions of social cohesion; $X_{i,t-1}$is a vector of control variables (GDP-level and GDP-growth from Penn World Table-database (Heston et al. 2012), EFW-level which enters to account for catching up in economic policy reform and for policy persistence effects, and a dummy indicating whether the country experienced an economic crisis, gathered from Leaven and Valencia 2012); $\varepsilon_{i,t}$ is an error term; α_0 is a constant term, while α_1 and α_2 are parameter vectors. All explanatory variables are lagged one period to mitigate problems of reverse causality.

The error term

$$\varepsilon_{i,t} = \theta_i + \mu_t + \eta_{i,t} \tag{2}$$

is composed of a unit and a time fixed effect to account for unobserved heterogeneity, as well as an i.i.d. error term. The most popular way to account for unit fixed effects is a simple within group-transformation. This procedure however makes it difficult to estimate the impact of (almost) time-invariant variables. Moreover, the inclusion of a lagged dependent variable in the presence of unit fixed effects causes an endogeneity bias in short panels (Nickell 1981). An alternative to fixed effects is the System GMM-estimator developed by Blundell and Bond (1998) that deals with these problems by employing instrumental variables, but since we have so few observations this was not a suitable option[2]. We therefore employ fixed effects.

Results are available in table 5.[3] The baseline fixed effects model is in column I. In column II we undertake a probit estimation where the dependent variable takes the value 1 if there has been a significant positive change in the EFW, 0 otherwise. Finally, in columns III-VII we again use fixed effects, but in turn replace each of the five dimensions of social cohesions with dummy variables (SCvarQ2-SCvarQ4), that take the value 1 if the level of social cohesion is in a certain quartile, 0 otherwise. We do this in order to see if there are any significant non-linearities at play.

We see that EFW-level always has the expected negative sign (suggesting that countries with less economic freedom reform their economies faster).[4]The crisis variable meanwhile always has a negative effect on reforms when significant, which is in contrast to the crisis hypothesis. Furthermore, we see that social divisions has a positive effect when statistically significant, suggesting that in a society with greater social divisions it should actually be easier to undertake reforms. This result is in contrast to the previous literature on the reform link, i.e. the research of Ritzen et al. (2000), Easterly et al. (2006) and Heller (2009), where social divisions (measured by income inequality and ethnic

[2]We did however choose to undertake System-GMM and pooled OLS regressions on the baseline model. The results are available in table A.2.3 in the appendix. They do not differ substantially from the results presented in table 5.

[3]In table 5 we use the unweighted EFW-index, which is a composed measure of the averages of the sub-indexes of the EFW. To account for this weakness in the depedent variable we run a principal component factor analysis on the five sub-indexes, generating two factors. The first factor loads heavily on area 2-5 of the EFW (i.e on legal and property, sound money, trade and regulation) wheras the second loads heavily on area 1 (government). Factor scores, normalized on a 0-10 scale, were used as dependent variables in regressions. The empirical results from table 5 are essentially confirmed, nevertheless Fairness as merit seems to have a stronger effect on the first factor and Social divisions seems to have a stronger effect on the second. The results are available in table A.2.5 and A.2.6 in the appendix.

[4] Nevertheless, the EFW-level coefficient has a value close to one in equations (i), (iii), (vi), and (vii), suggesting that we may have a unit-root problem. Our panel is too small for a standard unit root test to be reliable, and we therefore employ the Fisher-type test developed by Maddala and Wu (1999) and Choi (2001). Based on the p-values of individual unit root tests, Fisher's test assumes that all series are non-stationary under the null hypothesis against the alternative that at least one series in the panel is stationary. The results show that when we employ the Fisher test to the fraser economic freedom index variable we can reject the null-hypothesis that all panels contains unit roots. The results from the test are availble in table A.2.4 in the appendix.

fractionalization) are shown to have a profound and negative effect on institutional quality and maturity. Modern values is never statistically significant, while traditional nationalism has a positive effect in the case probit specification. The effect from institutional commitment is also positive when significant. Fairness as merit, meanwhile, has a positive effect on reform capacity when significant, suggesting that countries with a more merit based view of fairness have an easier time undertaking reforms. The dummy variables (columns III-VII) are generally insignificant, suggesting that the importance of non-linearities is very modest. The interaction effects of each of the five dimensions (columns III-VII) suggest that none has much of an effect of making reforms in terms of crisis.

In summary, the results go against the previous literature, challenging the prevailing view of social cohesion as being unambiguously beneficial to economic reform. Most notably, fairness as merit is found to have a positive effect. This is surprising, as it contrasts the egalitarian view of social cohesion suggested by many authors. The social divisions dimension, which encompasses all the indicators of social cohesion used in the previous literature on the reform link, is shown to have either a non-existent or a positive effect on economic reforms.

Table 5: Regression results

	FE	Probit			FE		
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)
Interaction variable			social divisions	modern values	traditional nationalism	institutional commitment	fairness as merit
Freedom House / Polity (Imputed)	0.0515	0.149	0.02	-0.128	-0.0887	0.14	-0.0446
	(0.0659)	-0.192	-0.102	-0.104	-0.145	-0.219	-0.0896
EFW	-0.922***	-2.733***	-1.061***	-0.566	-0.681**	-1.081***	-1.131***
	(0.165)	-0.842	-0.258	-0.457	-0.262	-0.305	-0.214
Crisis	-0.570***	0.211	-0.625**	0.22	-0.412	0.139	-0.615*
	(0.142)	-0.707	-0.287	-0.322	-0.364	-0.422	-0.342
LogRGDP	5.688	1.135**	0.337	-0.0793	0.217	0.853	0.349
	(3.637)	-0.491	-0.679	-0.733	-0.974	-0.7	-0.538
5 year avg. RGDP growth	5.688	21.96*	5.681	7.499*	4.928	3.504	5.78
	(3.637)	-11.29	-4.273	-3.917	-4.581	-6.171	-4.065
Social divisions	1.369**	0.833***	-0.38		-1.137	-1.609*	-0.648
	(0.587)	-0.26	-0.772		-0.769	-0.843	-0.408
Modern values	-0.771	-0.473	1.757***	0.429		1.244***	1.138*
	(0.478)	-0.767	-0.478	-0.835		-0.335	-0.594
Traditional nationalism	0.599	1.701**	1.760**	0.049	0.596		0.896
	(0.427)	-0.76	-0.686	-1.235	-0.851		-0.583
Institutional commitment	0.552	0.295	0.624	1.144	0.433	1.358***	
	(0.542)	-0.775	-0.512	-0.74	-0.403	-0.476	
Fairness as merit	0.813**	1.899**		0.875	0.783	1.049	1.128*
	(0.361)	-0.931		-0.79	-1.035	-0.786	-0.642
SCvarQ2			0.0434	-0.98	-0.368	0.729	0.496**
			-0.216	-0.778	-0.382	-0.627	-0.197
SCvarQ3			0.0366	-0.231	-0.241	0.546	0.476**
			-0.134	-0.421	-0.336	-0.721	-0.189
SCvarQ4			-0.399	-0.882		0.556	1.193***
			-0.675	-0.543		-0.806	-0.323
Crisis* SCvarQ2			0.388	0.293	0.0835	-0.983**	-0.135
			-0.437	-0.685	-0.602	-0.399	-0.496
Crisis* SCvarQ3			-1.365**	-0.119	0.234	-1.060***	0.0893
			-0.65	-0.372	-0.554	-0.325	-0.479
Crisis* SCvarQ4			-0.349	-0.938***	-0.895	-0.196	0.291
			-0.549	-0.311	-1.01	-0.39	-0.4
Constant	-0.353	-16.41	-1.384	-0.831	-0.925	-5.313	-0.866
	(4.536)	-10.74	-4.775	-6.642	-5.497	-5.49	-4.807
Observations	61	61	61	61	61	61	61
R-squared	0.750	0.6693	0.817	0.829	0.753	0.844	0.853
Prob>chi2		0.000					
Number of countries	38	38	38	38	38	38	38

5 Discussion and conclusions

The purpose of the paper was to investigate whether social cohesion really promotes reforms. We did this in two steps. First, we investigated whether social cohesion is a coherent concept by using a principal-component factor (PCF) analysis covering 16 indicators used to measure social cohesion in the previous literature for 40 different countries. The results suggested that in fact social cohesion is a multidimensional concept, consisting of no less than five orthogonal components or distinct dimensions, which we labeled social divisions, modern values, traditional nationalism, institutional commitment, and fairness as merit.

In the next step, we studied to which extent social cohesion, or rather the components of the concept obtained from the PCF, affects a country's capability of reforms. We did so by regressing economic reforms, quantified as a five-year change in the Economic Freedom of the World Index, on each of the five dimensions, separately, in a panel spanning 1990-2009. We also regressed economic reforms quantified as a five-year change in two weighted EFW-indexes obtained from PCF. Our results indicated that, in fact, most dimensions of social cohesion do not influence the occurrence of reforms. However, fairness as merit, in contrast to equality, was shown to have a positive effect on economic reforms. Moreover, a certain degree of social divisions actually seems helpful helpful in handling a crisis.

The results go against the previous literature, challenging the prevailing view of social cohesion as a facilitator of reforms. One way of interpreting these somewhat surprising results is to consider social cohesion perhaps as a double-edged sword, and especially so when it comes to economic reforms in a efficiency-enhancing free-market direction.

If indeed social cohesion, according to many of the previously used definitions in the literature, in a given society is strong, then most likely the status quo and the barriers to reform are equally strong. In a society where people "stick together", characterized by strong solidarity within its social community, to use Durkheim's expression, established interests and cognitive biases may block beneficial changes of the existing institutions. From this perspective, social cohesion does not really promote reforms at all. It is rather part of the problem that many societies, not the least in some present-day European countries, face. If the values in a country - whether modern or more traditionally nationalistic - are committed to the existing institutions, then why would they favor institutional change? If this is so, social cohesion should be considered a barrier to reform.

However, if social cohesion is instead based on an understanding of fairness as merit, supporting incentives, the value and reward of hard work and achievement, and also an acceptance of the resulting income inequalities, then indeed it is beneficial to efficiency-enhancing reforms. Moverover, the existence of social divisions may indeed work as triggers for reform, rather than the opposite. Consequentially, issues of fairness should be more readily addressed when undertaking economic reforms, rather than social cohesion in general. This is the major lesson of this paper to policy makers wanting to promote the social acceptance of reforms aimed at enhancing growth and competitiveness.

A Appendix

A.1 Regimes of social cohesion

To get a better empirical understanding of the country and time specific patterns of the factors obtained above we use a hierarchical cluster analysis. Hence we identify homogenous groups of observations country-wave, with as much within-group similarity as possible combined with as much between-group dissimilarity as possible (Gatignon 2010. p. 295). This is done by generating average scores on each dimension of social cohesion, for each country and WVS-wave. To make comparisons easier, the factor scores are normalized to a [0, 1] scale. This leaves us with 67 unique observations for 40 countries.

The result is presented in table A.1.1, where we see that it generates seven groups or different regimes of social cohesion. The countries belonging to each cluster are presented in table A.2.2 in the appendix. Two groups consist of observations from one single country, India and South Africa. The other groups are named after some common characteristic.

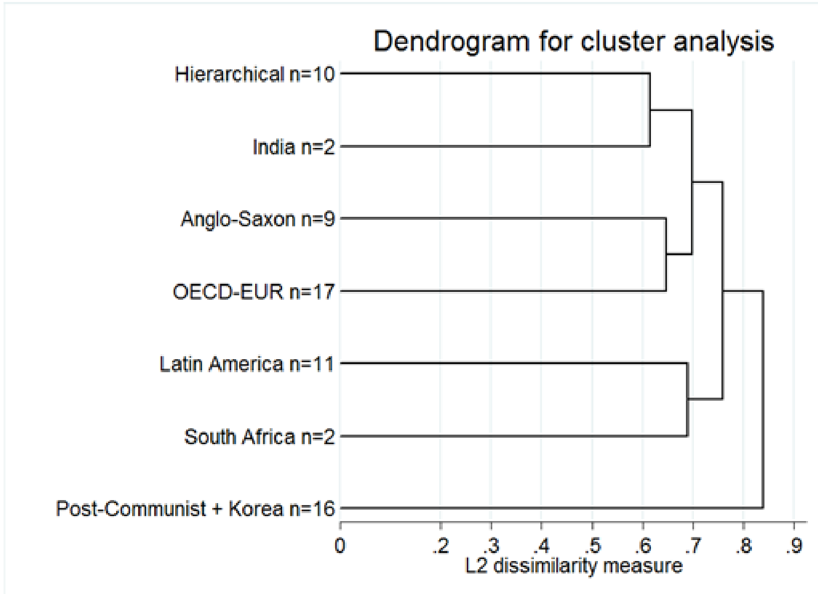
Table A.1.1: Regimes of social cohesion

Cluster groups	Share of sample	Social divisions	Modern values	Traditional nationalism	Institutional commitment	Fairness as merit
Anglo-Saxon	13.4 %	0.2 (0.11)	0.9 (0.09)	0.7 (0.17)	0.7 (0.09)	0.8 (0.14)
EUR-OECD	25.4 %	0.1 (0.09)	0.8 (0.14)	0.4 (0.12)	0.5 (0.12)	0.4 (0.12)
Latin America	16.4 %	0.5 (0.14)	0.6 (0.12)	0.7 (0.09)	0.3 (0.13)	0.5 (0.19)
Post-com + Korea	23.9 %	0.3 (0.13)	0.3 (0.17)	0.2 (0.11)	0.7 (0.08)	0.8 (0.09)
Hierarchical	14.9 %	0.1 (0.11)	0.3 (0.1)	0.6 (0.18)	0.7 (0.18)	0.5 (0.1)
India	3.0 %	0.4 (0.00)	0.4 (0.01)	0.8 (0.05)	0.7 (0.10)	0.1 (0.10)
South Africa	3.0 %	0.9 (0.08)	0.6 (0.02)	0.7 (0.04)	0.7 (0.16)	0.4 (0.08)

The Anglo-Saxon cluster is composed solely of English speaking countries, with high values on institutional commitment and fairness as merit. Interestingly enough, they have the highest average score on modern values, while at the same time being highly traditional, demonstrating the ability of traditional values to survive modernization.

The EUR-OECD cluster is composed of European OECD member countries. They have low scores on social divisions, relatively low scores on traditional nationalism, institutional commitment and fairness as merit, and high scores on modern values.

The Latin American cluster is composed of countries from that region. They



X-axis measures Euclidean distance and indicates on what level of similarity two clusters could be merged into one. A higher x-value indicates lower similarity.

Figure A.1.1: Dendrogram of regimes of social cohesion

have the second highest average score on social divisions, fairly high scores on modern values and traditional nationalism. What stands out is their low score on institutional commitment, suggesting an environment characterized by distrust in parliament and political apathy.

The Post-communist group, with countries from the former Eastern Bloc (the exception is South Korea), stands out for its low scores on both modern values and traditional nationalism, while having high institutional commitment and high scores on fairness as merit.

The common features between the countries in what we label the hierarchical group are harder to distinguish. The group consists of countries from Central and Eastern Europe, Asia and one OECD country (Austria). It is however clear that they are fairly similar to one another as regards social divisions, modern values and concepts of fairness, as indicated by the relatively low standard deviations.

Figure 1 is a dendrogram showing how similar/dissimilar the groups are. We use an average linkage clustering technique, with Euclidean distance measure (Hesketh and Everitt, 2004. p. 271). The hierarchical and Indian cluster are the most similar, joining each other at roughly 0.60. The Anglo-Saxon and EUR-OECD groups are similar at approximately 0.65, while Latin America and South Africa can be combined on a level just below 0.7. Again, the post-communist cluster sticks out. It is dissimilar with all other groups on a 0.83 level.

In our sample, former communist countries are present in both the Hierarchical cluster group and the Post-communist group. One could suspect that their common history would bring on cultural similarities. The dendrogram nonetheless points to key cultural differences. Schwartz and Bardi (1997) state that cultural adaptation to communism promotes conservative and hierarchical values, and argue that this effect was strongest in Eastern Europe (e.g. in Bulgaria, Georgia and Russia) where communism was more successful in penetrating the social system. This could perhaps explain why all eastern european countries except the Czech Republic are found in the hierarchical group. Nevertheless, the average score on traditional nationalism is higher in central Europe compared to East Europe, indicating that East Europe is less conservative, not more. Nevertheless, it is quite plausible that the adaptation of (or lack of) communist social values contribute to the inter-cluster divide, by crowding out (or failing to) previous value systems. Religious background could be important factor in this manner. Among the central European countries all but one (Albania has a Muslim majority) are historically catholic countries. In the East European countries, the Baltic countries are predominantly Catholic or Protestant Lutheran, while the others are Orthodox.

It should be noted that the regimes of social cohesion identified in our cluster analysis differ from the results in Green et al. (2009) who identifies a liberal, a social democratic, a social market, and an East Asian regime of social cohesion. While their liberal regime resembles our Anglo-Saxon cluster, we see no similar correspondance between our clusters and the rest of their regimes. As noted above one reason is probably that Green et al. (2009) confuse the discussion about social cohesion by using various measures of state involvement in the economy.

In summary then, our analysis of the variables usually employed to proxy for social cohesion reveals no less than five distinct dimensions of the concept, all of which can in one way or another be tied to various aspects of the theoretical constructs in the previous literature. These five dimensions can in turn be translated into at least five regimes of social cohesion (where the models differ in their emphasis on the five dimensions).

A.2 Tables

Table A.2.1: PCF sample

Observations by country in sample.

Country	Observations	share of sample	No of waves
Albania	569	0,02	2
Argentina	957	0,03	2
Australia	758	0,02	1
Austria	371	0,01	1
Belgium	634	0,02	1
Bulgaria	271	0,01	2
Brazil	371	0,01	1
Canada	1414	0,05	2
Chile	958	0,03	2
Czech Republic	731	0,02	2
Germany	422	0,01	1
Spain	1907	0,06	2
Estonia	339	0,01	2
Finland	675	0,02	3
France	1034	0,03	2
Guatemala	612	0,02	1
Croatia	225	0,01	1
Hungary	158	0,01	1
India	917	0,03	2
Ireland	603	0,02	1
Italy	1553	0,05	2
Japan	46	0	1
Korea	179	0,01	1
Lithuania	274	0,01	2
Latvia	219	0,01	1
Moldova	644	0,02	2
Mexico	891	0,03	2
Netherlands	735	0,02	2
Norway	330	0,01	1
New Zeeland	293	0,01	2
Peru	1363	0,04	2
Philippines	643	0,02	1
Poland	423	0,01	1
Russia	1701	0,06	3
Slovenia	431	0,01	2
Sweden	555	0,02	2
Ukraine	814	0,03	2
USA	2117	0,07	3
Venezuela	640	0,02	1
South Africa	3036	0,1	2
Total	30813	1	-

Table A.2.2: Cluster group members

Table - Cluster group members and time period

Anglo-Saxon	EUR-OECD	Latin America	Post-Com + Korea	Hierarchical	India	South Africa
Australia 1995	Belgium 2000	Argentina 1995	*Bulgaria 2000*	Albania 1995	India 1995	South Africa 1995
Canada 1990	Finland 1990	Argentina 2000	Czech Republic 1995	Albania 2000	India 2000	South Africa 2000
Canada 2000	Finland 1995	Brazil 1995	Czech Republic 2000	Austria 1990		
Ireland 1990	Finland 2000	Chile 1995	Estonia 1995	*Bulgaria 1995*		
New Zeeland 1995	France 1990	Chile 2000	Estonia 2000	Croatia 1995		
New Zeeland 2005	France 2000	Guatemala 2000	Korea 2000	Hungary 1995		
USA 1990	Germany 1995	Mexico 1995	Latvia 1995	Japan 1900		
USA 1995	Italy 1990	Mexico 2000	Lithuania 1995	Phillippines 2000		
USA 2000	Italy 2000	Peru 1995	Lithuania 2000	Poland 2000		
	Netherlands 1990	Peru 2000	Moldava 1995	*Slovenia 1995*		
	Netherlands 2000	Venezuela 1995	Moldava 2000			
	Norway 1990		Russia 1990			
	Slovenia 2000		Russia 1995			
	Spain 1990		Russia 2000			
	Spain 1995		Ukraine 1995			
	Sweden 1990		Ukraine 2000			
	Sweden 1995					

Note 1: 1990 refers to WVS/EVS conducted between 1990-1994, 1995 to 1995-1998, 2000 to 1999-2004 and 2005 to 2005-2009.

Note 2: Countries in cursive change cluster over time

Table A.2.3: Baseline regression results - OLS and GMM

	OLS	GMM
	(I)	(II)
ΔEFWt-1		-0.0284
		(0.0933)
Freedom House / Polity (Imputed)	-0.00921	-0.0976
	(0.0393)	(0.106)
EFW	-0.533***	-0.561***
	(0.0875)	(0.113)
Crisis	-0.266**	-0.331**
	(0.119)	(0.163)
LogRGDP	0.0383	0.0539
	(0.0993)	(0.124)
5 year avg. RGDP growth	1.536	3.539
	(2.219)	(4.548)
Social divisions	0.0133	-0.00753
	(0.0569)	(0.0812)
Modern values	0.133	0.290
	(0.149)	(0.229)
Traditional nationalism	0.0957	0.104
	(0.136)	(0.130)
Institutional commitment	0.282**	0.372**
	(0.131)	(0.157)
Fairness as merit	0.222*	0.205
	(0.115)	(0.135)
Year 1995 dummy		0.105
		(0.134)
Year 2000 dummy		0.112
		(0.0914)
Year 2005 dummy		-0.00607
		(0.150)
Constant	2.123	0.844
	(2.377)	(4.732)
Observations	61	56
R-squared	0.686	
Number of countries		37

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A.2.4: Fisher unit-root test

Fisher-type unit-root test for **EFW**			
Based on augmented Dickey-Fuller tests			
H0: All panels contain unit roots		Number of panels	= **122**
Ha: At least one panel is stationary		Avg. number of periods	= **6.63**
AR parameter: **Panel-specific**		Asymptotics: **T -> Infinity**	
Panel means: **Included**			
Time trend: **Not Included**			
Drift term: **Not Included**		ADF regressions: **1** lag	
		Statistic	p-value
Inverse chi-squared(**244**)	P	**722.0967**	**0.0000**
Inverse normal	Z	**-6.6070**	**0.0000**
Inverse logit t(**544**)	L*	**-13.9174**	**0.0000**
Modified inv. chi-squared	Pm	**23.9058**	**0.0000**
P statistic requires number of panels to be finite.			
Other statistics are suitable for finite or infinte number of panels.			

Table A.2.5: Regression results - EFW factor 1

	FE	Probit			FE		
	(I)	(II)	(III)	(IV)	(V)	(VII)	(VIII)
Interaction variable			social divisions	modern values	traditional nationalism	institutional commitment	fairness as merit
Freedom House / Polity (Imputed)	0.129	0.337	0.109	-0.0933	-0.415**	0.166	0.0117
	(0.121)	(0.270)	(0.156)	(0.205)	(0.160)	(0.351)	(0.178)
EFW-Index1	-0.909***	-1.296***	-1.354***	-0.810**	-0.179	-0.993***	-1.153***
	(0.203)	(0.464)	(0.318)	(0.315)	(0.184)	(0.287)	(0.307)
Crisis	-0.798***	-0.0446	-0.721	-0.325	-0.411	-0.0242	-0.936**
	(0.219)	(0.691)	(0.445)	(0.291)	(0.548)	(0.606)	(0.448)
LogRGDP	-0.352	0.521	0.388	-0.577	-1.078	0.668	0.0946
	(0.986)	(0.399)	(0.915)	(0.988)	(1.264)	(0.952)	(1.139)
5 year avg. RGDP growth	9.044	-6.618	8.057	10.35	5.652	5.748	7.924
	(6.056)	(9.687)	(6.663)	(7.690)	(6.698)	(9.163)	(7.219)
Social Divisions	1.540*	0.154		1.533**	0.162	0.975	0.955
	(0.861)	(0.211)		(0.612)	(1.120)	(1.427)	(1.017)
Modern Values	-1.134	-0.0287	-0.557		-2.128***	-2.057	-1.049
	(0.677)	(0.911)	(1.158)		(0.663)	(1.698)	(0.705)
Traditional nationalism	0.501	0.824	2.248*	0.196		1.165*	1.247
	(0.638)	(0.770)	(1.113)	(1.001)		(0.639)	(1.051)
Institutional commitment	0.826	0.350	3.035**	0.381	1.698		1.281
	(0.925)	(0.745)	(1.367)	(1.679)	(1.268)		(1.008)
Fairness as merit	1.097**	0.807	0.572	1.634*	0.0223	1.628*	
	(0.477)	(0.762)	(0.716)	(0.940)	(0.457)	(0.858)	
SCvarQ2			0.102	-0.609	-0.942**	0.619	0.442
			(0.277)	(0.444)	(0.385)	(0.956)	(0.277)
SCvarQ3			-0.0509	0.285	-0.845***	0.442	0.810**
			(0.237)	(0.676)	(0.261)	(1.050)	(0.315)
SCvarQ4			-1.738	-0.985		0.546	1.778***
			(1.361)	(1.189)		(1.242)	(0.647)
Crisis*SCvarQ2			-0.154	0.550	0.636	-0.993*	0.244
			(0.589)	(0.851)	(0.920)	(0.564)	(0.620)
Crisis*SCvarQ3			-2.365**	0.145	0.461	-1.162***	0.0359
			(0.886)	(0.470)	(0.638)	(0.425)	(0.634)
Crisis*SCvarQ4			-1.244	-0.474	-3.698***	-0.0198	0.319
			(0.864)	(0.628)	(1.347)	(0.735)	(0.567)
Constant	0.0934	7.049	-2.646	2.396	10.34	-6.569	-1.172
	(9.578)	(10.32)	(10.47)	(13.64)	(7.548)	(10.92)	(11.45)
Observations	61	61	61	61	61	61	61
R-squared	0.711	0.584[a]	0.769	0.805	0.788	0.755	0.804
Prob>chi2		0.000					
Number of countries	38		38	38	38	38	38

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

[a]Pseudo R-squared

Table A.2.6: Regression results - EFW factor 2

	FE	Probit			FE		
	(I)	(II)	(III)	(IV)	(V)	(VII)	(VIII)
Interaction variable			social divisions	modern values	traditional nationalism	institutional commitment	fairness as merit
Freedom House / Polity (Imputed)	-0.573***	-0.308	-0.594***	-0.575***	-0.649**	-0.326	-0.646***
	(0.174)	(0.206)	(0.208)	(0.160)	(0.265)	(0.206)	(0.159)
EFW-Index2	-1.014***	-0.684***	-0.984***	-0.664*	-1.033***	-1.249***	-1.209***
	(0.164)	(0.214)	(0.222)	(0.393)	(0.229)	(0.178)	(0.0928)
Crisis	-0.643**	-1.926***	-1.131***	1.363	0.0558	1.058***	-0.448
	(0.275)	(0.608)	(0.279)	(0.982)	(0.537)	(0.373)	(0.639)
LogRGDP	4.048***	-1.078**	4.136**	4.269**	4.536**	5.414***	4.646***
	(1.443)	(0.470)	(1.574)	(1.884)	(2.007)	(1.281)	(1.066)
5 year avg. RGDP growth	-0.768	10.21	0.438	11.63	2.025	-4.210	5.077
	(6.525)	(11.88)	(8.507)	(8.106)	(8.816)	(5.817)	(4.008)
Social Divisions	3.099**	0.227		1.184	2.615	2.417*	3.505***
	(1.346)	(0.388)		(2.341)	(1.755)	(1.298)	(1.279)
Modern Values	0.802	0.258	1.464		1.309	-1.274	0.662
	(1.131)	(0.468)	(0.930)		(1.125)	(0.906)	(0.861)
Traditional nationalism	1.570	0.257	3.845***	2.994**		3.237***	2.899***
	(1.185)	(0.416)	(0.799)	(1.251)		(0.858)	(1.038)
Institutional commitment	0.296	1.152	2.005**	0.813	-0.440		1.154
	(0.733)	(0.775)	(0.762)	(1.221)	(0.977)		(0.887)
Fairness as merit	0.307	0.870	0.288	0.826	-0.491	2.022***	
	(0.749)	(0.678)	(0.690)	(1.061)	(0.836)	(0.493)	
SCvarQ2			-0.419	-1.783	-1.045	1.930***	1.345***
			(0.457)	(1.604)	(0.965)	(0.323)	(0.378)
SCvarQ3			-0.399	-1.036	-0.294	1.590**	-0.0203
			(0.468)	(0.768)	(1.012)	(0.620)	(0.537)
SCvarQ4			-0.533	-1.091		1.437**	0.713
			(1.395)	(0.886)		(0.607)	(0.603)
Crisis*SCvarQ2			1.607***	-1.094	-0.396	-2.623***	-1.904**
			(0.585)	(1.215)	(1.090)	(0.557)	(0.913)
Crisis*SCvarQ3			-2.466***	-1.175	-0.0628	-2.389***	0.538
			(0.517)	(1.545)	(1.137)	(0.492)	(0.911)
Crisis*SCvarQ4			0.600	-3.054***	0.118	-0.536	-0.0502
			(0.821)	(1.112)	(1.018)	(0.441)	(0.654)
Constant	-25.81**	5.607	-28.27**	-41.88***	-32.49**	-37.73***	-36.13***
	(12.06)	(11.34)	(12.80)	(11.27)	(12.07)	(11.48)	(6.851)
Observations	61	61	61	61	61	61	61
R-squared	0.764	0.347[a]	0.875	0.862	0.795	0.905	0.882
Prob>chi2		0.0025					
Number of countries	38	38	38	38	38	38	38

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

[a]Pseudo R-squared

Table A.2.7. Indicators and databases

Variable	Database	Name	Question and values[1]
Interpersonal trust	WVS/EVS	A165	Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people? 0 - 'Can't be too careful' 1 - 'Most people can be trusted'
Tolerance	WVS/EVS	A124-A127, A129-A132, A141, A149, A150	Average value of classes of people mentioned: On this list are various groups of people. Could you please sort out any that you would not like to have as neighbours? People with a criminal record, people of different race, heavy drinkers, emotionally unstable people, immigrants/foreign workers, people who have aids, drug addicts, homosexuals, political extremists, left wing extremists, right wing extremists 0 - 'Mentioned' 1 - 'Not mentioned'
Confidence in inst. (parliament)	WVS/EVS	E075	I am going to name a number of organisations. For each one, could you tell me how much confidence you have in them: is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all? 1 - 'None at all' 2 - 'Not very much' 3 - 'Quite a lot' 4 - 'A great deal'

Table A.2.7 (continue)

Variable	**Database**	**Name**	**Question and values**[1]
Fairness (merit/equality)	WVS/EVS	C059	Imagine two secretaries, of the same, doing practically the same job. One finds out that the other earn considerably more than she does. The better paid secretary, however, is quicker, more efficient and more reliable at her job. In you opinion, is it fair or not fair that one secretary is paid more than the other? 0 - 'Not fair' 1 - 'Fair'
Econ: equality vs inequality	WVS/EVS	E035	Now I'd like you to tell me your views on various issues. How would you place your views on this scale? 1 mean agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if you your views fall somewhere in between, you can choose any number in betweeen. Sentences: Incomes should be made more equal vs We need larger income differences as incentives 1 - 'Incomes should be made more equal' 2 - '2' 3 - '3' 4 - '4' 5 - '5' 6 - '6' 7 - '7' 8 - '8' 9 - '9' 10 - 'We need larger income differences as incentives'
National pride	WVS/EVS	G006	How proud are you to be [Nationality]? 1 - 'Not at all proud' 2 - 'Not very proud' 3 - 'Quite proud' 4 - 'Very proud'

Table A.2.7 (continue)

Variable	Database	Name	Question and values[1]
Political discussions	WVS/EVS	A062	When you get together with your friends, would you say you discuss political matters frequently, occasionally or never? 1 - 'Never' 2 - 'Occasionally' 3 - 'Frequently'
Political demonstrations	WVS/EVS	E027	Now I'd like you to look at this card. I'm going to read out some different forms of politcal action that people can take, and I'd like you to tell me, for each one, whether you have actually done any of these things, whether you might do it or would never, under any circumstances, do it: Attending lawful demonstrations 1 - 'Would never do' 2 - 'Might do' 3 - 'Have done'
Quality of life	WVS/EVS	A170	All things considered, how satisfied are you with your life as a whole these days? 1 - 'Dissatisfied' 2 - '2' 3 - '3' 4 - '4' 5 - '5' 6 - '6' 7 - '7' 8 - '8' 9 - '9' 10 - 'Satisfied'
Gender equality	WVS/EVS	C001	Do you agree with the following statements? When jobs are scarce, men should have more right to a job than women 1 - 'Agree' 2 - 'Disagree'

Table A.2.7 (continue)

Variable	**Database**	**Name**	**Question and values**[1]
Traditional vs rational/secular values	WVS/EVS	tradrat5	"Societies near the traditional pole emphasize the importance of parent-child ties and deference to authority, along with absolute standards and traditional family values, and reject divorce, abortion, euthanasia, and suicide. These societies have high levels of national pride, and a nationalistic outlook. Societies with secular-rational values have the opposite preferences on all of these topics. "
Survival vs self-expression values	WVS/EVS	survself	Societies near the survival pole focus on economic and physical security above all and societies on the self-expression pole emphasises subjective well-being, self-expression and the quality of life.
Homicide rate	UNODC Homicide Statistics		Homicide rate per 100 000 population
Gini-coefficient	UNU-WIDER World Income Inequality Database, version 2.0c May 2008		Gini-coefficient
Ethnic fractionalization	Quality of Government Database, version 8 June 2012	al_ethnic	Ethnic fractionalization reflects the probability that two randomly selected people from a given country will not belong to the same ethnolinguistic group. The higher the number, the more fractionalized society

Table A.2.7 (continue)

Variable	**Database**	**Name**	**Question and values**[1]
Freedom House / Polity (imputed)	Quality of Government Database, version 8 June 2012	fh_ipolity2	Index of democracy, combined of average scores from Freedom House and Polity (with imputed Polity values if missing). 1 - 'Least democratic' 2 - '2' 3 - '3' 4 - '4' 5 - '5' 6 - '6' 7 - '7' 8 - '8' 9 - '9' 10 - 'Most democratic
Average years of schooling	International Human Development Indicators		Mean years of schooling (of adults aged 25 and older)

[1]Our coding differ in some regards from the original coding. When needed the coding order has been reversed, such that higher values always reflect more of the variable name.

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Project Information

Welfare, Wealth and Work for Europe

A European research consortium is working on the analytical foundations for a socio-ecological transition

Abstract

Europe needs change. The financial crisis has exposed long-neglected deficiencies in the present growth path, most visibly in the areas of unemployment and public debt. At the same time, Europe has to cope with new challenges, ranging from globalisation and demographic shifts to new technologies and ecological challenges. Under the title of Welfare, Wealth and Work for Europe – WWWforEurope – a European research consortium is laying the analytical foundation for a new development strategy that will enable a socio-ecological transition to high levels of employment, social inclusion, gender equity and environmental sustainability. The four-year research project within the 7th Framework Programme funded by the European Commission was launched in April 2012. The consortium brings together researchers from 33 scientific institutions in 12 European countries and is coordinated by the Austrian Institute of Economic Research (WIFO). The project coordinator is Karl Aiginger, director of WIFO.

For details on WWWforEurope see: www.foreurope.eu

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ICLEI - Local Governments for Sustainability	ICLEI	Germany
Institute of Economic Research Slovak Academy of Sciences	IER SAVBA	Slovakia
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