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WORKING PAPERS

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182/2002

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WIFO Working Papers, No. 182
August 2002

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2002/291/W/0

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Abstract

The paper aims for an empirical validation of the impact of variation in industrial structure on aggregate income and growth. Various mechanisms for the linkage between meso-structure and macro-performance are identified: the income elasticity of demand, the structural bonus versus burden hypotheses, differential propensities towards entrepreneurial discovery, and producer or user related spillovers. After discussing detailed results from conventional shift-share analysis, dynamic panel estimations are applied to a standard growth model augmented by structural variables. Based on data for 28 OECD countries, the results confirm that industrial structure has been a significant determinant of macroeconomic development and growth in the 1990s.

Key Words: Structural change, economic growth, structural bonus versus burden, producer and user related spillovers

JEL Codes: O1, O3, O4

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1. Introduction

This paper aims for an empirical validation of the linkages between meso-structure and macro-performance. To begin with, we have to acknowledge that sectoral structures and aggregate performance are mutually dependent. Keeping in mind the various channels that might link the meso- and macro levels of economic activity will help us to guard a clearer view when interpreting the data.

i. The first and most commonly appreciated mechanism is due to sectoral differences in the *income elasticity of demand*, which gradually shift industry shares in overall consumption during the process of economic development. Aggregate growth of income thus causes structural change. The tertiarisation process, for example, is frequently explained by a higher income elasticity of demand in the services sector. In a separate paper based upon a decomposition of international input-output data, Peneder, Dachs and Kaniovski (forthcoming) confirm the importance of demand induced shifts between sectors (besides substantial technology and negligible foreign trade effects).[1]

ii. A second and related channel of how aggregate development excerts an influence upon industrial structure can be summarised under the popular view of the *structural bonus hypothesis*. It postulates a positive relationship between structural change and economic growth, based upon the assumption that during the process of economic development, economies upgrade from industries with comparatively low to those with a higher value added per labour input. For a critical discussion see Timmer and Szirmai (2000). Contrary to the above shifts in demand, this hypothesis refers directly to the reallocation of labour resources. The prediction it implies is not always quite clear and the direction of causality can be both ways. In the following shift-share analysis, we will make it operational by the specific hypothesis that the reallocation of labour favours industries with higher *levels* of labour productivity.[2]

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[1] Countries covered by the input-output analysis are Denmark, France, Germany, The Netherlands, United Kingdom, Japan and the USA. See also Guo and Planting (2000), who emphasise import penetration as an important cause for the declining shares of the US manufacturing sector.

[2] These can afford to pay higher wages and attract high-skilled workers, who move more easily between sectors.

iii. Thirdly, an almost opposite mechanism, where structural change has a negative effect on aggregate growth, is revealed by Baumol's hypothesis of unbalanced growth. Intrinsic differences between industries in their opportunities to raise labour productivity for a given level of demand shift ever larger shares of the labour force away from 'progressive' industries with high productivity *growth* towards the 'stagnant' industries with low productivity growth and accordingly higher labour requirements. In the long-run, the *structural burden* of increasing labour shares getting employed in the stagnant industries then tend to diminish the prospects for aggregate growth of per capita income.[3]

In most of the above cases, structural change is best described as a process of 'sorting', which means that differential growth between industries is driven by exogenous forces (Montobbio, 2000, p. 20). For example, the sector shares drift inevitably towards industries with a given high level of income elasticity of demand according to the first mechanism; conversely, the labour shares drift mechanically towards 'stagnant' industries with low growth of labour productivity for given levels of output according to the third channel.

In contrast to sorting, structural change can also be driven by a process of 'selection' (ibid.), which requires some substitutability between the outputs of firms in various industries. One example for structural change caused by 'selection' is the impact of technical progress and capital deepening on the need for material inputs and natural ressources (Aiginger, 2001, p. 55). The growing technical efficiency in the use of basic and resource related goods, such as steel and other metals, wood, pulp or paper, has the dynamic implication of decreasing the shares of these industries in total expenditures. Although there are intrinsic differences between industrial branches regarding their typical degree of exposure to such effects, the process is partly endogenous to creative entrepreneurial response (quality upgrading, search

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[3] To be more precise, the famous "cost disease" argument of unbalanced growth presented by Baumol (1967) and Baumol et al. (1985) states that because of the limited potential to increase labour productivity through technological progress or capital deepening, industries such as most of the personal, social, cultural and public services, cannot compensate for the rise in wage levels, forced upon them by the more progressive industries with high productivity growth. The consequence is a natural and unavoidable rise in the cost of production, as well as increasing shares in employment and nominal output. For a recent publication on that matter see Oulton (1999), who argues that Baumol's conclusion only applies if the stagnant industries supply final products or services.

for new applications, etc.). This entrepreneurial opportunity to shift demand is an important source of 'selection' more generally. It equally applies to other industries and reveals another channel of how meso-structures can affect macro-performance.

iv. The fourth mechanism refers to differences between industries with respect to their typical propensity to undertake endogenous (often sunk and largely intangible) *investments to expand demand* by creating new markets or increasing the consumers' willingness to pay for already established products and services. Any selective environment which stimulates the competition for the perceived quality of output generates investments e.g. in research and development, advertising, or human resources. Provided that technological opportunities exist and that customers are receptive to the supply of new combinations, differential growth at the industry level becomes endogenous to entrepreneurial action (Peneder, 2001). For each economy, a higher share of such 'entrepreneurial' types of industry would then also imply a larger overall capacity to generate income and growth.

A final channel for the impact of industrial structure on aggregate growth refers to the indirect effects generated by positive externalities between industries. In contrast to the above argument, this does not necessarily imply the evolutionary mechanism of differential growth between industries but would also be consistent with predictions of endogenous steady-state growth.

v. Industrial structure has an apparent impact on aggregate income if industries differ in their generation of *exernal effects*. A large research sector as well as other technology intensive industries are the familiar showcase. 'Producer related spillovers' can, for example, emanate from the easier diffusion of productive knowledge within common territorial boundaries (due to spatial proximity and/or shared institutional frameworks). Conversely, we speak of 'user related spillovers' when positive externalities come into effect through the application of certain products and services. This is the case for intermediary goods, whereby the economic value of embodied knowledge is not fully captured in the prices the customer pays. To different degrees, tradability then substitutes for proximity.

In both of the above cases, causation need not only go from meso-structure to macro development. Higher aggregate income also allows for more (public and private) investment in complementary institutions (e.g. for research and education) and functional differentiation (e.g. of specialised producer related services).[4] Both would be conducive to business in entrepreneurial types of industry as well as the internalisation of positive spillovers. We must therefore keep in mind the existence of reverse or even cumulative causation, which, for example, will force us to implement strict lag structures in the econometric analysis.

The focus of this paper is on the impact of variations at the level of individual markets or industries upon aggregate development, thereby taking serious the issue of heterogeneity at the market level. The heterogeneity at the level of individual enterprises is thereby ignored. Firm level studies have become increasingly popular in recent years and some excellent treatments of related interest are presented in Baily, Hulten and Campbell (1992), Baily, Bartelsmann and Haltiwanger (1996, 2001), Caves (1998), Bartelsmann and Doms (2000), or Bailey and Solow (2001).[5] In his survey of the literature, Haltiwanger concludes that the "emerging evidence suggests that the process of economic growth at the micro level is incredibly noisy and complex – there is a vast amount of churning as business and workers seek to find the best methods, products, locations and matches. This churning is an inevitable and vital component of economic growth" (Haltiwanger, 2000, p.17).

Longing for an empirical validation of the meso-macro linkage in economic development, the remainder of this paper is organised as follows. Section 2 briefly presents three new taxonomies of manufacturing industries that will be applied in the empirical analysis. In Section 3 labour productivity growth in the EU, Japan and the USA will be decomposed into general within-, static shift- and dynamic shift effects by means of conventional shift-share analysis. Although the results are largely consistent with other calculations presented in the literature at a more aggregate level, the examination of individual contributions by distinct types of industries reveals some interesting new details. Section 4 then provides panel econometric estimations of typical cross-country growth regressions, while also including indicators of structural change. In contrast to shift-share analysis, the econometric analysis also captures the indirect effects via spillovers between industries. Similar sets of panel

[4] See Stigler (1951).

[5] See also Peneder (2002b), who uses microeconometric analysis to investigate a 'meso-micro' linkage of economic development. He estimates probabilities of entry and tests for significant differences in the age distribution of Viennese firms, applying the same taxonomies as presented in Section 2.

regressions are applied for (i) the levels of GDP per capita reflecting the long run relationship between economic growth and industrial structure, and (ii) rates of growth in GDP per capita as its short-term counterpart. The final section presents a brief summary and concludes.

2. Characterising industrial structure

The empirical analysis will feature three particular taxonomies of manufacturing industry, which were created in a series of research projects undertaken on behalf of the European Commission. They were intended to offer a coherent set of empirical tools to facilitate inquiries into industrial performance with respect to the intangible sources of competitive advantage. All three taxonomies were developed by statistical cluster analysis. 98 NACE 3-digit manufacturing industries were categorised in a comprehensive and mutual exclusive manner. The industry types are summarised in Table 1. Peneder (2002a) offers detailed information on data sources, methodology and special characteristics of the classifications.

Taxonomy I focuses on the distinction between tangible and largely location-bound, versus intangible and firm specific factors of production. It thereby extends the approach of Davies and Lyons (1996), who discriminate industries by the relative importance of endogenous sunk investments in advertising and R&D (Sutton, 1991). The clustering process makes use of US data for wages and salaries, investments in physical capital, advertising outlays and R&D expenditure. These are assumed to span four independent dimensions of inputs for revenue generation. Ratios to total value added have been calculated for wages and physical capital. Expenditures on advertising and R&D are represented by their ratio to total sales. The latter are directly derived from firm-level data.

Taxonomy II is directed at the dimension of human resources and is based on occupational data, which distinguish the two types of white-collar and blue-collar workers, and then for each, the shares of respectively high and low-skilled labour. These data stem from the OECD and cover employment shares for a sample of developed economies. Finally, taxonomy III segregates industries according to differences in kind and intensity of external service inputs. It was created using US input-output tables, available at the disaggregate level of 500 times 500 industries, and reveals typical combinations of service inputs purchased via external market transactions.

As in case of any classification, we still find much heterogeneity within each individual category. In particular, we cannot assume perfect correspondance between different economic areas with respect to the typical combinations of the underlying variables. Understandably, the exclusive reliance on US data in the course of creating taxonomies I and III might raise concerns about international comparability. However, precisely therein lies one major advantage of the taxonomic approach. This is because an exact correspondence is not necessary for applying the classification as a discriminatory variable. The only requirement is consistency as far as assignment to a broadly defined industry type is concerned. Additionally, the USA is a very attractive benchmark, first because of its status as one of the economically most advanced nations, and secondly, distortions in the data due to particular local patterns of specialisation are arguably less likely due to the sheer size of the economy.

Table 1: Three taxonomies of manufacturing industry

***Taxonomy I*: Factor input combinations**	
• Mainstream manufacturing (MM)	• Marketing driven industries (MDI)
• Labour intensive industries (LI)	• Technology driven industries (TDI)
• Capital intensive industries (CI)	
***Taxonomy II*: Skill requirements**	
• Low-skill industries (LS)	• Medium-skill white-collar industries (MWC)
• Medium-skill blue-collar industries (MBC)	• High-skill industries (HS)
***Taxonomy III*: External service inputs**	
• Other industries	• Industries with high inputs from retail and advertising services (IR&S)
• Industries with high inputs from transport services (ITRS)	• Industries with high inputs from information- and knowledge-based services (IKBS)

Source: Peneder (2002a), Peneder for European Commission (2000).

3. Structural 'bonus' or 'burden': a decomposition analysis

Shift-share analysis provides a convenient means to investigate how aggregate growth is mechanically linked to differential growth of labour productivity and the reallocation of labour between industries. It therefore relates directly to the two contrasting mechanisms described before as a structural bonus or burden to aggregate productivity growth. Applying the same methodology as presented in Fagerberg (2000a) or Timmer and Szirmai (2000), we decompose the aggregate growth of labour productivity into three separate effects:

$$growth(LP_T) = \frac{LP_{T,fy} - LP_{T,by}}{LP_{T,by}} = \frac{\overbrace{\sum_{i=1}^{n} LP_{i,by}(S_{i,fy} - S_{i,by})}^{\text{I: static shift effect}} + \overbrace{\sum_{i=1}^{n} (LP_{i,fy} - LP_{i,by})(S_{i,fy} - S_{i,by})}^{\text{II: dynamic shift effect}} + \overbrace{\sum_{i=1}^{n} (LP_{i,fy} - LP_{i,by})S_{i,by}}^{\text{III: within growth effect}}}{LP_{T,by}} \qquad (1)$$

LP=labour productivity; by=base year, fy=final year; T= Σ over industries i; S_i = share of industry i in total employment.

First, the structural component is calculated as the sum of relative changes in the allocation of labour across industries between the final year and the base year, weighted by the initial value of labour productivity in the base year. This component is called the *static shift effect*. It is positive/negative if industries with high levels of productivity attract more/less labour resources and hence increase/decrease their share of total employment. For the purpose of this section, we specify the structural bonus hypothesis in terms of an expected positive contribution of the static shift effect to aggregate growth of labour productivity:

The *structural bonus* hypothesis: $\sum_{i=1}^{n} LP_{i,by}(S_{i,fy} - S_{i,by}) > 0$ (2)

Secondly, *dynamic shift effects* are captured by the sum of interactions of changes in labour shares times changes in labour productivity of industries. If industries increase both labour productivity and their share of total employment, the combined impact is a positive contribution to overall productivity growth. (Of course, the same applies if industries are characterised by a simultaneous fall in labour productivity and employment shares). In other words, the interaction term becomes larger, the more labour resources shift towards industries with fast productivity growth. The interaction effect is however negative, if industries with fast growing labour productivity cannot maintain their shares in total employment. The negative effect is larger, the more industries with high productivity growth are faced with declining employment shares. Thus, the interaction term can be used to capture Baumol´s hypothesis of a structural burden of labour reallocation on aggregate growth, which predicts that employment shares shift away from progressive industries towards those with lower growth of labour productivity:

The *structural burden* hypothesis: $\sum_{i=1}^{n}(LP_{i,fy} - LP_{i,by})(S_{i,fy} - S_{i,by}) < 0$ (3)

Thirdly, the *'within' effect* corresponds to growth in aggregate labour productivity under the assumption that no structural shifts have ever taken place and each industry has maintained the same amount of shares in total employment as during the base year. We must, however, recall that the frequently observed near equivalence of within industry growth and aggregate growth cannot be cited as evidence against differential growth between industries. Even in the case that all the positive and negative structural effects net out, much variation in productivity growth can be present at the lower level of activities.[6]

Table 2 displays the results of the shift-share analysis for the European Union broken down into individual contributions by various sectors and industry types. The data are from EUROSTAT's New Cronos data base. Value added at constant prices at the disaggregated level of 3-digit manufacturing industries were partly complemented at WIFO, using industry specific price deflators documented in Egger and Pfaffermayr (2001).

Corresponding to the decomposition in equation (1), the sum of the static and the dynamic shift effects, as well as the within-industry effects, is equal to the average growth of labour productivity in the according aggregate (i.e. the first cell of each sub-table). This is how the data sums up horizontally. Vertically, for each of the three components, the contributions made by each sector or type of industry also sum up to the according number in the first line

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[6] As productivity has a robust tendency to grow, the within effect is practically a summation over positive contributions only. Conversely, for each industry the sign of the contribution to both shift effects depends on whether labour shares have increased or decreased. The summation over all industries therefore collect positive and negative contributions, with the changes in labour shares offsetting each other. The shift effects are therefore meant to capture only that comparatively small increment to aggregate growth, which is generated by the net difference in productivity performance of the shifting share of the labour resources. Even that increment can either be positive (structural bonus) or negative (structural burden). In short, offsetting effects of shifts in employment shares of industries with high and low levels of labour productivity, as well as high and low productivity increases, explain why shift share analyses regularly fail to reveal substantial direct contributions of structural change to aggregate growth.

of each sub-table. The numbers in brackets are displayed as additional information about the average growth of labour productivity within the individual sectors or industry types and sum up neither in the horizontal nor in the vertical dimension. They help us to detect whether there are any systematic patterns of differential productivity growth between industries. Supported by data from analogous tables for the EU member countries, Japan and the USA presented in the Annex, we can summarise the following stylised facts.

First of all, consistent with results reported in the literature, the structural components appear to be largely dominated by the within effects of productivity growth. This outcome tells us that, on aggregate, labour reallocations between industries with low- or high-productivity performance have only a weak net impact on overall growth. However, looking at this decomposition only from such an aggregate perspective hides important structural changes at the level of individual sectors. This is particularly relevant for the services sector, where the overall contribution to total value added per employee is almost evenly split between the static shift and the within growth component in the EU, if measured at constant prices. In other words, the services sector contributes to GDP per capita via two distinct channels. First of all, through its overall growth in value added per employee, just as in any other sector. Secondly, and in contrast to the two other sectors, by means of its growing employment shares. The observed large amount of labour reallocation during the process of tertiarisation is consistent with the hypothesis of growing shares in demand due to a higher *income elasticity* in the services sector.

Secondly, close inspection of the detailed data for individual EU countries plus Japan and the USA demonstrates the simultaneous operation of opposing mechanisms captured under the static and the dynamic shift effects. The *structural burden* of resource reallocation away from industries with high productivity growth appears to be particularly robust. In all the countries where data are available at constant prices, the dynamic shift effect is negative for the broad decomposition by the primary, secondary and tertiary sectors. Consequently, the structural burden hypothesis is unequivocally confirmed for the services sector when productivity is measured at constant prices. But also within manufacturing, the much more detailed decomposition by NACE 3-digit industries reveals a negative dynamic shift effect in all but three cases. Only Finland, Denmark and the United Kingdom succeeded in shifting labour resources towards industries with higher productivity growth. In all other countries, output expansion of these industries could not keep pace with their increasing labour efficiency.

Conversely, the indication for the *structural bonus* of resource reallocation towards industries with high levels of labour productivity is much weaker. According to the broad decomposition of contributions by the primary, secondary and tertiary sectors, in 10 out of 16 countries the static shift effect is small but positive. In the decompositions of 3-digit industries in the manufacturing sector that effect is positive in 12 countries. In short, the static shift effect is positive in many countries, but also negative in some, and in any case of modest size. Hence, the structural bonus hypothesis can not be generally confirmed. Our data reveal no unequivocal tendency of labour to move into high-productivity industries.[7]

Thirdly, decomposition of the manufacturing sector by the types of industry presented in Table 1 reveals some systematic and robust patterns of differential growth in labour productivity. Besides the capital intensive branches, these are above all the 'entrepreneurial' groups of industries characterised as particularly technology driven, high-skilled, or exhibiting an exceptionally high demand for knowledge-based services. Within their proper taxonomy these industries regularly rank first or second in average annual productivity growth (also in the detailed tables for EU member countries not displayed here). But only for the capital intensive industries do we observe a downsizing of labour resources which fully corresponds to the speed of productivity growth. In the three other types good productivity performance was partly driven by high output growth.[8] Let us recall that for the same industries the structural shift effects are often negative due to shrinking labour shares. What the decomposition does not tell, however, is that such industries expand output while simultaneously leaving labour resources for productive use in other branches of the economy.

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[7] Looking at the contributions of individual types of industry we see that several branches with especially high levels of labour productivity, such as the group comprising of capital intensive production, could not escape passing through the stages of maturity within their respective industry life cycles. The combination of high productivity growth together with limited opportunities for expansion of output necessarily leads to decreasing employment shares. If positive effects of the more entrepreneurial types (such as the technology driven industries) are not sufficiently large to offset this tendency, the static shift efffect turns out to be negative.

[8] Their differential capacity to expand demand is also evident in the 'apparent consumption' (which is equal to production plus imports minus exports) for EU, Japan and the USA taken together. From 1990 to 1998 average annual growth was 3.75 % in technology driven industries, 3.22 % in high-skill industries, and 3.07 % in industries with large inputs from knowledge based services. This compares to 2.68 % for total manufacturing or 1.48 % in capital intensive industries.

Table 2: Detailed decomposition of labour productivity growth in the European Union

EU	Total		static shift	dynamic shift	within-growth
1995-1999 constant prices					
Total	*+0.816*	=	*+0.023*	*-0.008*	*+0.800*
			=	=	=
Agriculture	(+4.05)		-0.051	-0.006	+0.078
Industry	(+0.86)		-0.327	-0.012	+0.276
Services	(+0.68)		+0.402	+0.011	+0.447
1985-1998 constant prices					
Manufacturing					
NACE 3-digit industries	*+2.861*	=	*-0.004*	*-0.098*	*+2.963*
Breakdown by..					
Taxonomy 1	*+2.861*	=	*-0.034*	*-0.072*	*+2.967*
			=	=	=
1. MM	(+2.58)		+0.039	+0.014	+0.687
2. LI	(+1.64)		-0.021	-0.006	+0.365
3. CI	(+5.89)		-0.191	-0.117	+0.744
4. MDI	(+2.08)		+0.140	+0.038	+0.422
5. TDI	(+4.14)		-0.002	-0.001	+0.749
Taxonomy 2	*+2.861*	=	*+0.030*	*-0.003*	*+2.834*
			=	=	=
1. LS	(+2.55)		-0.184	-0.071	+0.933
2. MBC	(+2.11)		+0.154	+0.044	+0.490
3. MWC	(+3.68)		+0.042	+0.017	+0.953
4. HS	(+3.18)		+0.018	+0.006	+0.458
Taxonomy 3	*+2.861*	=	*+0.022*	*+0.009*	*+2.831*
			=	=	=
1. IKBS	(+3.52)		+0.061	+0.025	+0.581
2. IR&A	(+2.65)		+0.106	+0.034	+0.668
3. ITR	(+3.56)		-0.042	-0.020	+0.848
4. Other	(+2.13)		-0.103	-0.031	+0.733

Source: EUROSTAT, OECD, own calculations

In short, consistent with the findings of Fagerberg (2000a) or Timmer and Szirmai (2000), shift-share analysis confirmed that *on average* structural change has a rather weak impact on the aggregate growth of labour productivity as we find no unambigous tendency of labour reallocations to favour industries with high productivity performance. Conversely, we observe a robust structural burden due to the fact that in the industries with fastest productivity growth, expansion of output regularly can not keep pace with the speed of labour shedding.

The above results have a welcome, sobering effect on overly enthusiastic expectations about the meso-macro link. The near equivalence of within industry and aggregate growth tells us, that the direct effects of structural change are best understood as an increment to the more general forces of growth. But we have also argued that the limited nature of the methodology cannot be accepted as an adequate settlement of the issue. Instead, we have learned that the relationship is more complex than mechanical shift share analysis can reveal. There are different effects with different signs for different industries. In the aggregate, many – but not all of these net out. The 'increment' still unfolds some systematic patterns. In particular, the disaggregation of the tables allowed us to demonstrate that (i) differential growth between industries is pronounced and systematic and (ii) industries make different contributions to the overall effects. We can take this as a first indication that structural change in favour of some *specific types* of industry might still be conducive to aggregate growth. The next section will turn to this question within an econometric set-up.

4. 'Producer' and 'user related' spillovers: the econometric evidence

As a pure accounting procedure, decomposition analysis can only detect the direct contributions of structural shifts at the industry level to aggregate growth performance. In contrast, an econometric approach offers the important advantage, that the potential impact of structural change on productivity growth is not limited to effects which are directly accountable, but additionally captures indirect effects resulting from spillovers between different kinds of economic activities. Such spillovers might result from the implementation of new, state-of-the art products and services (*user related spillovers*), as well as through the diffusion of knowledge about, for example, technologically sophisticated methods of production (*producer related spillovers*). In the former case, externalities are intrinsic to the goods purchased and need not be related to any kind of spatial proximity in production. In the latter case, however, the near presence of certain kinds of businesses is advantageous to other activities as well.

4.1. Industrial structure and economic development

To begin with, we focus our attention on the *levels* of economic development, measured by GDP per capita at purchasing power parities (PPP) of 1995. Additionally, we implement a set of structural variables, which define for each country i the share of services (*SOS*) in total value added and the shares of specific types j of 3-digit manufacturing industries in total exports (*XSR*) and imports (*MSR*) relative to the OECD:

$$SOS_i = \frac{VA_i^{services}}{VA_i^{total}} \qquad XSR_i^j = \frac{\frac{X_i^j}{X_i^{tm}}}{\frac{X_{oecd}^j}{X_{oecd}^{tm}}} \qquad MSR_i^j = \frac{\frac{M_i^j}{M_i^{tm}}}{\frac{M_{oecd}^j}{M_{oecd}^{tm}}} \;;$$

Note: SOS = share of services; XSR = relative export shares; MSR =relative import shares; tm = total manufacturing.

These structural variables are not affected by the general increase in the trade shares. They are characterised only by their relative position vis-à-vis the rest of the OECD countries. More than merely indicating general shifts in the composition of output, the XSR variables indicate an economy´s competitive performance with respect to these industries, whereas MSR is also indicative of its relative openness towards specific types of imported goods.

For the following econometric analysis we use a fixed effects panel regression of the form:

$$\begin{aligned} lY_{i,t} = {} & \alpha + \beta_1 lPOP_{i,t} + \beta_2 lPOPWA_{i,t} + \beta_3 EMR_{i,t} + \beta_4 EMR_{i,t-1} + \beta_5 lINVT_{i,t-1} + \beta_6 \Delta lINVT_{i,t} \\ & + \beta_7 EDU_{i,t-1} + \beta_j \mathbf{X}_{i,t-1} + \eta_t + \mu_i + \varepsilon_{i,t} \end{aligned} \qquad (4)$$

The dependent variable $Y_{i,t}$ is given by GDP per capita at purchasing power parities of 1995 for country *i* in year *t*. The following explanatory variables have been included in order to capture different determinants of economic development:

The logarithms for the total population (*lPOP*) and the total population at working age (*lPOPWA*) were included as a means of evaluating the influence of *demographic changes* in the population of a country. Ceteris paribus, GDP per capita falls when the population grows; therefore, the expected sign of the coefficient β_1 is negative. In contrast, if the general size of the population is taken into consideration, a larger fraction of the population at working age is expected to have a positive impact on overall productive capacity, increasing overall GDP. Thus we expect β_2 to be positive.

We use the employment rate (*EMR*) to check for country specific differences in the *business cycle*.[9] The regression also includes the time dummies η_t , which enable us to control for global business cycle effects. As labour productivity should develop in a procyclical manner,

[9] We thereby follow Guellec (2000, p. 7), who applies the employment rate instead of output gap calculations in a similar context of panel growth regressions. The reason is that the latter rely on strong assumptions about productivity growth and thus invite serious problems of endogeneity.

we expect β_3 to be positive. The opposite applies to the lagged employment rate (EMR_{t-1}), for which a higher value of β_4 signals *tighter labour markets*. Investment in physical capital is captured by two variables: first, by the lagged value of total investments in the previous year ($lINVT_{t-1}$) and secondly, by its growth rate ($\Delta lINVT$). The coefficients β_5 and β_6 thus reflect the short and long run impact of *capital deepening* on GDP per capita and should be positive. The same applies to the *human capital* variable, which is given by the lagged level of the average number of years in training or education (*EDU*).

What then follows is a vector of structural variables (***X***) which, in varying combinations, capture different aspects of relative size in certain types of activities. Since tertiarisation was one of the most impressive processes of structural change throughout the 20th century, the lagged share of services in total value added (SOS_{t-1}) was introduced first. For manufacturing industries, variables on the two special types of technology driven and human capital intensive industries turned out to be valuable additions to the regression. The shares of industries with large inputs from knowledge based services was barely significant in any analogously defined specifications and is therefore omitted. In order to mitigate problems of endogeneity, all the structural variables are entered as lagged values (*t-1*); in the case of the *XSR,* variables are also combined with the past growth rates of the respective ratios. The signs of the coefficients for the relative export shares of technology driven and skill intensive industries are expected to be positive, if there are producer related spillovers. In contrast, relative import shares will only turn out to be significant, if there are also user related spillovers from intrinsic characteristics of the goods purchased.

The estimations are based upon a data panel comprised of i = 28 OECD countries over a period of t = 9 years (1990 to 1998). The OECD ECO database was the source of all the data on GDP, populations, employment, and physical investment. Data on education were taken from Bassanini and Scarpetta (2001).[10] Value added shares in the services sector were extracted from OECD (2000). All the other structural variables stem from the UN world trade database, whereby SITC 4 digits were recoded into NACE 3-digits, before aggregation into the according industry types of the three taxonomies. The results are presented in Tables 3 and 4, whereby Specification I is the basic model, with no variables for industrial structure.

[10] They gained the data from De la Fuente and Doménech (2000) and complemented it with information from the regular OECD series “Education at a glance“.

Specification II adds the value added shares of the services sector to the explanatory variables. In Specifications III and IV, the set is expanded by the structural variables for technology driven and skill intensive industries. Finally, Specification V combines indicators of the share of services with the relative export shares of technology and skill intensive industries.

Of the many variables, *EDU* is the most critical. Its limited availability means that the initial sample of 28 countries was reduced by one quarter. As a consequence, we present two tables in which the specifications are all identical, with the exception that Table 3 includes the education variable, whereas it is excluded in Table 4. Although the size of coefficients differ somewhat between the two tables, the results turn out to be surprisingly robust, despite this variation in the number of available observations.

The demographic variables exhibit the correct signs but are not always significant. As expected, the coefficient for population size is negative but only significant when variables on technology driven and skill intensive industries are included. Population at working age has a positive influence on GDP per capita, but is only significant as long as data on skill intensive industries are excluded. The employment rate coefficient is significantly positive (except for Specification II) and seems to work well in capturing some procyclical effects of the general business climate. The negative impact of the lagged employment rate, indicating the relative tightness of the labour market, works as expected. Its significance tends to improve with the inclusion of further structural variables. The lagged levels and the growth rates of investment in physical capital are by far the most robust explanatory variables. With coefficients ranging between 0.20 and 0.43, capital investment appears to be the single most important determinant of GDP per capita. It is again surprising to see that the average years of education are only a significant determinant when the structural variables concerning technology driven and skill intensive industries are included. In all these specifications, its coefficient is of about the same magnitude: an increase in the average length of education by one year raises the income level by 7 %. The share of services only weakly affects GDP levels. Its coefficient for the lagged variable is even negative, very small, and only significant if no other structural variables are included. An obvious explanation would be that in the case of services, causality mostly works the other way round: Higher levels of GDP per capita lead to larger shares for the services sector, due to its comparatively higher income elasticities of demand. Although this is a plausible explanation, it is not our concern here. Using the lagged value of SOS, we only permitted causality to run from industrial structure to growth.

Table 3: Fixed effects panel regression of Log GDP p.c.: 1990 to1998 (with education)

Log GDP per capita at PPP - LSDV	I	II	III	IV	V
	β(t)	β(t)	β(t)	β(t)	β(t)
lPOP	-2,3498***	-2,2253***	-0,2477	-0,4102	0,2876
	(-7,23)	(-6,59)	(-0,87)	(-1,30)	(0,88)
lPOPWA	1,5694***	1,3403***	0,5499**	0,4345	-0,1233
	(6,55)	(5,39)	(2,10)	(1,49)	(-0,42)
EMR	0,4490**	0,2877	0,4179*	0,6544**	0,5970**
	(2,25)	(1,16)	(1,73)	(2,42)	(2,35)
EMR $_{(t-1)}$		0,0317	-0,3553	-0,6553**	-0,5875**
		(0,17)	(-1,54)	(-2,56)	(-2,31)
lINVT $_{(t-1)}$	0,2018***	0,2089***	0,2426***	0,2782***	0,2733***
	(4,98)	(4,94)	(5,56)	(5,73)	(5,67)
Δ IINVT	0,2479***	0,2525***	0,2685***	0,3009***	0,2652***
	(5,81)	(5,43)	(6,01)	(6,07)	(5,47)
EDU $_{(t-1)}$	0,0226	-0,0024	0,0717***	0,0680***	0,0721***
	(1,56)	(-0,14)	(7,13)	(5,94)	(6,50)
SOS $_{(t-1)}$		-0,0052***			-0,0006
		(-2,83)			(-0,31)
XSR_tdi $_{(t-1)}$			0,0991***		0,1342***
			(3,20)		(3,88)
Δ XSR_tdi			0,0803*		0,0562
			(1,84)		(1,03)
MSR_tdi $_{(t-1)}$			0,1156***		
			(3,63)		
XSR_hs $_{(t-1)}$				0,1145***	0,0701*
				(3,30)	(1,95)
Δ XSR_hs				0,0898**	0,1012**
				(2,45)	(2,41)
MSR_hs $_{(t-1)}$				0,0186	
				(0,62)	
year dummies (η_t)	yes	yes	Yes	yes	yes
No. observations	178	152	156	156	136
No. countries	21	19	21	21	19
R-sq within:	0,9144	0,9333	0,9390	0,9242	0,9483

Note: GDP at PPP of 1995; XSR = shares in total exports relative to OECD; MSR = shares in total imports relative to OECD; tdi = technology driven industries; hs = high skill industries.

Table 4: Fixed effects panel regression of Log GDP p.c.: 1990 to1998 (without education)

Log GDP per capita at PPP - LSDV					
	I	II	III	IV	V
	β(t)	β(t)	β(t)	β(t)	β(t)
lPOP	-2,3186***	-2,1263***	-0,6054*	-0,6049*	-0,2577
	(-8,26)	(-7,12)	(-1,90)	(-1,83)	(-0,75)
lPOPWA	1,5103***	1,2487***	0,6007**	0,4517	0,0872
	(6,48)	(5,15)	(2,16)	(1,57)	(0,30)
EMR	0,3135**	-0,3223	-0,1441	0,2771	-0,0382
	(2,10)	(-1,26)	(-0,51)	(0,94)	(-0,13)
EMR $_{(t-1)}$		0,3020	-0,7895***	-1,1745***	-0,9871***
		(1,37)	(-3,09)	(-4,51)	(-3,75)
LINVT $_{(t-1)}$	0,2331***	0,2824***	0,3930***	0,4077***	0,4262***
	(9,10)	(8,51)	(12,87)	(12,91)	(13,91)
□ lINVT	0,2196***	0,2970***	0,2990***	0,2838***	0,3166***
	(8,04)	(8,49)	(8,08)	(7,34)	(8,18)
SOS $_{(t-1)}$		-0,0038*			0,0014
		(-1,81)			(0,63)
XSR_tdi $_{(t-1)}$			0,1693***		0,1347***
			(4,55)		(3,15)
□ XSR_tdi			0,0909***		0,0210
			(2,69)		(0,47)
MSR_tdi $_{(t-1)}$			0,0794**		
			(2,41)		
XSR_hs $_{(t-1)}$				0,1982***	0,1322***
				(5,31)	(3,06)
□ XSR_hs				0,1221***	0,1267**
				(3,12)	(2,50)
MSR_hs $_{(t-1)}$				-0,0210	
				(-0,84)	
year dummies (η_t)	yes	yes	yes	yes	yes
No. observations	232	201	202	202	181
No. countries	28	26	28	28	26
R-sq within:	0,8837	0,8984	0,8844	0,8752	0,9026

Note: GDP at PPP of 1995; XSR = shares in total exports relative to OECD; MSR = shares in total imports relative to OECD; tdi = technology driven industries; hs = high skill industries.

The impact of the relative shares of technology driven and skill intensive industries is more robust. Their lagged values for relative shares in total exports are significantly positive in all the specifications, even when all three structural variables are included. In Specification V, the quantitative impact of an increase in export shares of skill intensive industries relative to the OECD by one unit amounts to a 7 % increase in GDP per capita. For the group of technology driven industries, the same effect results in additional productivity growth of 13 %. For skill intensive industries, an increase in the growth of relative shares by one percentage point has an additional effect of 10 %. In the respective specifications in which relative import shares were included, the group of technology driven (but not skill intensive) industries appears to generate positive user-related spillovers in addition to the externalities related to production.

4.2. Structural change and economic growth

After having demonstrated the existence of a systematic relationship between industrial structure and income levels, we are finally going to examine the impact of structural change on economic *growth*. In contrast to the previous estimation, the following growth regression operates in first differences, also including the lagged dependent variable among the regressors. This dynamic specification requires special instrumentation of the lagged endogenous variable, for which we use the one-step and the two-step GMM estimators developed by Arellano and Bond (1991).[11] The one-step procedure relies on the Huber-White sandwich estimator of variance, which is robust with respect to the problems of heteroscedasticity. Since taking the first difference removes the country specific effects μ_i, our basic model assumes the form:

$$\begin{aligned}\Delta lY_{i,t} &= \alpha + \beta_1 \Delta lY_{i,t-1} + \beta_2 \Delta lPOP_{i,t} + \beta_3 \Delta lPOPWA_{i,t} + \beta_4 \Delta EMR_{i,t} + \beta_5 \Delta EMR_{i,t-1} + \beta_6 \Delta lINVT_{i,t-1} \\ &\quad + \beta_7 \Delta 2lINVT_{i,t} + \beta_{j>7} X_{i,t} + \Delta \eta_t + \varepsilon_{i,t}\end{aligned} \tag{5}$$

Note: Δ var = variable in first differences; Δvar_{t-1}=.. lagged differences; Δ2var = .. second differences

Tables 5 and 6 present the corresponding estimations for both the one-step and the two-step GMM estimator. While the two-step estimator should theoretically be preferred, experimental

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[11] The GMM estimator used by Arellano and Bond implements lagged levels of the dependent variable and the predetermined variables, as well as differences between the strictly exogenous variables as instruments.

evidence reports problems concerning a downward bias in its estimates of the standard errors (Arellano and Bond, 1991; Islam, 2000). Although in our case, both procedures appear to produce very similar outcomes, we nevertheless follow the recommendation made by Arellano and Bond, and use only the one-step results for inferences regarding the coefficients. The two-step results were mainly used to assess the validity of the specification.

A critical assumption underlying the estimations is the lack of any second-order autocorrelation in the residuals from the first differences. The Arellano-Bond tests for first and second order serial correlation are reported in the bottom lines of the tables. Estimates would be inconsistent if the null hypothesis of no second order serial correlation in the A-B test (2) is rejected at a significant level.[12]

The dependent variable $Y_{i,t}$ is given by the annual growth rate of GDP per capita at PPPs of 1995. The education variable was not included, as Arellano and Bond's GMM estimator turned out to be very sensitive to the implied loss of observations. The lagged level of GDP per capita checks the general effects of conditional convergence. With annual data, the logarithm for β_1 provides the conditional convergence parameter $-\lambda$, which (in the neo-classical framework) would explain by what percent per year the initial gap between per capita income relative to its "steady state" level tends to diminish. In our estimates, the coefficients are highly significant but surprisingly low, which would imply an unrealistically fast speed of convergence.[13] This anomaly can however be explained by the short time span covered by the panel and the use of annual data, both of which tend to intensify the impact of short term fluctuations.

[12] In contrast to A-B(2), significant values in the A-B test(1) do not imply inconsistent estimates.

[13] In the one-step estimation, all of them fall within the narrow range of 0.44 (in the specification where structural variables on technology driven industries were included) up to a value of 0.56 (in the basic specification without structural variables). If we take the highest value, the according λ would be 0.58, implying that half of the gap is closed within almost 14 months (=ln(2)/ λ). For its initial interpretation in cross-country regressions see Barro (1991) or Barro and Sala-i-Martin (1995, p. 37). Influential critical views have been put forward by Quah (1996) as well as Lee, Pesaran, and Smith (1997).

Table 5: Dynamic panel regression of growth in GDP per capita: 1990 to1998

Δ Log GDP per capita at PPP - A-B (one-step)

	I	II	III	IV
	β (t)	β (t)	β (t)	β (t)
Δ lGDP $_{(t-1)}$	0.5615***	0.5212***	0.4426***	0.4673 ***
	(6.03)	(6.57)	(5.37)	(5.92)
Δ lPOP	-0.8231***	-0.4515**	-0.2491	-0.3761
	(-3.32)	(-2.02)	(-1.07)	(-1.37)
Δ lPOPWA	0.5226**	0.1351	-0.1228	0.0204
	(2.22)	(0.56)	(-0.50)	(0.08)
Δ EMR	0.3597**	0.3697**	0.3295*	0.3424*
	(2.32)	(2.06)	(1.86)	(1.89)
Δ EMR $_{(t-1)}$	-0.4183**	-0.2224	-0.1550	-0.1907
	(-2.33)	(-0.98)	(-0.66)	(-0.82)
Δ lINVT $_{(t-1)}$	0.1283***	0.1178***	0.1212***	0.1138***
	(4.20)	(3.72)	(5.22)	(5.60)
Δ2 IINVT	0.2213***	0.2310***	0.2448 ***	0.2382***
	(5.87)	(6.27)	(8.33)	(7.64)
SOS $_{(t-1)}$		-0.0003*	-0.0005***	-0.0002***
		(-1.76)	(-2.85)	(-1.89)
Δ XSR_tdi $_{(t-1)}$			0.0641 ***	
			(2.73)	
Δ2 XSR_tdi			0.0244 ***	
			(3.07)	
MSR_tdi $_{(t-1)}$			0.0124**	
			(2.58)	
Δ XSR_hs $_{(t-1)}$				0.0499**
				(2.42)
Δ2 XSR_hs				0.0372***
				(3.25)
MSR_hs $_{(t-1)}$				0.0094**
				(2.31)
Year dummies (η_t)	yes	Yes	Yes	Yes
No. Observations	201	174	173	173
No. Countries	27	26	27	27
A-B test (1)	0.0934	0.0596	0.0166	0.0227
A-B test (2)	0.0892	0.1589	0.2712	0.1617

Note: GDP at PPP of 1995; Δ var = variable in first differences; Δvar_{t-1} =.. lagged differences; Δ2var = .. second differences; XSR (MSR) = shares in total exports (imports) relative to OECD; tdi = technology driven industries; hs =high skill industries.

Table 6: Dynamic panel regression of growth in GDP per capita: 1990 to1998

Δ Log GDP per capita at PPP - A-B (two-step)				
	I	II	III	IV
	β (t)	β (t)	β (t)	β (t)
Δ lGDP $_{(t-1)}$	0.6259***	0.4234***	0.4776***	0.5013***
	(5.64)	(5.67)	(3.17)	(3.22)
Δ lPOP	-0.6174**	-0.3405	-0.5746	-0.1704
	(-2.02)	(0.88)	(-1.90)	(-0.42)
Δ lPOPWA	0.3679	-0.5592	0.4057	-0.1915
	(1.43)	(-□□□□)	(1.54)	(-0.70)
Δ EMR	0.2936**	0.3715*	0.1273	0.0967
	(2.40)	(1.82)	(0.43)	(0.39)
Δ EMR $_{(t-1)}$	-0.4433***	-0.2450***	-0.2541	-0.8315**
	(-6.48)	(-3.90)	(-1.32)	(-2.20)
Δ lINVT $_{(t-1)}$	0.1204***	0.1576***	0.1411***	0.1922***
	(3.56)	(5.72)	(3.02)	(2.80)
Δ2 lINVT	0.2179***	0.2317***	0.2264***	0.2423***
	(12.86)	(10.32)	(7.25)	(7.98)
SOS $_{(t-1)}$		-0.0005***		
		(-□□□□)		
XSR_tdi $_{(t-1)}$			0.0586 **	
			(2.52)	
Δ2 XSR_tdi			0.0332 ***	
			(4.37)	
MSR_tdi $_{(t-1)}$			0.0108 ***	
			(2.83)	
XSR_hs $_{(t-1)}$				0.0467**
				(2.18)
Δ2 XSR_hs				0.0472***
				(4.64)
MSR_hs $_{(t-1)}$				0.0091***
				(3.17)
Year dummies (η_t)	yes	yes	Yes	Yes
No. observations	201	174	173	173
No. Countries	27	26	27	27
A-B test (1)	0.0600	0.2117	0.1411	0.3609
A-B test (2)	0.0950	0.4703	0.3555	0.3280

Note: GDP at PPP of 1995; Δ var = variable in first differences; Δvar_{t-1} =.. lagged differences; Δ2var = .. second differences; XSR (MSR) = shares in total exports (imports) relative to OECD; tdi = technology driven industries; hs =high skill industries.

The variables on demography work as expected, with negative coefficients for total population growth, and a positive impact of growth in the population at working age – at least in the basic equation. The impact of *lPOPWA*, however, is not robust for the inclusion of structural variables. Similar problems arise with employment rates. As expected, the first differences in the employment rate act pro-cyclically and hence have a positive effect, but only remain significant within the one-step estimation. The lagged levels exhibit the appropriate negative sign, which is consistent with its interpretation of relative shortages in the labour market. Again, the coefficients are not always significant, performing better in the two-step than in the one-step estimation. Throughout all the specifications, investment in physical capital is the most consistently significant determinant of productivity growth. It exhibits a positive impact for lagged differences (0.12), and second differences (0.23).

The chosen set of specific structural indicators also constitute significant determinants of aggregate growth. Increasing shares of services, which are included as lagged levels, have a negative impact on the aggregate growth of GDP per capita. This result is again in line with the structural burden hypothesis commonly applied to the services sector, but should not be overstated, as the vast heterogeneity within the service industries has not been taken into account. However, within the manufacturing sector, the lagged differences and the second differences of relative export shares for both technology driven and skill intensive industries have a significant and positive impact on aggregate growth. Their coefficients range between 0.24 and 0.67, providing empirical evidence of substantial producer related spillovers. These are complemented by positive but somewhat smaller user related externalities, with significant coefficients for the lagged levels of relative import shares in technology driven and high skill industries.

5. Summary and conclusions

This paper longs for an empirical validation of the links between meso-structure and macro performance. In the beginning, the direct contribution of structural change to the aggregate growth of labour productivity is measured by conventional shift-share analysis. Consistent with most of the literature, the structural components appear to be largely dominated by the within effects of productivity growth. A critical discussion of detailed results illustrates, why the mechanical aggregation of shift-share analysis hides the more interesting sectoral dynamics beneath the level of average effects. The general conclusions are threefold: (i) structural change generates positive as well as negative contributions to aggregate productivity growth; (ii) since many of these effects net out, structural change on average appears to have only a weak impact; (iii) since certain types of industries systematically achieve higher rates of productivity growth and expansion of output than others, structural change in favour of specific industries might still be conducive to aggregate growth.

This last point is taken up in the final step, where dynamic panel econometrics is applied to test for the impact of specific structural variables on aggregate income and growth. The data panel is comprised of 28 OECD countries; the time frame is 1990 to 1998; the data indicates the levels and first differences of GDP per capita at PPPs of 1995. The set of regressors includes demography, employment rates, capital investment, and average years of education. These are complemented by the value added share of the services sector and relative shares in the exports and imports of technology driven and high skill industries. For the general macro-economic variables, the standard results of cross-country regressions are mostly reproduced. But the additional inclusion of several structural variables generates the following stylised facts:

(i) Although the share of the services sector is positively correlated with income levels, its lagged levels have a negative impact on GDP per capita and annual growth rates after inclusion of the standard variables of cross-country growth regressions. The effect is small, but significant and robust. It is generally consistent with Baumol´s hypothesis of a *structural burden* through unbalanced growth in those branches of the services sector, where productivity gains are hard to achieve.

(ii) Turning to the manufacturing sector, for both technology driven and high skill industries, the lagged levels and first differences for the shares of total exports relative to the OECD have a pronounced positive and significant impact on the level and growth of GDP per capita. This observation might be explained by two distinct channels: The first is a *direct* link to aggregate developments via differential growth favouring 'entrepreneurial' types of industry with a greater capacity to create new markets and expand the consumers' willingness to pay. Secondly, an *indirect* link is provided by positive *producer related spillovers* between industries, for example, when proximity allows for a better diffusion of knowledge within common territorial boundaries.

(iii) It is not only an increase in exports but also in imports and hence the application of technologically advanced products, which contributes positively to aggregate growth. Coefficients are smaller and less robust. But the significant impact of the lagged level of shares in total imports relative to the OECD confirms that *user related spillovers* (intrinsic to certain goods but independent of proximity in production) are also relevant. Positive externalities between industries arise when the economic value of embodied knowledge is not entirely captured in the prices for intermediate goods.

Acknowledgements

The author wants to thank Karl Aiginger, Uwe Cantner, Jan Fagerberg, Paul Geroski, Serguei Kaniovski, Markus Marterbauer, Michael Pfaffermayr, the editors and anonymous referees for helpful comments and suggestions as well as Eva Sokoll and Traude Novak for their data-related assistance.

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Annex

Belgium	**Total**		**static shift**	**dynamic shift**	**within-growth**
1986-1999 constant prices					
Three Sectors	***+1.165***	=	***+0.240***	***-0.250***	***+1.175***
			=	=	=
Agriculture	(-7.78)		+0.096	-0.026	-0.033
Industry	(+2.96)		-0.509	-0.241	+1.065
Services	(+0.22)		+0.652	+0.018	+0.143
1985-1998 constant prices					
Manufacturing					
NACE 3-digit industries	***+7.399***	=	***+1.032***	***-1.299***	***+7.666***
Breakdown by					
Taxonomy 1	***+7.399***	=	***-0.039***	***-0.302***	***+7.740***
			=	=	=
1. MM	(+5.80)		+0.018	+0.015	+1.528
2. LI	(+5.98)		-0.008	-0.009	+1.223
3. CI	(+13.03)		-0.458	-0.619	+2.508
4. MDI	(+5.64)		+0.293	+0.178	+0.965
5. TDI	(+8.99)		+0.117	+0.132	+1.515
Taxonomy 2	***+7.399***	=	***-0.014***	***+0.039***	***+7.374***
			=	=	=
1. LS	(+6.70)		-0.183	-0.160	+2.731
2. MBC	(+7.64)		+0.113	+0.140	+1.679
3. MWC	(+8.60)		+0.100	+0.096	+2.170
4. HS	(+6.60)		-0.044	-0.037	+0.794
Taxonomy 3	***+7.399***	=	***+0.063***	***-0.009***	***+7.345***
			=	=	=
1. IKBS	(+7.54)		+0.313	+0.229	+0.871
2. IR&A	(+6.14)		-0.101	-0.073	+1.571
3. ITR	(+8.80)		-0.159	-0.176	+2.581
4. Other	(+6.92)		+0.010	+0.011	+2.321

Denmark	**Total**		**static shift**	**dynamic shift**	**within-growth**
1986-1999 constant prices					
Three Sectors	***+1.007***	=	***+0.016***	***-0.023***	***+1.013***
			=	=	=
Agriculture	(+6.69)		-0.057	-0.040	+0.168
Industry	(+0.57)		-0.177	-0.014	+0.169
Services	(+1.00)		+0.249	+0.031	+0.676
1985-1998 constant prices					
Manufacturing					
NACE 3-digit industries	***+3.116***	=	***+0.101***	***+0.091***	***+2.923***
Breakdown by					
Taxonomy 1	***+3.116***	=	***-0.043***	***-0.003***	***+3.162***
			=	=	=
1. MM	(+2.13)		+0.213	+0.059	+0.699
2. LI	(+2.18)		-0.001	-0.000	+0.408
3. CI	(+0.12)		-0.190	-0.002	+0.007
4. MDI	(+4.02)		+0.008	+0.004	+1.150
5. TDI	(+6.59)		-0.073	-0.064	+0.898
Taxonomy 2	***+3.116***	=	***-0.011***	***-0.060***	***+3.186***
			=	=	=
1. LS	(+3.44)		-0.191	-0.086	+1.215
2. MBC	(+1.46)		+0.211	+0.042	+0.296
3. MWC	(+3.18)		-0.010	-0.004	+0.754
4. HS	(+4.46)		-0.021	-0.012	+0.921
Taxonomy 3	***+3.116***	=	***+0.030***	***+0.078***	***+3.008***
			=	=	=
1. IKBS	(+1.61)		-0.240	-0.048	+0.300
2. IR&A	(+5.09)		+0.170	+0.115	+1.405
3. ITR	(+2.31)		+0.347	+0.095	+0.420
4. Other	(+2.48)		-0.247	-0.085	+0.883

Germany	**Total**		**static shift**	**dynamic shift**	**within-growth**
1991-1999 constant prices					
Three Sectors	***+2.239***	=	***+0.339***	***-0.039***	***+1.939***
			=	=	=
Agriculture	(+4.65)		-0.043	-0.030	+0.110
Industry	(+2.04)		-0.723	-0.143	+0.866
Services	(+1.75)		+1.105	+0.134	+0.962
1985-1998 constant prices					
Manufacturing					
NACE 3-digit industries	***+4.391***	=	***+0.031***	***-0.130***	***+4.490***
Breakdown by					
Taxonomy 1	***+4.391***	=	***-0.014***	***-0.042***	***+4.447***
			=	=	=
1. MM	(+4.16)		+0.018	+0.010	+1.239
2. LI	(+3.69)		-0.119	-0.068	+0.693
3. CI	(+6.53)		-0.098	-0.074	+0.868
4. MDI	(+3.42)		+0.207	+0.102	+0.539
5. TDI	(+4.95)		-0.021	-0.012	+1.108
Taxonomy 2	***+4.391***	=	***+0.059***	***-0.040***	***+4.372***
			=	=	=
1. LS	(+4.92)		-0.197	-0.155	+1.408
2. MBC	(+3.76)		+0.296	+0.136	+0.898
3. MWC	(+4.53)		-0.035	-0.019	+1.343
4. HS	(+4.04)		-0.006	-0.003	+0.724
Taxonomy 3	***+4.391***	=	***-0.001***	***+0.001***	***+4.391***
			=	=	=
1. IKBS	(+4.44)		+0.086	+0.050	+0.748
2. IR&A	(+4.25)		+0.024	+0.013	+1.242
3. ITR	(+5.18)		-0.032	-0.023	+1.171
4. Other	(+3.93)		-0.079	-0.039	+1.230

Greece	**Total**		**static shift**	**dynamic shift**	**within-growth**
1995-1998 constant prices					
Three Sectors	***-0.087***	=	***-0.771***	***-0.381***	***+1.066***
			=	=	=
Agriculture	(+59.55)		-1.046	-0.359	+1.129
Industry	(+1.23)		-0.251	-0.012	+0.363
Services	(-0.62)		+0.525	-0.010	-0.426
1985-1998 constant prices					
Manufacturing					
NACE 3-digit industries	***-1.360***	=	***+0.284***	***-0.169***	***-1.475***
Breakdown by					
Taxonomy 1	***-1.360***	=	***+0.115***	***-0.114***	***-1.361***
			=	=	=
1. MM	(-1.66)		-0.137	+0.031	-0.364
2. LI	(-2.22)		-0.085	+0.030	-0.581
3. CI	(+2.07)		-0.170	-0.048	+0.368
4. MDI	(-2.39)		+0.424	-0.102	-0.650
5. TDI	(-1.98)		+0.083	-0.025	-0.134
Taxonomy 2	***-1.360***	=	***+0.117***	***-0.031***	***-1.446***
			=	=	=
1. LS	(-0.12)		-0.163	+0.003	-0.074
2. MBC	(-4.90)		-0.167	+0.079	-0.747
3. MWC	(-2.65)		+0.426	-0.102	-0.437
4. HS	(-3.00)		+0.022	-0.011	-0.188
Taxonomy 3	***-1.360***	=	***+0.135***	***-0.041***	***-1.454***
			=	=	=
1. IKBS	(-4.87)		+0.009	-0.004	-0.720
2. IR&A	(-1.64)		+0.411	-0.069	-0.288
3. ITR	(-0.50)		-0.007	+0.001	-0.126
4. Other	(-0.75)		-0.277	+0.032	-0.320

Spain	**Total**		**static shift**	**dynamic shift**	**within-growth**
1995-1999 constant prices					
Three Sectors	***-1.493***	=	***+0.010***	***-0.020***	***-1.483***
			=	=	=
Agriculture	(+2.09)		-0.098	-0.008	+0.085
Industry	(-0.56)		-0.061	+0.002	-0.188
Services	(-2.21)		+0.168	-0.014	-1.380
1985-1998 constant prices					
Manufacturing					
NACE 3-digit industries	***+1.765***	=	***-0.032***	***-0.675***	***+2.472***
Breakdown by					
Taxonomy 1	***+1.765***	=	***-0.134***	***-0.217***	***+2.116***
			=	=	=
1. MM	(+1.33)		+0.081	+0.014	+0.291
2. LI	(+0.76)		+0.080	+0.011	+0.226
3. CI	(+7.43)		-0.325	-0.213	+0.854
4. MDI	(+0.30)		+0.070	+0.003	+0.079
5. TDI	(+6.35)		-0.042	-0.031	+0.665
Taxonomy 2	***+1.765***	=	***-0.007***	***+0.026***	***+1.746***
			=	=	=
1. LS	(+1.41)		-0.367	-0.070	+0.654
2. MBC	(+1.75)		+0.208	+0.058	+0.480
3. MWC	(+2.10)		+0.100	+0.022	+0.394
4. HS	(+2.86)		+0.053	+0.016	+0.217
Taxonomy 3	***+1.765***	=	***+0.048***	***-0.018***	***+1.735***
			=	=	=
1. IKBS	(+1.60)		+0.215	+0.039	+0.195
2. IR&A	(+0.46)		+0.014	+0.001	+0.119
3. ITR	(+2.66)		-0.063	-0.022	+0.703
4. Other	(+2.03)		-0.119	-0.036	+0.718

France	**Total**		**static shift**	**dynamic shift**	**within-growth**
1986-1999 constant prices					
Three Sectors	***+1.202***	=	***+0.163***	***-0.111***	***+1.150***
			=	=	=
Agriculture	(+1.36)		+0.010	+0.001	+0.019
Industry	(+2.18)		-0.426	-0.153	+0.744
Services	(+0.60)		+0.579	+0.042	+0.387
1985-1998 constant prices					
Manufacturing					
NACE 3-digit industries	***+2.971***	=	***-0.016***	***-0.029***	***+3.016***
Breakdown by					
Taxonomy 1	***+2.971***	=	***-0.063***	***-0.102***	***+3.135***
			=	=	=
1. MM	(+2.63)		+0.100	+0.037	+0.629
2. LI	(+2.05)		-0.017	-0.006	+0.414
3. CI	(+6.58)		-0.229	-0.167	+0.812
4. MDI	(+2.69)		+0.165	+0.061	+0.542
5. TDI	(+3.16)		-0.082	-0.027	+0.738
Taxonomy 2	***+2.971***	=	***+0.052***	***+0.013***	***+2.906***
			=	=	=
1. LS	(+2.85)		-0.100	-0.046	+1.029
2. MBC	(+2.35)		-0.009	-0.003	+0.581
3. MWC	(+3.88)		+0.128	+0.055	+0.992
4. HS	(+2.25)		+0.033	+0.007	+0.303
Taxonomy 3	***+2.971***	=	***+0.061***	***+0.038***	***+2.871***
			=	=	=
1. IKBS	(+3.50)		+0.072	+0.028	+0.651
2. IR&A	(+2.94)		+0.215	+0.073	+0.621
3. ITR	(+3.50)		+0.036	+0.018	+0.806
4. Other	(+2.13)		-0.262	-0.081	+0.793

Ireland	**Total**		**static shift**	**dynamic shift**	**within-growth**
1990-1998 current prices					
Three Sectors	***+5.994***	=	***-0.261***	***-0.124***	***+6.385***
			=	=	=
Agriculture	(+0.90)		-0.281	-0.006	+0.025
Industry	(+9.85)		-0.380	-0.289	+3.396
Services	(+4.73)		+0.399	+0.171	+2.964
1985-1998 constant prices					
Manufacturing					
NACE 3-digit industries	***+5.351***	=	***+0.421***	***-0.237***	***+5.167***
Breakdown by					
Taxonomy 1	***+5.351***	=	***+0.363***	***+0.150***	***+4.838***
			=	=	=
1. MM	(+1.39)		+0.014	+0.004	+0.318
2. LI	(+1.32)		-0.199	-0.070	+0.279
3. CI	(+40.20)		-0.064	-0.153	+2.479
4. MDI	(+2.95)		-0.358	-0.116	+1.082
5. TDI	(+5.20)		+0.970	+0.484	+0.679
Taxonomy 2	***+5.351***	=	***+0.374***	***+0.842***	***+4.135***
			=	=	=
1. LS	(+1.70)		-0.956	-0.234	+0.896
2. MBC	(+0.54)		+0.054	+0.005	+0.070
3. MWC	(+11.11)		+0.706	+0.862	+2.779
4. HS	(+4.17)		+0.570	+0.209	+0.390
Taxonomy 3	***+5.351***	=	***+0.552***	***+0.803***	***+3.996***
			=	=	=
1. IKBS	(+16.09)		+0.696	+0.890	+1.847
2. IR&A	(+3.02)		+0.128	+0.032	+0.840
3. ITR	(+2.93)		-0.034	-0.017	+0.667
4. Other	(+1.69)		-0.238	-0.102	+0.641

Italy	**Total**		**static shift**	**dynamic shift**	**within-growth**
1986-1999 constant prices					
Three Sectors	***+1.994***	=	***+0.226***	***-0.162***	***+1.930***
			=	=	=
Agriculture	(+6.28)		-0.133	-0.166	+0.345
Industry	(+2.18)		-0.219	-0.080	+0.850
Services	(+1.32)		+0.578	+0.083	+0.735
1985-1998 constant prices					
Manufacturing					
NACE 3-digit industries	***+0.912***	=	***+0.059***	***-0.346***	***+1.199***
Breakdown by					
Taxonomy 1	***+0.912***	=	***-0.039***	***-0.050***	***+1.001***
			=	=	=
1. MM	(+0.72)		+0.208	+0.020	+0.198
2. LI	(+0.89)		+0.057	+0.008	+0.218
3. CI	(+2.86)		-0.217	-0.073	+0.398
4. MDI	(-0.02)		-0.053	+0.000	-0.005
5. TDI	(+1.26)		-0.034	-0.005	+0.192
Taxonomy 2	***+0.912***	=	***+0.039***	***-0.006***	***+0.879***
			=	=	=
1. LS	(+0.55)		-0.248	-0.020	+0.230
2. MBC	(+0.96)		+0.124	+0.017	+0.205
3. MWC	(+1.96)		-0.016	-0.004	+0.436
4. HS	(+0.05)		+0.178	+0.001	+0.008
Taxonomy 3	***+0.912***	=	***+0.011***	***-0.045***	***+0.947***
			=	=	=
1. IKBS	(+2.71)		+0.009	+0.003	+0.380
2. IR&A	(+0.13)		+0.179	+0.003	+0.033
3. ITR	(+2.12)		-0.184	-0.051	+0.484
4. Other	(+0.13)		+0.007	+0.000	+0.050

Netherlands	Total		static shift	dynamic shift	within-growth
1995-1999 constant prices					
Three Sectors	***+0.896***	=	***-0.114***	***-0.001***	***+1.011***
			=	=	=
Agriculture	(+3.30)		-0.082	-0.005	+0.057
Industry	(+0.82)		-0.397	-0.012	+0.203
Services	(+1.02)		+0.364	+0.016	+0.751
1985-1998 constant prices					
Manufacturing					
NACE 3-digit industries	***+4.180***	=	***-0.206***	***-0.900***	***+5.285***
Breakdown by					
Taxonomy 1	***+4.180***	=	***-0.155***	***-0.131***	***+4.466***
			=	=	=
1. MM	(+3.76)		+0.103	+0.055	+0.865
2. LI	(+1.40)		+0.099	+0.024	+0.240
3. CI	(+6.97)		-0.303	-0.171	+0.928
4. MDI	(+5.18)		+0.106	+0.076	+1.424
5. TDI	(+5.29)		-0.161	-0.114	+1.009
Taxonomy 2	***+4.180***	=	***-0.076***	***-0.097***	***+4.352***
			=	=	=
1. LS	(+5.83)		-0.205	-0.162	+1.892
2. MBC	(+2.46)		+0.175	+0.071	+0.458
3. MWC	(+4.11)		-0.170	-0.078	+1.507
4. HS	(+4.04)		+0.125	+0.071	+0.496
Taxonomy 3	***+4.180***	=	***-0.034***	***+0.049***	***+4.164***
			=	=	=
1. IKBS	(+4.04)		-0.243	-0.112	+0.910
2. IR&A	(+5.00)		+0.287	+0.193	+1.119
3. ITR	(+5.30)		-0.004	-0.003	+1.238
4. Other	(+2.83)		-0.073	-0.030	+0.897

Austria	**Total**		**static shift**	**dynamic shift**	**within-growth**
1995-1999 constant prices					
Three Sectors	***+1.992***	=	***+0.083***	***-0.121***	***+2.031***
			=	=	=
Agriculture	(+8.95)		-0.074	-0.012	+0.102
Industry	(+4.52)		-0.601	-0.125	+1.595
Services	(+0.53)		+0.758	+0.015	+0.334
1985-1998 constant prices					
Manufacturing					
NACE 3-digit industries	***+5.897***	=	***+0.052***	***-0.149***	***+5.994***
Breakdown by					
Taxonomy 1	***+5.897***	=	***-0.106***	***-0.138***	***+6.142***
			=	=	=
1. MM	(+5.07)		+0.180	+0.134	+1.387
2. LI	(+4.53)		+0.037	+0.026	+1.126
3. CI	(+8.82)		-0.455	-0.432	+1.468
4. MDI	(+5.96)		+0.042	+0.027	+1.183
5. TDI	(+8.65)		+0.089	+0.107	+0.978
Taxonomy 2	***+5.897***	=	***-0.048***	***-0.094***	***+6.039***
			=	=	=
1. LS	(+4.01)		-0.381	-0.208	+1.640
2. MBC	(+4.85)		+0.371	+0.250	+1.086
3. MWC	(+11.13)		-0.196	-0.242	+2.729
4. HS	(+4.79)		+0.158	+0.107	+0.585
Taxonomy 3	***+5.897***	=	***+0.066***	***-0.257***	***+6.088***
			=	=	=
1. IKBS	(+11.02)		-0.082	-0.138	+1.183
2. IR&A	(+2.24)		+0.452	+0.117	+0.565
3. ITR	(+8.77)		-0.066	-0.081	+2.567
4. Other	(+5.09)		-0.238	-0.156	+1.773

Portugal	Total		static shift	dynamic shift	within-growth
1995-1999 constant prices					
Three Sectors	***+2.011***	=	***-0.162***	***-0.203***	***+2.376***
			=	=	=
Agriculture	(-7.18)		+0.196	-0.025	-0.162
Industry	(-0.13)		+0.739	-0.005	-0.048
Services	(+4.25)		-1.098	-0.173	+2.586
1985-1998 constant prices					
Manufacturing					
NACE 3-digit industries	***+5.089***	=	***+3.597***	***-4.781***	***+6.273***
Breakdown by					
Taxonomy 1	***+5.089***	=	***-0.112***	***-0.458***	***+5.659***
			=	=	=
1. MM	(+4.91)		-0.165	-0.113	+1.072
2. LI	(+3.03)		+0.087	+0.053	+1.262
3. CI	(+20.82)		-0.244	-0.319	+1.582
4. MDI	(+2.92)		+0.294	+0.086	+0.680
5. TDI	(+18.89)		-0.084	-0.165	+1.064
Taxonomy 2	***+5.089***	=	***+0.045***	***+0.038***	***+5.006***
			=	=	=
1. LS	(+3.26)		-0.049	-0.022	+1.866
2. MBC	(+6.74)		-0.017	-0.020	+1.690
3. MWC	(+8.34)		+0.090	+0.056	+1.053
4. HS	(+7.92)		+0.022	+0.023	+0.397
Taxonomy 3	***+5.089***	=	***+0.086***	***-0.387***	***+5.391***
			=	=	=
1. IKBS	(+7.37)		-0.252	-0.276	+0.961
2. IR&A	(+4.00)		+0.251	+0.111	+0.820
3. ITR	(+8.83)		-0.357	-0.433	+2.065
4. Other	(+3.59)		+0.444	+0.211	+1.545

Finland	**Total**		**static shift**	**dynamic shift**	**within-growth**
1995-1999 constant prices					
Three Sectors	***+0.732***	=	***+0.203***	***-0.107***	***+0.636***
			=	=	=
Agriculture	(-22.61)		+0.314	-0.100	-0.373
Industry	(+3.22)		-0.056	-0.007	+0.947
Services	(+0.09)		-0.055	-0.000	+0.062
1985-1998 constant prices					
Manufacturing					
NACE 3-digit industries	***+5.939***	=	***+0.539***	***+0.583***	***+4.817***
Breakdown by					
Taxonomy 1	***+5.939***	=	***+0.301***	***+0.294***	***+5.344***
			=	=	=
1. MM	(+4.70)		+0.055	+0.035	+1.200
2. LI	(+4.88)		-0.373	-0.344	+1.362
3. CI	(+9.84)		+0.235	+0.203	+1.438
4. MDI	(+3.05)		-0.163	-0.060	+0.717
5. TDI	(+7.40)		+0.547	+0.460	+0.626
Taxonomy 2	***+5.939***	=	***+0.257***	***+0.214***	***+5.468***
			=	=	=
1. LS	(+4.54)		-0.574	-0.366	+1.571
2. MBC	(+4.85)		-0.112	-0.095	+1.097
3. MWC	(+7.28)		+0.761	+0.555	+2.133
4. HS	(+4.97)		+0.182	+0.120	+0.667
Taxonomy 3	***+5.939***	=	***+0.119***	***+0.133***	***+5.686***
			=	=	=
1. IKBS	(+7.85)		+0.479	+0.459	+1.136
2. IR&A	(+3.44)		+0.123	+0.055	+0.840
3. ITR	(+6.86)		+0.013	+0.010	+2.261
4. Other	(+5.15)		-0.495	-0.391	+1.450

Sweden	**Total**		**static shift**	**dynamic shift**	**within-growth**
1995-1998 constant prices					
Three Sectors	***+4.262***	=	***-0.065***	***-0.021***	***+4.348***
			=	=	=
Agriculture	(+16.07)		-0.143	-0.033	+0.194
Industry	(+5.46)		+0.085	+0.012	+1.440
Services	(+3.75)		-0.007	-0.001	+2.715
1985-1998 constant prices					
Manufacturing					
NACE 3-digit industries	***+0.438***	=	***+0.117***	***-0.004***	***+0.326***
Breakdown by					
Taxonomy 1	***+0.438***	=	***+0.023***	***+0.037***	***+0.378***
			=	=	=
1. MM	(+0.19)		-0.140	-0.004	+0.051
2. LI	(+0.53)		-0.264	-0.021	+0.094
3. CI	(+0.70)		-0.209	-0.016	+0.115
4. MDI	(-0.91)		+0.098	-0.011	-0.154
5. TDI	(+1.27)		+0.538	+0.089	+0.272
Taxonomy 2	***+0.438***	=	***+0.078***	***-0.069***	***+0.429***
			=	=	=
1. LS	(+1.14)		-0.468	-0.079	+0.303
2. MBC	(+0.01)		+0.235	+0.000	+0.004
3. MWC	(-0.13)		+0.211	-0.003	-0.039
4. HS	(+0.99)		+0.101	+0.012	+0.161
Taxonomy 3	***+0.438***	=	***+0.019***	***-0.100***	***+0.519***
			=	=	=
1. IKBS	(-0.48)		+0.565	-0.032	-0.078
2. IR&A	(+1.08)		-0.130	-0.018	+0.254
3. ITR	(+0.96)		-0.421	-0.050	+0.285
4. Other	(+0.19)		+0.005	+0.000	+0.059

United Kingdom	**Total**		**static shift**	**dynamic shift**	**within-growth**
1989-1999 constant prices					
Three Sectors	***+1.708***	=	***-0.031***	***-0.124***	***+1.863***
			=	=	=
Agriculture	(+6.84)		-0.061	-0.027	+0.085
Industry	(+2.84)		-0.664	-0.188	+0.919
Services	(+1.29)		+0.694	+0.091	+0.858
1985-1998 constant prices					
Manufacturing					
NACE 3-digit industries	***+2.923***	=	***+0.006***	***+0.010***	***+2.906***
Breakdown by					
Taxonomy 1	***+2.923***	=	***+0.005***	***+0.011***	***+2.907***
			=	=	=
1. MM	(+2.74)		-0.013	-0.005	+0.753
2. LI	(+1.10)		-0.060	-0.010	+0.230
3. CI	(+4.59)		-0.109	-0.050	+0.473
4. MDI	(+3.10)		+0.106	+0.042	+0.714
5. TDI	(+4.02)		+0.080	+0.035	+0.736
Taxonomy 2	***+2.923***	=	***+0.029***	***-0.059***	***+2.953***
			=	=	=
1. LS	(+3.04)		-0.099	-0.045	+1.098
2. MBC	(+0.96)		+0.078	+0.009	+0.201
3. MWC	(+2.68)		+0.143	+0.045	+0.734
4. HS	(+5.85)		-0.094	-0.068	+0.920
Taxonomy 3	***+2.923***	=	***+0.034***	***+0.018***	***+2.871***
			=	=	=
1. IKBS	(+2.63)		+0.035	+0.010	+0.524
2. IR&A	(+3.96)		+0.109	+0.053	+0.951
3. ITR	(+2.42)		+0.111	+0.036	+0.557
4. Other	(+2.54)		-0.221	-0.082	+0.839

Japan	**Total**		**static shift**	**dynamic shift**	**within-growth**
1990-1999 current prices					
Three Sectors	***+0.741***	=	***+0.141***	***+0.035***	***+0.566***
			=	=	=
Agriculture	(-0.30)		-0.066	+0.007	-0.026
Industry	(+0.45)		-0.463	-0.017	+0.151
Services	(+0.76)		+0.670	+0.045	+0.441
1985-1998 current prices					
Manufacturing					
NACE 3-digit industries	***+6.483***	=	***+0.014***	***+0.055***	***+6.413***
Breakdown by					
Taxonomy 1	***+6.483***	=	***-0.019***	***-0.021***	***+6.523***
			=	=	=
1. MM	(+5.91)		+0.078	+0.057	+1.523
2. LI	(+4.83)		-0.098	-0.079	+1.134
3. CI	(+8.88)		-0.111	-0.083	+1.073
4. MDI	(+6.12)		+0.173	+0.136	+1.233
5. TDI	(+8.43)		-0.062	-0.053	+1.560
Taxonomy 2	***+6.483***	=	***+0.022***	***+0.019***	***+6.441***
			=	=	=
1. LS	(+5.26)		-0.062	-0.046	+1.889
2. MBC	(+6.29)		+0.006	+0.005	+1.422
3. MWC	(+7.47)		+0.043	+0.034	+2.175
4. HS	(+7.72)		+0.036	+0.027	+0.955
Taxonomy 3	***+6.483***	=	***+0.045***	***+0.041***	***+6.397***
			=	=	=
1. IKBS	(+8.53)		+0.053	+0.049	+1.275
2. IR&A	(+6.67)		+0.156	+0.115	+1.713
3. ITR	(+6.05)		+0.057	+0.041	+1.476
4. Other	(+5.53)		-0.220	-0.165	+1.934

USA	Total		static shift	dynamic shift	within-growth
1987-1997 constant prices					
Three Sectors	***+1.449***	=	***+0.042***	***-0.049***	***+1.456***
			=	=	=
Agriculture	(+1.31)		-0.012	-0.002	+0.037
Industry	(+2.58)		-0.304	-0.084	+0.641
Services	(+1.08)		+0.359	+0.037	+0.779
1985-1998 constant prices					
Manufacturing					
NACE 3-digit industries	***+2.566***	=	***-0.075***	***-0.245***	***+2.886***
Breakdown by					
Taxonomy 1	***+2.566***	=	***-0.058***	***-0.192***	***+2.817***
			=	=	=
1. MM	(+1.22)		+0.180	+0.031	+0.310
2. LI	(+0.80)		-0.026	-0.004	+0.180
3. CI	(+5.33)		-0.051	-0.025	+0.507
4. MDI	(+1.29)		+0.146	+0.019	+0.267
5. TDI	(+7.06)		-0.307	-0.213	+1.553
Taxonomy 2	***+2.566***	=	***-0.036***	***-0.059***	***+2.661***
			=	=	=
1. LS	(+1.85)		-0.023	-0.006	+0.562
2. MBC	(+0.74)		+0.155	+0.016	+0.160
3. MWC	(+4.25)		-0.046	-0.020	+1.314
4. HS	(+3.63)		-0.123	-0.050	+0.625
Taxonomy 3	***+2.566***	=	***-0.007***	***-0.062***	***+2.634***
			=	=	=
1. IKBS	(+4.46)		-0.215	-0.099	+1.112
2. IR&A	(+3.10)		+0.086	+0.028	+0.695
3. ITR	(+1.26)		+0.203	+0.032	+0.307
4. Other	(+1.84)		-0.081	-0.023	+0.520

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