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Inter – regional Mobility in the Accession Countries: A Comparison to EU15-Member States

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Abstract

This paper uses a data set covering 9 EU15 member states and 7 candidate countries and new member states to compare inter-regional migration patterns in the 1990s. We find that migration is lower in candidate countries and new member states than in EU15 member states. Also in contrast to the EU15 member states migration has fallen in candidate countries and new member states. This casts doubt on the viability of migration as an adjustment mechanism. Estimating place to place models of migration we find that migration is less reactive to regional disparities in candidate countries and new member states than in EU15 member states. If reaction to labor market disparities were similar to EU15 states net migration should increase by a factor of 2 to over 10.

Key Words: Regional Labor Market Adjustment, Transition, EU - Accession
JEL – Classification: P25, J61

Contents

1 Introduction

The stylized fact of low migration rates in Europe has been repeatedly documented. Decressin/Fatas (1995), Fatas (2000), Obstfeld/Peri (2000) and Puhani (2001) find that migration only contributes moderately to the reduction of differences in regional labor market conditions in European Union (EU) – member states. Recent evidence suggests that migration is an even less efficient mechanism for equilibrating regional labor markets in candidate countries and new member states. Fidrmuc (2004) finds that overall internal mobility in the new EU member states is low and inefficient in reducing regional disparities. Ederveen/Bardsley (2003) find that migrants in the candidate countries and new member states are less responsive to regional wage and employment disparities than in EU15 member states and Drinkwater (2003) reports that the willingness to migrate across regions and national borders is at the lower end among European countries. Cseres-Gergeley (2002), Hazans (2003), Kallai (2003) and Fidrmuc/Huber (2003) provide case studies on Hungary, the Baltics, Romania and the Czech Republic to provide further evidence on low migration in candidate countries and new member states.

The potential economic and political consequences of this lack of labor mobility have been repeatedly stressed. Low internal migration increases mismatch unemployment and will thus contribute to high nation wide unemployment

(Boeri/Scarpetta, 1996). Aside from causing social problems, this may also have political implications. In the long run higher unemployment rates may lead to increased demands for regional transfers. This in turn may cause dissatisfaction on the side of those parts of the population financing regional transfers and lead to the disintegration of political unions.[2] Furthermore, lack of migration impinges on the short run adjustment capabilities of regional labor markets to asymmetric shocks (Eichengreen, 1998). Lacking migration may thus also hamper the viability of monetary unions. Since exchange rate fluctuations are impossible in monetary Unions, the absence of migration leads to adjustment to asymmetric shocks through wages, unemployment or participation rates. To the extent that these adjustment mechanisms are socially or politically less desirable than migration, low migration will cause social and political costs of EMU (Fidrmuc, 2003).

Despite these profound implications, little is known about the causes for low migration in Europe. A number of explanations such as inefficiencies in spatial matching (Faini et al, 1997), the effects of social transfers on the search incentives of the unemployed (Fredriksson, 1999), housing market imperfections (Cameron/Muellbauer, 1998) and cultural differences as reflected for instance in attitudes towards risk (Bentivogli/Pagano, 1999) have been put forward to account for this puzzle. A final verdict on which of these factors is decisive, however, has not been reached.

In this paper we use data on inter-regional migration in the 1990s for nine EU15 – member states and seven countries that either joined the EU in 2004 or are negotiating on membership, to compare regional migration patterns. Our goals are twofold. First, we explore the stylized facts of migration in candidate countries and new member states and compare them to EU15 member states. In the next section we thus describe migratory moves in the two regions. We highlight a number of differences in migration patterns. In particular interregional migration is low by EU15 standards in candidate countries and new member states and has been falling throughout the 1990s. A lower share of migration is accounted for by active aged persons and in both regions around 90% of all measured migration flows are

churning flows, which contribute little to the equilibration of aggregate regional disparities. We also present evidence that a substantial part of migration covers only short distances and that migration rates are strongly correlated over time. This suggests that migration presents a rather protracted and sluggish adjustment mechanism to regional disparities.

Second, we compare the responsiveness of migration to regional income and labor market disparities by estimating place to place models of migration. We estimate a model suggested by Bentivogli/Pagano (1999), incorporating risk aversion in section three. In contrast to earlier comparative work, this allows us to estimate directly the elasticity of migration with respect to regional income and employment rate disparities in both EU15 - member states and candidate countries and new member states. We find that both net and gross migration is less reactive to regional employment rate and income disparities in the candidate countries and new member states and that attitudes towards risk play a minor, but geographic factors a major role in determining migration. We also show that net migration should increase by a factor of 2 to 10 in the candidate countries and new member states if it were as responsive to regional disparities in as in Spain, Italy or the Netherlands. Section four finally concludes the paper by drawing some policy conclusions and outlining potential directions for further research.

2 Stylized Facts

We use internal migration data for the 1990s on nine European Union countries namely, Austria, Belgium, Denmark, Germany, Italy, the Netherlands, Spain, Sweden and the UK and seven countries which either have completed negotiations for membership or are still negotiating accession namely, the Czech Republic, Estonia, Hungary, Poland, Slovenia, Slovakia and Romania. All data were taken from Eorostat's Cronos database. As shown in table 1 these data vary in scope and content. In particular, the data refer to different regional units in various countries. For most countries data refer to NUTS II regions, but for Denmark, Estonia

and Slovenia, data are available only at the NUTS III level, while in Germany and the UK they only cover NUTS I regions. These differences in regional disaggregation imply substantial differences in region size. For instance, the largest territories in terms of average population are the German and U.K. NUTS I regions and the smallest regions are the NUTS III regions of Slovenia, Estonia and Demark. For regional units at the same level of regional disaggregation average size also varies considerably. In terms of population the largest NUTS II regions are in Italy with 2.9 million inhabitants and the smallest in Austria with 898 thousand.[3]

The data also differ with respect to the time period covered[4]. For Germany for instance data are only available to 1993 and in Slovakia only the year 2000 is available. Thus in an attempt to maximize available information, we conduct our descriptive analysis for two sample years: 1992 and 1999.[5] We break this rule only in the cases of Poland, where we report data from 1990 instead of 1992 and for Slovakia where data from the year 2000 are taken instead of 1999. Furthermore, most of the data collected are place to place data. For two countries (Romania and Slovakia), however, place to place information is not available.[6] Thus we cannot conduct analysis in the same depth for these countries.

{Table 1: Around here}

2.1 Net and Gross Migratory Moves

In Table 2 we report the number of migrants changing their region of residence as a percentage of the country's population in 1992 and 1999, respectively. This indicator has been used as a measure of the overall mobility by a number of authors (e.g. Fatas, 2000, Faini et al, 1997, Bentolila, 1999). Formally, it can be defined as half of the sum of total outflows and inflows across regions[7]:

$$GF = \frac{1}{2}\left[\frac{\sum_i (O_i + M_i)}{\sum_i POP_i}\right] \qquad (1)$$

where GF stands for the share of gross migration flows in total population, O_i and M_i are the migrant outflows and inflows from region i, respectively, and POP_i is the population of region i.

Gross migration may, however, be a misleading indicator, because a substantial part of migration is accounted for by churning flows, where people move in and out of the same region.[8] Most macro-economic models, which consider migration as an equilibrating mechanism in the face of regional disparities focus on net-migration. Thus measures of net migration should better capture the efficiency of inter regional migration flows in equilibrating regional disparities in unemployment and income. This can be measured as the sum absolute values of the difference between emigration and immigration across regions. In the notation of equation (1) net migration flows as a share of total population are given by:

$$NF = \frac{1}{2}\left[\frac{\sum_i |O_i - M_i|}{\sum_i POP_i}\right] \tag{2}$$

and the share of net flows in total flows is:[9]

$$SNF = \left[\frac{\sum_i |O_i - M_i|}{\sum_i (O_i + M_i)}\right] = \frac{NF}{GF} \tag{3}$$

The results of this decomposition (see table 2) do not suggest that migration is a viable mechanism for regional adjustment in Europe. Although there is some variance across countries, migration is low in current EU15-member states and even lower in candidate countries and new member states. In the average EU15 member state around 1% of the population changes region of residence within a year. Gross migration rates are substantially lower than 1% only in Italy and Spain. In the candidate countries and new member states gross migration rates exceed the 1% mark only in Romania and Hungary and are around or below 0.5% in most countries.

{Table 2 around here}

Furthermore, in contrast to the EU15-Member states, where gross migration has stagnated or even increased over the period from 1992 to 1999, migration rates have fallen in all candidate countries and new member states for which we have data in both time periods. This finding is consistent with a number of results reported by other authors researching migration patterns in the candidate countries and new member states (Kallai, 2004, Hazans, 2004, Fidrmuc/Huber, 2004) but stands in stark contrast to the increase of regional disparities found in much of the literature on regional development (Egger/Huber/Pfaffermayr 2004, Petrakos 1995, Huber/Palme, 2001, Gorzelak, 1996), which suggests that regional divergence predominated in the last decade in the candidate countries and new member states and thus incentives to migrate should have increased rather than decreased.

The low effectiveness of migration at lowering regional disparities is underlined by net migration rates. They rarely exceed 0.1% of the population in the candidate countries and new member states and haven fallen in all countries but the Czech Republic.[10] In EU15-member states by contrast net migration flows at least approach the 0.1% level in all countries but Austria and the Netherlands and the evidence concerning a decline is less ubiquous. Thus a substantial part of migration (around 90%) in both regions is due to churning flows, which contribute little to the narrowing of aggregate regional disparities.

2.2 Regional and Demographic Structure

Our data refers to population moves. This may distort results concerning labor migration, if some migration is undertaken for reasons other than economic activity. Examples of such migration may be students moving to their place of education or pensioners to retire. Furthermore, as noted for example by Cameron/Muellbauer (1998) migration among neighboring regions and within urban agglomerations may be primarily motivated by housing motives, if residents of one region (such as a city) move to another (such as the suburbs) without changing workplace. Such migration is obviously not associated with income or unemployment disparities between regions, but is motivated by cheaper housing, better educational infrastructure or

better living conditions in the receiving region. Thus it will do little to equilibrate regional labor market disparities, since effective labor supply remains unchanged both in the sending and receiving region.

{Table 3 Around here}

While gauging the exact extent of such non-labor market motivated migration is impossible with our data, some indication is available. First, for a number of countries we have available migration by age groups and gender.[11] This allows us to estimate the share of active aged (between 20 and 64) in total migration i.e., of those that at least theoretically could move for labor market reasons. These data (see Table 3) suggest that the share of active aged is slightly lower in most candidate countries and new member states than in the EU15. In typical candidate countries and new member states between 65% and 70% of the migrants are active aged, (with the outliers being Romania with 74% and Estonia with around 58%). In the member states by contrast typically more than 70% of the migrants are active aged. The only indicator, where candidate countries and EU15 member states have higher figures than member states is with the share of female migrants. More than half of the migrants in candidate countries and new member states are female. This may in part be explained by the higher participation rate of females in many candidate countries and new member states, leading to more labor motivated migration among women.

{Table 4 Around Here}

Furthermore, for those countries where place to place data are available we can calculate the share of moves between neighboring regions as indication of the relevance of short distance moves, which are not associated with labor market motives. Shares of migration among neighboring regions may, however, be influenced by differences in geography among countries, which in turn may lead to

differences in the number of neighbor relationships and thus may influence the share of migration between neighboring regions. In column 3 of table 4 we thus calculated the share of contingency relationships in a country.[12] Comparing this share with the share of migration among neighboring regions gives an indication of the extent to which the share of short distance moves between neighboring regions exceeds the rate expected if migration were independent of distance. According to these statistics flows between neighboring regions exceed their expected value by a factor of between 1.2 and 3.0. Thus a substantial part of migration in both candidate countries and new member states and EU15 member states is accounted for by short distance moves.[13]

Further doubt concerning the viability of migration as a mechanism for equilibrating regional disparities comes from correlating net migration rates (as a percentage of resident population in a region) over time periods. These correlations are usually high and significant (see column 4 of table 4). Correlation coefficients of net migration rates between regions at two points in time seven years apart are highly significant in all countries and may reach levels of up to 0.9. As recently pointed out by Rappaport (1999) this suggests that migration is not reactive to transitory shocks but reflects either the protracted adjustment to permanent shocks or differences in the steady state growth paths among regions.

2.3 Internal and External Migration

Our data also exclusively measure internal migration. A number of recent contributions, however, suggest that international and intra-country migration may be substitutes (Borjas, 1999). If migrants from abroad are more likely to move to places with high wages and low unemployment rates, this may deter national migrants from moving to these places. Alternatively if emigrants in depressed regions are faced with a choice of moving to less depressed regions in their own country or abroad, the choice may be to move abroad, if these regions offer even better conditions than regions at home.

{Table 5 Around here}

Again this claim can be analyzed at least for a subset of countries in our data, for which we have available information on net migration abroad from the same data set. The information displayed in table 5, suggests a low potential for this explanation. While most candidate countries and new member states (except for Estonia) are net receiving countries for international migrants the share of migrants received tends to be low. Similarly, emigration abroad does not seem to be a viable alternative to migration within a country. Most of the candidate countries and new member states for which data are available, have gross emigration rates abroad that are at the lower end of the EU15 distribution.[14]

Finally regional data suggests that rather than substitutes international migration is complementary to internal migration. Regions with high net emigration into the country also tend to be regions with high emigration abroad. The correlation coefficient between the two is 0.45. Thus, it seems unlikely that high international migration rates compensate for low internal migration in candidate countries and new member states.

3 Estimating Place to Place Models of Migration

Descriptive statistics thus suggest that migration rates in the candidate countries and new member states are low even relative to EU15 figures and have fallen in the last decade. Furthermore, they indicate that a larger share of migration is accounted for by population moves not associated with labor market motives and that migration is highly auto-correlated. While this indicates that migration may be ineffective in reducing labor market disparities, it does not provide us with quantitative estimates. We therefore estimate a model of place-to-place migration to quantify differences in the responsiveness of migration to regional disparities. To motivate our choice of specification, we consider a model proposed by Bentivogli/Pagano (1999). In this overlapping generations model, agents are assumed to live for two periods. At

the beginning of the first period they decide, whether they would like to live in their region of birth (labeled h) or whether they prefer emigration to another region (called a) within the country. After this decision has been made, agents in their first period consume in their chosen region of residence and either work receiving income of w_t, which is drawn from a normal distribution with mean μ_i and variance σ_i (with i an index for the region of residence i.e. $i \in \{a, h\}$,) or are registered as non-employed and receive an income from the informal sector of b, which is assumed constant across all regions. Finally, in their second period of life agents retire and consume from their savings.

If agents at the beginning of the first period decide to emigrate from their region of birth they incur a cost of migration, denoted by θ_{ah}. Bentivogli/Pagano (1999) show that under the assumption that θ_{ah} is uniformly distributed in the interval [p,z] with z-p=1 (where p depends on the relative attractivity of regions as well as the costs of migration) among agents, the share of population of a region moving from region h to a at time t (m_{aht}) can be written as:

$$m_{aht} = \alpha(\mu_{at} - \mu_{ht}) - \alpha b(u_{at} + u_{ht}) - \frac{\alpha\lambda}{2}(\sigma_a{}^2 - \sigma_h^2) - p_{ah} \qquad (4)$$

with α a function of the interest rate, and λ the absolute risk aversion coefficient and u_{it} and σ_{it} indicators of labor market tightness and the variance of regional income, respectively.

In empirically implementing equation (4) we include fixed effects to control for time invariant characteristics of regions such as amenities as well as psychological and financial costs associated with migration and focus directly on net migration rates.[15] In particular we perform two estimations. First we reformulate equation (4) as:

$$\ln(m_{aht}) = \alpha \ln(\mu_{at} - \mu_{ht}) - \beta \ln(u_{at} + u_{ht}) + \gamma \ln(\sigma_{at}{}^2 - \sigma_{ht}^2) - \sum_a \sum_{h \neq a} \phi_{ah} + \sum_t \tau_t + \varsigma_{aht} \qquad (5)$$

where ϕ_{ah} is a set of *Jx(J-1)* fixed effects for each sending and receiving region pair. These are included to control for all aspects of moving costs between two regions,

e.g., the differences in regional amenities, the distance to be covered, contingency effects, differences in relationships between urban and suburban regions, and potential cultural differences within regions of countries that may increase psychological moving costs. τ_t are fixed effects for each time, period. These are included to proxy for macroeconomic influences on migration behavior, e.g., changes in the social welfare system or changes in the level of unemployment rates (Decressin, 1994) and ζ_{aht} is the error term.

Second as a check of robustness we also run a specification of the form

$$\ln(m_{aht}) = \alpha \ln(\mu_{at} - \mu_{ht}) - \beta \ln(u_{at} + u_{ht}) + \gamma \ln({\sigma_{at}}^2 - \sigma_{ht}^2) + \sum_a \pi_a + \sum_h \theta_h + \sum_t \tau_t + \varsigma_{aht} \qquad (6)$$

where π_a and θ_h are sending and receiving region fixed effects respectively. Relative to the specification in equation (5) this has the advantage that less of the variance in the migration rate is explained by fixed effects, but holds the disadvantage that only region specific factors such as regional amenities are proxied for by the dummies, while factors influencing travel costs between two regions are not.[16]

Finally, several authors suggest different measures of labor market tightness in specification of equations (5) and (6). Jackman/Savouri (1992) use vacancy rates in addition to unemployment rates, Juarez (2000) uses employment growth or employment rates, and Fields (1979) favors unemployment rates. Unfortunately comparable data for all countries are available for employment rates (i.e. employment as a share of resident active age population), only. Thus we focus on this measure of labor market tightness. Finally, as a proxy for variability of GDP per capita we follow Bentiviogli/Pagano (1999) and use the standard deviation of GDP per capita over the last three years.[17] Also we were unable to secure data on these variables for all countries for the complete time period. In particular we have no data for the U.K and we miss data on GDP for the countries reporting on NUTS III level (i.e. Denmark, Estonia, Slovenia) before 1995. Furthermore for Italy and Spain we exclude the island NUTS II regions of Sicily, Sardinia and Canaries and the Baleares from estimation.[18]

{Table 6 Around here}

Table 6 displays the results of decomposing the standard deviation of these explanatory variables into a component due to the variance across sending-receiving region pairs (the between standard deviation) and into a component, due to variation across time (the within standard deviation). The first of these gives indication of the size of regional disparities in the respective countries. The table thus indicates that both regional GDP per capita and employment rate disparities in the candidate countries and new member states are by and large comparable to those in most EU15 member states. Furthermore, the table shows that the within variance of our dependent variables is rather low. This would lead us to expect that a large share of the variance in the regression (5) can be explained by fixed effects and thus supports our attempt to check for robustness of results excluding bilateral fixed effects.

{Table 7: Around Here}

Table 7 presents the results of the regression with bilateral fixed effects. It suggests that net migration rates respond moderately to economic variables in the current EU15 member states. For most of the EU15 countries analyzed (all but Italy and Denmark) we find a significant or at least marginally significant impact of regional per capita income disparities on migration. Furthermore, for some of the countries (Italy, Netherlands and Spain) the coefficients on employment rate disparities are significant or on the verge of significance. For Belgium we, however, obtain a very robust positive and significant coefficient, which suggests that in Belgium migration occurred from regions with high employment rates to regions with low employment rates. Coefficients on the differences in variability of GDP by contrast attain significance in the case of the Netherlands only. This suggests that in contrast to the

more distant migration analyzed in Bentivogli/Pagano (1999) risk aversion plays only a minor role in the migration decision within a country.

For the candidate countries and new member states, we find that per capita GDP differences are significant and of the expected sign for Hungary, only. They are significant but have an unexpected sign for Poland and Slovenia - suggesting that migrants move from high income to low income regions in these countries. For all other countries GDP differences remain insignificant. Furthermore, differences in employment rates are significant and of the expected sign only for Slovenia and significant but with an unexpected sign in Hungary. These results thus suggest that migration in the candidate countries and new member states is somewhat less responsive to regional income disparities than in EU15 member states.

The most robust result for both candidate countries and new member states and EU15 – member states is, however, that bilateral fixed effects explain the majority of the variation in gross place to place migration. R^2 values after including GDP differentials, employment rate differentials and differences in variation in GDP mostly increase by 1 to 2 percentage points relative to a specification with only bilateral fixed effects. This suggests that a substantial part of gross migration in both the EU15 and candidate countries and new member states is driven by factors other than economic motives.

For this reason we also estimated equation (6) using sending and receiving region fixed effects.[19] Results (see Table 8) reconfirm much of the previous findings. In particular net migration in most EU15-member states is significantly correlated with regional per capita GDP disparities but insignificantly correlated with these disparities in candidate countries and new member states. As previously we get significant coefficients of an unexpected sign in a number of candidate countries and new member states as well as Belgium and differences in the variation of GDP are also insignificant as a rule in both EU15 and candidate countries and new member states. Including sending and receiving region fixed effects, however, increases the size of the estimated parameter in a number of countries and reduces the R2 values of the

regressions. As previously, however, dummy variables still explain a substantial part of the variation of net migration

{Table 8 around here}

3.1 A Decomposition

We thus conclude that migration is less responsive to regional disparities in candidate countries and new member states than in most member states, where the most important difference is the lower responsiveness of candidate country and new member state migration to disparities in per capita GDP levels. To quantify the effect of these differences on migration in the candidate countries and new member states relative to the EU15 we perform a decomposition, in which we estimate the increase in net migration that would occur if responsiveness of migration to regional disparities were as high as in an EU15 country in one of the EU15 member states.

Formally, this can be done by denoting a and b as estimates of the coefficients on income and wage disparities in a particular member state. The relative increase in total migration in the candidate country (new member state) (ΔM) under the assumption that the responsiveness to wage and income disparities were equal to that in the member states, while all other factors remain equal, would then be given by:

$$\Delta M = \frac{\sum_a \sum_h \left(e^{a_{Eu}\ln(\mu_{at}-\mu_{ht})-b_{EU}\ln(u_{at}+u_{ht})+c_{EU}\ln(\sigma_a^2-\sigma_h^2)-\sum_a\sum_{h\neq a}\phi_{ah}+\sum_t\tau_t+\varsigma_{aht}} - M_{aht}\right)}{\sum_a \sum_h M_{aht}} \qquad (7)$$

where c, ϕ, and τ are the parameters estimated from equation (5) for the candidate countries and new member states and a_{EU}, b_{EU} and c_{EU} are the estimated coefficients for a "benchmark" EU15 member state.

{Table 9 Around here}

We perform this calculation for net migration using Spain, Italy and the Netherlands as baseline EU15 member states.[20] Results (in table 9) suggest that the lower responsiveness of migration to regional disparities in the candidate countries and new member states contributes to low internal migration. While these calculations should be interpreted carefully for most countries our calculations that migration figures should more than double to reach western European level in almost all candidate countries and new member states and should multiply by a factor of five to ten in a number of instances.[21] Thus these calculations indicate a substantially lower net migration given regional disparities in new member states and candidate countries than in most EU-15 member states.

4 Conclusions

This paper used data on inter-regional migration for 9 current EU15 – member states and 7 countries that will join the European Union in 2004 or are negotiating on membership, to compare regional migration patterns in these countries. Our most important results are first, that interregional migration is low by EU15 standards in candidate countries and new member states and has been falling throughout the 1990s and second, that the responsiveness of migration to regional disparities is substantially lower in the member states than in the EU15. We predict that in the typical candidate country (new member state) net migration should increase by a factor of 2 to more than 10 if the responsiveness of migration to regional disparities were comparable to the member states.

The findings thus suggest that low migration rates are one of the major obstacles to equalization of regional disparities as well as to effective absorption of asymmetric shocks in the candidate countries and new member states. On the policy side this clearly suggests that policies designed to reduce barriers to migration in the candidate countries and new member states should have a high priority. Unfortunately we are unable to answer the question, why the responsiveness of

migration is so low in the candidate countries and new member states, which could provide orientation as to which policies could be most helpful in increasing migration.

We would, however, argue that a policy framework to address the low internal migration rates in candidate countries and new member states should take a relatively broad view on migration and should encompass a multitude of factors such as housing and capital market imperfections (to overcome liquidity constraints), improving spatial matching and reviewing labor market institutions (in particular employment protection regulation). Clearly, for policy purposes it would be interesting to know which of these factors would be most effective in increasing the willingness to migrate. This, however, is beyond the evidence presented in this paper.

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Table 1: Data Sets used Countries, time periods and nature of the data

	Regional Disagregation	Number of Regions	Average Size*	Years Available	Place to place
Austria	NUTS II	9	898.1	1996-1999	yes
Belgium	NUTS II	11	928.5	1990-1999	yes
Germany	NUTS I	16	5127.3	1990-1993	yes
Denmark	NUTS III	15	354.6	1990-1999	yes
Spain	NUTS II	17	2316.6	1990-1999	yes
Italy	NUTS II	19	2983.3	1990-1996	yes
Netherlands	NUTS II	12	1313.4	1990-1999	yes
Sweden	NUTS II	6	1048.8	1990-1999	yes
U.K	NUTS I	12	4947.5	1990-1996	yes
Czech Republic	NUTS II	8	1286.2	1992-1999	yes
Estonia	NUTS III	5	275.8	1990-1999	yes
Hungary	NUTS II	7	1441.7	1990-1999	yes
Poland	NUTS II	16	2415.8	1990, 1995-1999	yes
Romania	NUTS II	8	2811.1	1994-1999	no
Slovenia	NUTS III	12	164.9	1991-1999	yes
Slovakia	NUTS II	4	1348.4	2000	no

Notes: NUTS=Nomenclature Unifie des Territoire Statistique , * in thousand inhabitants 1999, Source Eurostat New Cronos

Table 2: Migration indicators by country and year

	Gross MigrationRates[1)]		Net Migration Rates[2)]		Share of net Migration[3)]	
	1992	1999	1992	1999	1992	1999
Austria		0.93		0.054		5.79
Belgium	1.26	1.28	0.123	0.086	9.77	6.73
Germany	1.88	n.a.	0.152	n.a.	8.09	n.a.
Denmark	3.38	3.41	0.090	0.095	2.66	2.77
Spain	0.53	0.76	0.043	0.099	8.12	12.96
Italy	0.54	n.a.	0.097	n.a.	17.94	n.a.
Netherlands	1.63	1.69	0.079	0.063	4.85	3.75
Sweden	1.63	1.87	0.095	0.182	5.83	9.75
U.K	2.70	n.a.	0.132	n.a.	4.88	n.a.
Czech Republic	0.57	0.50	0.009	0.063	1.64	12.61
Estonia	0.87	0.53	0.203	0.024	23.24	4.64
Hungary	1.49	1.32	0.094	0.054	6.30	4.11
Poland[a)]	0.37	0.29	0.053	0.033	14.48	11.20
Romania	n.a.	1.23	n.a.	0.013	n.a.	1.09
Slovenia	n.a.	0.30	n.a.	0.021	n.a.	7.15
Slovakia[b)]	n.a.	0.22	n.a.	0.023	n.a.	10.25

Notes: Gross and net migration rates are measured in % of the population. a) Polish data for 1992 are 1990 figures b) Slovak data are from the year 2000. n.a. – data not available. 1) Figures are in %, see equation 1 for a definition of net migration flows. 2) Figures are in %, see equation 2 for a definition of net migration flows. 3) Figures are in %, see equation 3 for a definition of the share of net migration flows. Source: Eurostat New Cronos.

Table 3 Migration by Demographic Characteristics of Migrants

	share of females in total internal migration		share active of active aged in total internal migration	
	1992	1999	1992	1999
Austria	n.a.	47.42	n.a.	74.79
Belgium	50.25	49.81	70.25	70.51
Denmark	47.88	48.10	74.89	76.78
Spain	49.61	48.44	63.97	70.66
Italy	46.89	n.a.	68.92	n.a.
Netherlands	49.21	49.18	67.34	71.21
Sweden	49.70	51.06	68.77	77.76
U.K	51.72	n.a.	63.33	n.a.
Czech Republic	n.a.	52.42	n.a.	64.49
Estonia	52.42	58.21	52.01	57.69
Hungary	49.98	53.33	62.80	66.41
Romania	n.a.	56.01	n.a.	74.22
Slovenia	n.a.	55.86	n.a.	n.a.
Slovakia*)	n.a.	54.12	n.a.	68.47

Notes: Figures are percentages of total migrants *) Slovak data are from the year 2000. n.a. – data not available, Source Eurostat New Cronos

Table 4: Share of moves between neighboring regions and intertemporal correlations of migration rates

	Share of Migration Flows among neighbor Regions[a)]		Share of neighbor relationships [b)]	Correlation[c)] 1992-1999
	1992	1999	n.a.	n.a.
Austria		66.3	23.4	n.a.
Belgium	64.2	66.5	26.7	0.79
Denmark	53.4	52.2	17.3	0.84
Germany	53.4	n.a.	19.2	n.a.
Spain	36.6	37.5	17.6	0.51
Netherlands	60.8	60.0	25.8	0.92
Italy	28.7	n.a.	14.5	0.80
Sweden	48.1	55.9	26.3	0.48
Czech Republic	63.6	65.2	30.0	0.55
Estonia	71.1	72.6	60.0	0.62
Hungary	n.a.	77.2	34.4	n.a.
Poland	58.4	62.3	22.6	0.71
Slovenia	65.8	64.5	37.8	0.64

Notes: a) Columns report the share of total migration among neighboring regions as a percentage of total migration flows in 1999 and 1992, respectively; b) column reports the share of neighbor relationships in a country this is calculated by observing that in a country with n regions there are n*(n-1) pairs of sending and receiving regions. If m of these region pairs are contingent the share of contingency relationships in the total number of sending and receiving region pairs is given by $s = m/n(n-1)$. c) Column reports the correlation coefficient (across regions) of net emigration in % of population between 1992 and 1999. n.a. - data not available. Source: Eurostat New Cronos.

Table 5: External Migration in % of resident population

	Net Migration Abroad[a)]		Gross Emigration abroad [b)]	
	1992	1999	1992	1999
Austria	n.a.	n.a.	n.a.	0.9343
Belgium	n.a.	0.2659	n.a.	0.4044
Denmark	0.2216	0.1672	0.6172	0.7772
Germany	0.9742	n.a.	0.8971	n.a.
Spain	0.0948	0.3225	0.0052	0.0042
Italy	0.0993	n.a.	0.1001	n.a.
Netherlands	0.3068	0.3815	0.3184	0.3745
Sweden	0.2467	0.1797	0.3071	0.4126
Czech Republic	0.0853	n.a.	n.a.	0.5088
Estonia	-2.1756	-0.0447	2.4038	0.1475
Hungary	0.1113	0.1753	0.0425	0.0244

Notes: a) columns report net immigration (immigration – emigration) abroad in % of total population b) columns report gross emigration abroad in % of total population. n.a. - data not available. Source: Eurostat New Cronos

Table 6: Standard deviations of independent variables

	Differences in per capita GDP		Differences in employment rates		Differences in Variability of GDP	
	between	within	between	within	between	within
Austria	0.293	0.012	0.192	0.009	0.648	0.757
Belgium	0.414	0.025	0.318	0.020	1.099	1.254
Denmark	0.296	0.023	0.194	0.014	0.765	0.645
Germany	0.588	0.097	0.152	0.041	0.712	0.701
Spain	0.286	0.018	0.149	0.026	0.646	1.290
Netherlands	0.214	0.039	0.081	0.024	1.186	1.509
Italy	0.370	0.019	0.199	0.023	0.724	1.524
Sweden	0.146	0.028	0.052	0.012	0.624	1.203
Czech Republic	0.372	0.046	0.059	0.016	0.997	0.820
Estonia	0.468	0.042	0.087	0.024	1.397	0.444
Hungary	0.322	0.080	0.276	0.024	1.967	1.250
Poland	0.233	0.042	0.156	0.005	1.421	0.962
Slovenia	0.196	0.031	0.170	0.024	0.811	0.490

Note: Table reports within and between components of standard deviations. Source: Euostat New Cronos, Cambridge Econometrics

Table 7: Estimation Results of Equation (5) dependent variable: Net Migration Bilateral Fixed effects included

	GDP Differences	Employment rate Differences	Differences in variability of GDP	$R^{2\,b)}$ NOBS	R^2 only dummies
Austria	13.744**	-7.788	0.034	0.78	0.75
1996-1999	(6.190)	(4.352)	(0.145)	(143)	
Belgium	5.364**	-7.977***	-0.035	0.77	0.69
1993-1999	(2.645)	(2.003)	(0.039)	(380)	
Denmark	-0.983	2.656	0.000	0.70	0.69
1995-1999	(1.101)	(1.918)	(0.001)	(522)	
Germany	3.367**	-3.897	0.225***	0.81	0.75
1990-1993	(1.097)	(2.411)	(0.092)	(230)	
Spain[a)]	4.677***	5.872***	-0.005	0.75	0.66
1990-1999	(1.221)	(1.792)	(0.025)	(938)	
Netherlands	0.961**	4.210***	0.009	0.53	0.49
1990-1999	(0.445)	(1.005)	(0.029)	(592)	
Italy[a)]	0.200	5.994***	-0.016	0.80	0.75
1990-1996	(0.458)	(1.125)	(0.018)	(814)	
Sweden	2.486*	1.512	-0.026	0.75	0.70
1991-1996	(1.376)	(1.000)	(0.055)	(174)	
Czech Republic	0.696	-4.072	-0.187**	0.81	0.61
1993-1999	(0.464)	(3.410)	(0.081)	(385)	
Estonia	3.019	-8.440	0.144	0.60	0.34
1990-1999	(2.067)	(9.325)	(0.483)	(40)	
Hungary	1.104***	-2.904***	0.043	0.71	0.47
1990-1999	(0.378)	(0.686)	(0.045)	(168)	
Poland	-1.758***	-0.438	-0.009	0.73	0.62
1995-1999	(0.571)	(0.490)	(0.036)	(589)	
Slovenia	-6.646***	5.417**	-0.408	0.61	0.58
1995-1999	(2.454)	(2.661)	(0.315)	(149)	

Notes: Dependent variable: net migration rates in % of the population. a) Estimates for Italy and Spain exclude the islands Acores, Baleares, Sicily and Sardinia, *** (**) (*) signify significance at the 1% (5%) and (10%) level respectively. Values in brackets are standard errors of the estimate. b) Values in brackets are Number of Observations (NOBS)

Table 8: Estimation Results of Equation (6) dependent variable Net Migration: Sending and Receiving Region Dummies Included

	GDP Differences	Employment rate Differences	Differences in variability of GDP	$R^{2\,b)}$ NOBS	R^2 only dummies
Austria	28.611**	-10.840	-0.109	0.64	0.60
1996-1999	(12.911)	(10.726)	(0.143)	(143)	
Belgium	5.028**	-2.950	-0.038	0.45	0.41
1993-1999	(2.394)	(3.563)	(0.057)	(380)	
Denmark	-4.123	7.570*	0.000	0.33	0.31
1995-1999	(2.638)	(4.350)	(0.000)	(522)	
Germany	7.346*	-2.314	0.010	0.64	0.61
1990-1993	(3.962)	(5.424)	(0.121)	(230)	
Spain[a)]	4.448**	5.262***	-0.028	0.42	0.37
1990-1999	(2.224)	(1.554)	(0.033)	(938)	
Netherlands	1.023	4.610***	-0.059*	0.30	0.28
1990-1999	(1.382)	(2.165)	(0.034)	(592)	
Italy[a)]	-3.922	4.259**	-0.061**	0.59	0.57
1990-1996	(2.216)	(1.687)	(0.928)	(814)	
Sweden	9.110***	16.111***	0.067	0.61	0.44
1991-1996	(3.313)	(5.697)	(0.071)	(174)	
Czech Republic	-3.084	11.563	-0.129	0.50	0.47
1993-1999	(2.858)	(7.978)	(0.091)	(194)	
Estonia	-6.084	-9.314	-0.032	0.62	0.37
1990-1999	(6.552)	(9.209)	(0.051)	(40)	
Hungary	-1.598	-4.150	0.070	0.58	0.52
1990-1999	(0.998)	(2.853)	(0.049)	(168)	
Poland	-1.727	-0.023	-0.043	0.37	0.36
1995-1999	(1.088)	(8.943)	(0.047)	(598)	
Slovenia	-7.833**	0.616	0.158	0.44	0.40
1995-1999	(3.715)	(3.992)	(0.477)	(149)	

Notes: Dependent variable: net migration rates in % of the population. a) Estimates for Italy and Spain exclude the islands Acores, Baleares, Sicily and Sardinia, *** (**) (*) signify significance at the 1% (5%) and (10%) level respectively. Values in brackets are standard errors of the estimate. b) Values in brackets are Numbers of Observations (NOBS)

Table 9: Results of a decomposition of migration flows for net migration

	Italian coefficients	Spanish coefficients	Dutch coefficients
Czech Republic	500.37	260.30	1326.74
Estonia	339.70	554.93	982.34
Hungary	374.90	306.57	174.51
Poland	168.83	159.21	470.23
Slovenia	210.97	594.29	158.09

Note: Table reports the estimated migration (in % of migration in the last year of observation) if migration were as responsive to regional disparities as in the Netherlands, Italy and Spain, respectively. See equation (6) for a formal definition.

APPENDIX

Table A1: Estimation Results of Equation (5) dependent variable Net Migration: Lagged Values

	Lagged GDP Differences	Lagged Employment rate Differences	Differences in variability of GDP	R^{2} b) NOBS
Austria	-3.239	1.000	0.157	0.80
1996-1999	(2.267)	(4.732)	(0.167)	(108)
Belgium	-3.969***	6.376***	-0.037	0.76
1993-1999	(0.970)	(1.192)	(0.045)	(273)
Denmark	0.254	-1.288	0.000	0.73
1995-1999	(1.134)	(2.381)	0.000	(417)
Germany	-2.855***	4.618	0.121	0.89
1990-1993	(0.798)	(2.307)	(0.090)	(175)
Spain[a)]	-3.371*	-3.816*	-0.038	0.75
1990-1999	(1.957)	(1.384)	(0.027)	(835)
Netherlands	-1.082**	-4.375**	0.016	0.54
1990-1999	(0.456)	(1.126)	(0.039)	(526)
Italy[a)]	-0.081	-6.652***	-0.010	0.81
1990-1996	(0.507)	(1.332)	(0.020)	(679)
Sweden	-1.912*	-2.938	-0.106*	0.77
1991-1996	(1.094)	(3.188)	(0.059)	(159)
Czech Republic	-1.602***	11.837***	-0.137	0.69
1993-1999	(0.560)	(4.519)	(0.086)	(166)
Estonia	3.327	-15.571	-0.419	0.47
1990-1999	(3.961)	(11.983)	(1.195)	(30)
Hungary	-1.214***	3.017***	0.041	0.55
1990-1999	(0.379)	(0.639)	(0.042)	(128)
Poland	0.485	2.037***	0.007	0.76
1995-1999	(0.486)	(0.644)	(0.034)	(478)
Slovenia	2.996	-2.087	-0.068	0.57
1995-1999	(2.578)	(2.923)	(0.272)	(140)

Notes: Dependent variable: net migration rates in % of the population. a) Estimates for Italy and Spain exclude the islands Acores, Baleares, Sicily and Sardinia, *** (**) (*) signify significance at the 1% (5%) and (10%) level respectively. Values in brackets are standard errors of the estimate. b) Values in brackets are Number of Observations (NOBS)

Table A2: Estimation Results of Equation (6) dependent variable Gross Migration

	GDP Differences	Employment rate Differences	Differences in variability of GDP	$R^{2b)}$ (NOBS)	R^2 only dummies
Austria	-5.593**	2.535	0.021	0.66	0.60
1996-1999	(2.896)	(1.887)	(0.052)	(288)	
Belgium	0.794	-0.656*	0.007	0.82	0.81
1993-1999	(0.477)	(0.391)	(0.019)	(770)	
Denmark	-0.658**	0.122	0.0001	0.89	0.87
1995-1999	(0.302)	(0.532)	(0.0003)	(1050)	
Germany	-1.406***	1.144	0.036	0.90	0.89
1990-1993	(0.376)	(0.860)	(0.032)	(460)	
Spain[a)]	-0.993**	-0.414*	0.001	0.98	0.96
1990-1999	(0.173)	(0.251)	(0.004)	(1890)	
Netherlands	-2.587***	-0.193	0.021**	0.80	0.78
1990-1999	(0.305)	(0.148)	(0.009)	(1188)	
Italy[a)]	-0.150	-0.883***	0.001	0.91	0.90
1990-1996	(0.342)	(0.157)	(0.006)	(1628)	
Sweden	-4.513***	-0.261	-0.005	0.89	0.87
1991-1990	(0.870)	(0.269)	(0.013)	(348)	
Czech Republic	3.078**	-0.174	-0.026	0.68	0.66
1993-1999	(1.156)	(0.167)	(0.0267)	(392)	
Estonia	-1.310**	3.283	0.031	0.79	0.65
1990-1999	(0.481)	(2.184)	(0.105)	(80)	
Hungary	0.464***	-0.702***	0.001	0.94	0.89
1990-1999	(0.113)	(0.051)	(0.008)	(336)	
Poland	0.020	-0.492***	0.004	0.92	0.91
1995-1999	(0.160)	(0.126)	(0.009)	(1200)	
Slovenia	-0.808	0.590	-0.106	0.73	0.73
1995-1999	(1.088)	(1.058)	(0.111)	(341)	

Notes: Dependent variable: gross migration rates in % of the population. a) Estimates for Italy and Spain exclude the islands Canaries, Baleares, Sicilly and Sardinia, *** (**) (*) signify significance at the 1% (5%) and (10%) level respectively. Values in brackets are standard errors of the estimate. b) Values in brackets are Numbers of Observations (NOBS)

Table A3: Results of a decomposition of gross migration flows

	Italian coefficients	Spanish coefficients	Dutch coefficients
		Gross Migration	
Czech Republic	315.7	565.3	212.4
Estonia	118.6	147.1	327.4
Hungary	99.8	101.8	130.4
Poland	154.8	116.1	105.3
Slovenia	99.0	98.8	103.6

Note: Table reports the estimated migration (100 = equal migration as in the last year of observation) if migration were as responsive to regional disparities as in the Netherlands, Italy and Spain, respectively. See equation (7) for a formal definition.

NOTES

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[2] For example Fidrmuc/Horvath/Fidrmuc (1999) argue that lacking regional mobility was one of the economic causes for disintegration of Czechoslovakia.

[3] These differences in size could be a problem for empirical results, because one would expect measured migration to increase with decreasing region size. The new member states and candidate countries (with the exception of Slovenia and Estonia) are by and large comparable to the EU 15 member states in this respect, however. Furthermore, to the degree that the new members states' and candidate countries' regions are smaller than EU15 member states' we would expect higher rather than lower migration rates. Finally, in previous research (Huber, 2004) we show that average region size is a less important determinant of internal migration rates relative to other institutional variables.

[4] For a number of EU member states data are available back to the 1970's. We limit our analysis to the 1990s to provide for similar time periods for current EU15 member states and candidate countries.

[5] We performed similar analysis as below for other years as well as for data at different regional aggregations in earlier versions of this paper. The results of this analysis are comparable to those presented below and are available from the author.

[6] Furthermore, in Poland data for the year 1990 are not place to place data and the breakdown by age groups and gender presented below is also not available on a place to place basis.

[7] Division by two is necessary to avoid double counting since each outflow for one region is also an inflow for another region.

[8] These churning flows can be explained either by heterogeneity of individual tastes and characteristics or regional demand for labour (Fields, 1979), or through different life-cycle positions of individuals (e.g. students migrating to their place of education). Mueser (1997) shows that churning may also occur among ex-ante homogenous individuals due to endogenous wealth effects arising, for instance, from land price increases. Finally, spatial search models (Jackmann/Savouri, 1990, Molho, 2000, Juarez, 2000) predict churning as a result of stochastic matching, if workers do not search exclusively in their region of residence.

[9] This results from observing that : $\left[\frac{\sum_i (O_i + M_i)}{\sum_i POP_i}\right]\left[\frac{\sum_i |O_i - M_i|}{\sum_i (O_i + M_i)}\right] = \left[\frac{\sum_i |O_i - M_i|}{\sum_i POP_i}\right]$

[10] Interestingly the increase in net migration in the Czech Republic is primarily due to the increase in migration from Prague to its environs (see: Fidrmuc/Huber, 2003).

[11] Unfortunately, the data on age and gender of migrants is not available on a place to place basis.

[12] This is calculated by observing that in a country with n regions there are n*(n-1) sending and receiving region pairs (since migration within the region is not measured). If m of these pairs are contingent, the share of contingency relationships in the total number of sending and receiving region pairs is given by $s = \frac{m}{n(n-1)}$.

[13] Furthermore, the limited evidence available suggests that long distance moves declined more strongly in candidate countries between 1992 and 1999. In both Hungary and the Czech Republic moves covering a distance of more than 100km were 18% below their 1992 level, moves covering a distance of less than 100km were 10% below the 1990 level.

[14] This is also owed to restrictive immigration regulations in EU member states, which are the primary destination countries for candidate countries emigrants.

[15] Preference was given to net migration because we want to focus on the potential of migration to equilibrate regional labour markets. (Some regressions were also run for gross migration, however. These results are available from the author upon request.) Note, however, that using net migration we loose half of the observations since net migration is equal (but oppositely signed) between any pair of sending and receiving regions.

[16] Indeed a specification with sending and receiving region fixed effects, may be considered a restricted version of the bilateral fixed effects specification (Hui/Wall, 2001).

[17] We use the previous two years when three lags are unavailable.

[18] Data on employment rates and GDP per capita for the NUTS I and NUTS II regions were provided by Cambridge Econometrics, for the NUTS III regions of (Denmark, Estonia, and Slovenia) this data was taken from the Eurstat Cronos database.

[19] We also performed a number of robustness checks for this regression. In particular we excluded the differences in GDP variability, and experimented with specifications including distance between sending and receiving regions, as well as lagged variables to reduce potential endogeneity (see Table A1 in the appendix). None of this changes the qualitative results.

[20] This choice was guided by an attempt to use countries both from the north of the EU, with relatively low aggregate unemployment rates and higher labour market flexibility and from the South, where unemployment rates are somewhat higher and labour market flexibility is lower.

[21] Estimations conducted with gross migration rates suggest somewhat more modest differences: Gross migration should be between 10% to 50% higher in candidate countries and new member states if the reaction of migration to regional disparities were similar to Spain, Italy or the Netherlands. Extreme increases are indicated throughout for the Czech Republic, where migration should increase by a factor of

between 2 and 5. Slovene gross migration by contrast seems to already have converged to the levels of these countries.

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