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Zentrum für Europäische Integrationsforschung  
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Rheinische Friedrich-Wilhelms-Universität Bonn



Jan Fidrmuc

**Migration and Adjustment  
to Shocks in Transition  
Economies**

**Working Paper**

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# MIGRATION AND ADJUSTMENT TO SHOCKS IN TRANSITION ECONOMIES<sup>\*</sup>

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## Abstract:

Does migration serve as an effective channel of regional adjustment to idiosyncratic shocks in transition economies? If so, one should find a strong relationship between regional unemployment and average wages on the one hand, and migration flows on the other. Yet, the evidence from transition economies indicates that the efficacy of migration in reducing inter-regional unemployment and wage differentials has been low. High wages appear to stimulate overall mobility rather than encourage a net immigration, and the effect of unemployment is statistically weak and not robust. In addition, the effect of unemployment and wages on net migration flows is economically insignificant and the overall level of migration has fallen during transition.

Keywords: Migration, Unemployment, Regional Shocks

JEL Categories: F22, J61, P23

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# 1 Introduction

Migration, or labor mobility<sup>1</sup>, is an important economic phenomenon. Migrants flow from regions with high unemployment and/or low incomes to more prosperous regions, attracted by higher wages and/or better employment prospects. In this way, migration facilitates regional adjustment to adverse shocks: excess labor leaves depressed regions, thus gradually diminishing inter-regional differentials in wages and unemployment. In a hypothetical economy with perfect factor mobility, regions would adjust to asymmetric shocks immediately. When factor mobility is low and prices and wages rigid, however, the effects of asymmetric shocks persist and regional economies have to rely on other mechanisms, such as inter-regional fiscal redistribution, to deal with them.<sup>2</sup>

The post-communist in Central and Eastern Europe started economic reforms with essentially zero (official) unemployment and very egalitarian wage distribution. The subsequent transition from central planning to a market economy was associated with a dramatic increase in regional disparities. The widening gap between prosperous and depressed regions increases the need for regional adjustment, and raises the incentives for workers in depressed regions to relocate to regions with more favorable economic conditions. This paper assesses the efficacy of inter-regional migration as a channel of regional adjustment in several transition economies: the Czech Republic, Hungary, Poland, Slovakia and Lithuania. To facilitate comparison with (European) market economies, similar results for selected EU countries – Italy, Spain, Portugal and the Netherlands – are also presented. In particular the comparison with Southern European countries should be instructive as these countries are closer to the post-communist transition economies in terms of income levels and labor-market developments.

The analysis relates gross and net migration rates (gross and net migration flows scaled by the region's population) to regional unemployment rates and average wages. The main finding is that the efficacy of labor mobility as a channel of regional adjustment to idiosyncratic shocks has been rather limited in the transition economies. In general, regional

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<sup>1</sup> The terms migration and labor mobility are used interchangeably in the present paper.

<sup>2</sup> The typical comparison in this context is that between the US and continental Europe. In the US, labor mobility is high and plays an important role in reducing unemployment and wage differentials between regions (see Blanchard and Katz, 1992). In contrast, continental European countries often display persistent economic differences between regions such as North and South Italy or East and West Germany. In continental Europe, extensive inter-regional redistribution appears counterproductive in that it reduces incentives for migration.

unemployment rate and average wage affect net migration in the expected way – net immigration is positively related to the average wage and negatively to the unemployment rate prevailing in the region. However, results obtained with gross migration flows are more disappointing. Regions with high wages tend to display both high immigration and emigration (rather than high immigration and low emigration). This pattern appears quite universally across all transition economies included in the analysis. In some transition economies, the effect of unemployment on gross migration flows is similar – high unemployment discourages not only immigration to but also emigration from depressed regions. This pattern implies that migration affects predominantly regions with relatively favorable economic conditions. Depressed regions, in contrast, show low mobility and thus remain locked in with low average wages and high unemployment. Furthermore, the response of net migration flows to regional economic conditions is economically small (even though it often appears statistically significant), and migration flows have been declining since the onset of transition.

After briefly reviewing the theoretical and empirical literature on migration in the following section, the data and recent labor market development in transition economies are discussed in sections 3 and 4, respectively. The results of the empirical analysis are then presented in section 5. Although studying migration is interesting in its own right, analysis of labor mobility in transition economies is particularly interesting for two additional reasons. First, it is feared that the next round of EU enlargement will bring about massive East-West migration flows. Such fears are particularly prominent in Austria and Germany – the two *front-line* countries. Second, the efficacy of migration as a shock-absorbing mechanism will have important repercussions for the transition economies' future membership in the Economic and Monetary Union (EMU). If the new entrants continue to be exposed to asymmetric shocks (compared to those affecting the EMU core countries), giving up autonomous monetary policy will increase the need for alternative adjustment mechanisms, such as labor mobility. These implications are discussed in section 6. Finally, the main conclusions of the present paper are summarized in the last section.

## 2 The Theories and Empirics of Migration

Theoretical foundations of modern migration literature<sup>3</sup> were laid by Todaro (1969), and Harris and Todaro (1970). Their main insight was that migration is motivated by expected earnings differentials, i.e. wage differential between home and destination, adjusted for the probability of employment at destination. Accordingly, the higher the wage (the lower the unemployment rate) in the region of destination, the greater will be immigration to that region. Faini and Venturini (1994) argue, however, that the effect of wages in the region of origin need not be linear because migration from poor regions is limited by liquidity constraints. With rising home-region wages, emigration from poor regions may in fact increase rather than decline as the liquidity constraint ceases to be binding. Only for relatively affluent regions do rising wages at home reduce the incentive for migration. Borjas (1987) points out that migration responds not only to average wages but also to their dispersion reflecting underlying inter-regional differences in rewards to skills. In particular, regions (countries) with relatively egalitarian wage distribution will attract primarily low-skilled workers, whereas high-skilled workers will choose to migrate to regions with more uneven wage distribution, where the returns to skills are higher (Borjas, 1987). Stark (1991) moves the focus away from wage differentials. In particular, he explores the role of migration as a means for intra-family risk sharing—by moving to regions with imperfectly correlated income shocks, the members of a family can reduce the variance of family income. Finally, Burda (1995) likens migration to investment decisions under uncertainty and argues that potential migrants may postpone migration because of option value of waiting, which he shows is positive. Accordingly, the prospects of an improvement at home and the option to migrate later in case of a further deterioration may in fact induce potential migrants to stay put.

Most of the empirical literature focuses, in line with Harris and Todaro's insights, on the role of wages and employment prospects (typically proxied by unemployment) in explaining migration patterns. Often, social and demographic variables, as well as measures of various amenities and/or quality of life are included as well. Pissarides and McMaster (1990) find that relative unemployment and wages (both expressed as ratios to national mean values) significantly affect inter-regional migration in Great Britain, but the resulting regional adjustment to shocks is very slow. Jackman and Savouri (1992), who also study British migration, obtain a similar finding for unemployment and vacancy rates but find the opposite

result for wages (migration from high to low wage regions). Decressin (1994) in his analysis of migration among West German Federal States finds results similar to those of Pissarides and McMaster.

An important aspect of migration is its capacity to facilitate regional adjustment to idiosyncratic shocks.<sup>4</sup> Regions hit by permanent demand shocks respond by changes in stocks of labor or capital and/or by price (and wage) adjustment. Blanchard and Katz (1992) assess these three channels of regional adjustment using US state-level data and conclude that the bulk of adjustment occurs via labor mobility (after an initial increase in unemployment) rather than capital mobility or price and wage adjustment. Moreover, the adjustment is relatively fast, with the effect of a shock disappearing completely after five to seven years. Hence, labor in the US is highly mobile and responds readily to idiosyncratic economic shocks. In contrast, Decressin and Fatas (1995) find that in Western Europe, the effects of such shocks are absorbed mainly by changes in labor-force participation rather than migration. Indeed, Bentivogli and Pagano (1999) argue that the responsiveness of migration to unemployment and wage differentials is much lower in the EU compared to the US. As a result, wage and unemployment differentials are generally greater and more persistent in Europe than in the US. This lack of labor mobility is often seen as a potential threat to the stability of the EMU (see Eichengreen, 1993, 1998; Braunerhjelm et al., 2000). When idiosyncratic shocks have permanent or highly persistent effects, pressure for accommodating policy measures in affected regions or countries intensifies. The ability of individual countries in Europe to implement such measures is, however, limited because of the loss of monetary autonomy and the constraints on fiscal policy imposed by the Maastricht criteria.

Migration in transition economies received little attention so far, in part perhaps because of lack of suitable data. The main exception is the former East Germany (see Burda, 1999, and Hunt, 2000). In the wake of the reunification, the expected massive outflow of East Germans to the Western States did not materialize. On the contrary, by mid 1990s, the flows between the former East and West approximately equalized, with the number of migrants moving to the East matching that leaving for West Germany. The lack of massive migration is often attributed to the rapid (partial) convergence of wages in the new Federal States to the West German level and the transfers from the West (see Sinn, 1999), or the expectation of such convergence (Burda, 1995). The empirical analysis of Burda (1999) and Hunt (2000)

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<sup>3</sup> See Borjas (1994), and Ghatak and Levine (1998) for recent surveys of literature.

confirms the importance of wage and unemployment differentials, but also highlights the generally low labor mobility in Germany (East and West).

### 3 Data

Migration data for several transition economies were collected: the Czech Republic, Hungary, Lithuania, Poland, and Slovakia. To facilitate comparison with (European) market economies, the analysis was also performed for the following EU countries: Italy, Spain, Portugal and the Netherlands. Due to data limitations, the periods covered by the data differ somewhat. The data for the transition economies cover between three and seven years during 1990s. The data for the EU countries span from late 1980s to mid 1990s, covering between seven and twelve years. The data differ also in terms of size of the regions. In general, regions in transition economies are smaller, with average population ranging between 66 thousand in Lithuania to 790 thousand in Poland. In contrast, average population of regions in the EU countries ranges between 1.4 million in The Netherlands and 4.3 million in Spain. Clearly, smaller regions offer better approximation of the local labor market conditions. On the other hand, data pertaining to smaller regions also capture greater fraction of migration flows that are not labor-market related – e.g. moving from the city to the suburbs, or moving between two adjacent districts without changing employment.

The analysis utilizes data on overall immigration and emigration per region (without distinguishing the regions of origin or destination of migrants). The data are based on records from municipal population registers. Obviously, this may cause problems when interpreting the results, because population migration does not distinguish between employment-related migration and non-labor migration (because of marriage or divorce, education, retirement, and the like). This, however, is a general problem of most migration studies, as typically only population-migration data are available. Parikh and van Leuvensteijn (2000) compare population and labor migration data for Germany and find that regressions that use population and labor migration yield similar results, as long as migration figures are normalized by population and labor force, respectively.

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<sup>4</sup> This role of migration is emphasized by the optimum currency area literature, as initiated by Mundell (1961) and McKinnon (1963).



## 4 Labor Market Developments in Transition Economies

The transition from central planning to a market economy had dramatic labor-market repercussions. The formerly socialist countries set out to reform their economies with essentially no (official) unemployment and very egalitarian distribution of wages. In the course of transition, overall unemployment as well as regional disparities in unemployment and wages increased rapidly, as Table 1 shows.

**Insert Table 1 about here.**

The pattern of regional distribution of unemployment and wages appears to be strongly persistent: the correlation coefficients between regional unemployment rates (wages) in 1991 and 1996 are 0.52 (0.70) for the Czech Republic, 0.45 (0.80) for Slovakia, 0.92 (0.93) for Poland and 0.74 (0.85) for Hungary (between 1991 and 1997). Hence, regions that were stricken by high unemployment and low wages at the outset of transition in general remained economically depressed five years later. In addition, unemployment rates and average wages are negatively correlated across districts, with the following correlation coefficients obtained for 1996:  $-0.10$  for the Czech Republic,  $-0.68$  for Slovakia,  $-0.62$  for Hungary and  $-0.41$  for Poland.

In the presence of substantial regional disparities, workers in depressed regions stand to gain by moving to regions with higher wages and better employment opportunities. If this mechanism is effective, migration will eventually smooth away the effects of idiosyncratic shocks. Nevertheless, even with effective migration response to economic incentives, one may still observe persistent wage and unemployment differentials in equilibrium. This can be the case when high unemployment is matched by high wages, thus resulting in zero equilibrium migration (this, however, implies positive correlation between unemployment and wages, which is not the case in transition economies). Nevertheless, despite sizeable and growing gap between prosperous and depressed regions, migration in transition economies in fact declined in the course of reforms (see Table 1). This may be attributed to rising nationwide unemployment and worsening employment prospects associated with it (as argued by Decressin, 1994). Because of the different size of regions, direct comparison of the extent of labor mobility in transition economies and Western European countries is not possible (in general, the smaller the regions, the greater should be the extent of migration across regional boundaries). Nevertheless, when considering the smaller size of regions, labor mobility in transition countries does not appear high in international comparison.

## 5 Migration as Adjustment to Shocks

Migration is one of the principal mechanisms (alongside capital mobility and price flexibility) for absorbing adverse effects of asymmetric shocks. Consider a region hit by a permanent negative demand shock. As a result of such shock, unemployment rises and wages fall in the region. The region can adjust to the effects of this shock in a number of ways. First, worsening labor-market situation may induce the region's residents to leave and take up employment in regions with better economic conditions. Second, lower wages and plentiful labor may induce new firms to move into the region. And finally, the relative price level can adjust (either by falling wages and prices or by currency depreciation, if the region has its own currency) sufficiently so that demand for the region's products rises again. This paper investigates the efficacy of the first channel of regional adjustment – migration – and its responsiveness to regional economic characteristics: unemployment rates and average wages.

The dependent variable is gross and net migration, both normalized by population – so that the dependent variables measure migration rates rather than flows. The data only record the total number of migrants (inbound and outbound) per district, without identifying the regions of origin or destination. Gross inflow and outflow rates are strongly correlated—with correlation coefficients of 0.78 for the Czech Republic, 0.77 for Slovakia and 0.92 for Poland (the correlations are measured over the entire available period for each country, only net migration flows are available for Hungary). This implies that if some variables affect both inflows and outflows in the same direction, the coefficients estimated for net immigration rate may be biased (see Bauer and Zimmerman, 1995). Therefore, it is important to consider both gross and net migration. Gross migration flows appear strongly persistent (much more so than net migration), the correlation coefficients for gross migration rates in 1992 and 1996 are between 0.6 and 0.8 for the Czech Republic, Slovakia and Poland.

The analysis covers between three and seven years for the transition countries and between seven and twelve years for the EU countries (the choice of periods is mandated primarily by data availability). Observations for individual years are pooled together. All regressions include year dummies, with the first available year as the reference year. The results are reported in Tables 2 through 6. The focus of the analysis is on the impact of regional unemployment rates and average wages on inter-regional migration. Therefore, the most parsimonious regressions are estimated only with these two variables. The wage is

normalized by the nation-wide average wage to eliminate the effects of wage inflation. Both unemployment and wages are lagged by one year because of their possible endogeneity in migration. These results are reported in the first panel of each Table.

Clearly, many other factors besides unemployment and wages affect migration: the quality of infrastructure and amenities, the regions' social, cultural and demographic characteristics, and the like. Therefore, I also estimated regressions containing additional demographic and socio-economic variables. Regressions reported in the second panel of each Table contain also the (log of) population density (as a measure of urbanization, as well as congestion), and a dummy variable for suburban districts (i.e. those immediately adjacent to city districts<sup>5</sup>). Finally, the regressions reported in the third panel of each Table (except for Lithuania, for which the additional data were not available) contain further socio-economic and demographic variables: a measure of the size of the nascent private sector proxied by the number of small private unincorporated entrepreneurs (excluding farmers) as the percentage of population; employment in the industry and agriculture, as the percentage of total employment; the share of persons with university education; the share of Roman Catholics (in the Czech Republic and Slovakia); the share of persons above retirement age; and the shares of main ethnic minorities—the Romany (Gypsies) in the Czech and Slovak Republics and the Hungarian minority in Slovakia.

The results suggest that although unemployment rates and average wages indeed affect migration patterns in transition economies, the pattern is only imperfectly consistent with the role of migration as a mechanism of regional adjustment to shocks. Migration is most effective as a channel of regional adjustment when gross (and net) immigration is positively related to average wages and negatively to unemployment, while gross emigration is positive related to unemployment and negatively to average wages. However, this is not the pattern that obtains for migration in the transition economies. On the one hand, unemployment and average wages have the correct signs in regressions with net migration and are usually at least marginally significant. Hence, it appears that high wages and low unemployment indeed encourage net immigration. On the other hand, unemployment apparently discourages overall migration (except in Poland), i.e. not only immigration but also emigration. Similarly, high wages tend to be associated with higher overall migration, inbound and outbound. Hence,

<sup>5</sup> The city districts (along with the names of their respective suburban districts) are *Prague (Prague East and Prague West)*, *Brno (Brno-vicinity)*, *Plzen (Plzen South, Plzen North and Rokycany)* and *Ostrava (Frydek Myster, Karvina and Novy Jicin)* in the Czech Republic; *Bratislava (Bratislava-vicinity)* and *Kosice (Kosice-vicinity)* in Slovakia; and *Budapest (Pest)* in Hungary.

instead of facilitating relocation of labor from depressed districts to the more prosperous ones, migration largely involves mobility of labor among regions with relatively favorable economic conditions.

**Insert Tables 2 through 6 about here.**

The additional socio-economic and demographic variables appear to exert important effect on migration as well. Urbanization (measured by the log of population density) discourages net immigration (possibly because of congestion). Its effect on gross flows differs across the individual countries though. The dummy for suburbs turns out to be quite important in explaining migratory flows – suburban districts tend to have higher overall migration and receive a net inflow of migrants.

The number of entrepreneurs in the region, intended as a measure of the emerging private sector, is significantly and positively related to the inflow and outflow of migrants (except in Poland). It also appears to encourage net immigration. Hence, districts with a large and vibrant private sector tend to display higher labor mobility and attract a net migration inflow. This result is similar to that obtained for average wages, and may indeed reflect the same underlying pattern – the nascent private sector likely attracts more productive and better skilled workers, and these workers are in turn more mobile relative to the rest of the population. As with wages, however, the bulk of migration flows again appears to be among districts with relatively favorable economic conditions. In order to better facilitate regional adjustment, entrepreneurial activity should encourage immigration and discourage rather than encourage emigration. The only transition economy where this appears to be the case is Poland, where the effect of entrepreneurial activity on immigration is insignificant and the effect on emigration is negative.

Hence, the evidence suggests that migration flows in transition economies indeed respond to regional differences in unemployment rates and wages. However, the pattern of migration is only imperfectly consistent with migration facilitating regional adjustment to idiosyncratic shocks. The positive effect of wages on the immigration inflow and emigration implies that higher average wages are associated with greater overall mobility in prosperous regions rather than with net flow of labor from poor regions to those with more favorable conditions. Low mobility in depressed regions may be attributed to several factors. First, there are fixed costs of migration (because of search and information costs, costs of moving, etc.). The costs may be sufficiently high to prevent low-wage earners and the unemployed from migrating. Second, employment prospects for high-skilled labor may be generally better so that the pool of

migrants may consist largely of high-skilled workers earning relatively high wages. Finally, the low mobility in depressed regions may be due to structural factors. If workers' human capital is not transferable to different industries, then the unemployed workers in regions that were traditionally dominated by communist-era industries may have little options other than staying put.

Even more importantly, the potential effect of labor mobility on reducing regional differences in unemployment and wages is rather small. According to the regressions estimated with unemployment, wages, population density and dummies for suburbs, as reported in the middle panels of Tables 2 through 6, a ten percentage-point increase in the unemployment rate should give rise to a marginal net outflow between 0.03 and 0.25 percentage point of a district's population annually (0.66 if the insignificant coefficient obtained for Lithuania is considered). Similarly, an increase of average wages by 10 percentage points relative to the national average is associated with an increase in the annual net migrant inflow between 0.03 and 0.08 percentage point (recall that wages are expressed in ratios to national average rather than in levels or logs). With the pace of adjustment this slow, it is not at all surprising that regional differences in unemployment rates and wages in the transition economies have been highly persistent.

Finally, it is instructive to compare transition economies with market economies, especially those in Southern Europe that are closer to post-communist countries in terms of incomes levels and labor-market developments. Tables 7 through 10 present regression results obtained for Italy, Spain, Portugal and the Netherlands. The results are mixed. Italy<sup>6</sup> and Portugal indeed display the desirable pattern of migration. In particular, gross immigration is positively related to average wages and negatively to unemployment, while gross emigration is positively related to unemployment (the effect of average on gross emigration appears negative for Portugal and positive for Italy but the coefficients are insignificant for both countries). The effects of unemployment and wages on net migration are also consistent with migration facilitating regional adjustment to shocks and strongly significant.

The results for Spain and the Netherlands are more disappointing. Unemployment seems to discourage gross migration flows in Spain, although its effect on net migration has the correct sign. The effect of average wages appears insignificant or with incorrect sign for gross

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<sup>6</sup> The result for Italy is rather surprising, as Italy is often brought up as an example of a country with very immobile labor force and persistent economic differences across regions. Nevertheless, even though the coefficients are significant and have the correct signs, the estimated effects are economically small.

as well as net flows. In the Netherlands, unemployment appears to encourage overall migration whereas average wages discourage it.<sup>7</sup>

**Insert Tables 7 through 10 about here.**

## 6 Implications for EU and EMU Enlargement

Recently, mobility of Eastern European labor received considerable attention also for a different reason – accession to the European Union will eventually introduce the possibility for East Europeans to seek employment throughout the Union. Some current EU member countries, especially the *frontline* countries, Austria and Germany, are concerned about the prospects of a large influx of migrants from the East. In particular, it is feared that scores of migrants will be attracted by high Western European wages, increasing unemployment and driving down wages of the incumbent workers (see Bauer and Zimmermann, 1999, and Boeri and Bruecker, 2000, for assessment of potential post-enlargement migration).

While the empirical results presented in this paper do not facilitate a forecast of post-enlargement migration, several lessons can be drawn. First, labor mobility in the accession-candidate countries has been low and falling, despite often large (and increasing) wage and unemployment differentials across regions. Second, migration appears to occur chiefly among relatively prosperous regions rather than from depressed ones to those with favorable economic conditions. This may be because a large fraction of migrants are high-wage earners. If this pattern continues after the candidate countries' entry to the EU, free mobility of labor may actually have adverse effects for the new entrants (and positive effects for the current members) in as much as it may involve mainly migration of high-skilled workers. Finally, the response of net migration to regional economic characteristics, while statistically significant, is not significant in economic sense. Indeed, even sizeable differentials in average wages and unemployment rates give rise only to very modest net migration flows.

The present paper also yields some implications with respect to the eventual participation of the transition economies in the EMU, following their accession to the EU. It is envisaged that the new members will join the EMU in due course after becoming members of the EU. This, however, will be an important policy decision, with potentially far-reaching economic

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<sup>7</sup> This results for the Netherlands may reflect the fact that workers tend to commute to work, often over considerable distances, rather than migrate.

implications for the accession countries as well as the incumbent EMU members (in particular, premature admission of new members may undermine the stability of the union as a whole). In the course of intensifying integration, the accession countries should eventually become exposed to similar shocks as the core EMU countries. However, this process can be lengthy and in the meantime the accession countries are likely to continue experiencing shocks that are different from those affecting the EMU core. Indeed, Frenkel et al. (1999) suggest that between 1992 and 1998, the shocks affecting the accession-candidate countries were little correlated with those experienced by Germany and France (some of the correlation coefficients even turned out to be negative).

Joining the EMU implies relinquishing autonomy over monetary policy as well as submitting to important restrictions on fiscal policy (due to the Maastricht criteria imposing ceilings on public deficit and debt). Hence, the set of tools available for dealing with asymmetric shocks will be severely reduced by EMU membership. If the accession countries are exposed to asymmetric shocks and their labor markets cannot adjust easily enough to such shocks, then early participation in the EMU may not be the optimum exchange-rate regime for these countries. By retaining their separate currencies, the accession countries will be better able to cope with idiosyncratic shocks. Indeed, given the low responsiveness of labor mobility to regional unemployment and wages, it appears that the candidate countries may not be well equipped to deal with adverse effects of asymmetric shocks. Transitional barriers to labor mobility in the wake of the enlargement would in fact only aggravate this problem. Hence, an early entry to the EMU would make the monetary union more fragile and be potentially costly—both in economic and political terms.

## 7 Conclusions

Labor mobility can serve as an important channel for regional adjustment to idiosyncratic shocks. Emigration from depressed regions helps reduce inter-regional differentials in unemployment rates and average wages. This paper assesses the efficacy of migration as a channel of regional adjustment in several post-communist countries in transition. Economic reforms have had largely asymmetric repercussions in these countries, resulting in large and persistent unemployment and wage differentials across regions, thus increasing the need for effective regional adjustment. However, the efficacy of labor mobility as a channel of regional adjustment has been limited in the transition economies. While migration indeed responds to

inter-regional wage differentials, its responsiveness to unemployment is more limited (and less robust to changes in regression specification). Moreover, the effect of wage differentials on migration is only partially consistent with regional adjustment occurring via migration. Although wages have a positive effect on net migration, they are positively correlated with overall mobility—both gross immigration and emigration. Hence, depressed regions experience low overall mobility (inbound and outbound) rather than an outflow of migrants. The effect of unemployment is, to some extent, similar (although as emphasized above it is less robust to changes in regression specifications). When comparing post-communist transition economies with Southern European countries, migration patterns in Italy and especially Portugal appear much more effective in facilitating regional adjustment.

Yet, gross migration flows in transition countries were not negligible – in 1996, gross migration flows (as a percentage of the countries' populations) ranged between 0.6% in Slovakia and 2.3% in Lithuania. However, gross immigration and emigration are strongly correlated and hence the resulting net migration is tiny. This pattern can also be traced in the regression results presented above—while several socio-economic and demographic factors significantly affect gross migration flows, they often have a similar effect on inflows and outflows. Even though net migration is found to respond to regional economic characteristics, the effects are economically small and large inter-regional differentials in unemployment and average wages only give rise to modest net migration flows.

The pattern of labor mobility prevailing in transition economies has several important implications. First, regional differentials in unemployment and wages will not be smoothed away by migration easily. An appropriate policy response may be needed in order to avert creation of new *Mezzogiorni*. Second, given the low labor mobility in the accession countries, it seems unlikely that there will be a massive East-West migration flows in the wake of the next EU enlargement. East Europeans do not move readily even within their own countries, despite sizeable wage and unemployment differentials. Although wage differentials with respect to the current EU members are larger, so are migration costs and informal (e.g. linguistic and cultural) barriers to migration. Third, because of the low efficacy of migration in smoothign away inter-regional differentials in unemployment and wages, an early membership in the EMU is not necessarily an optimal policy choice for the accession countries. EMU membership stipulates loss of autonomous monetary policy and imposes important limitations on counter-cyclical fiscal policy. As the transition countries will likely



continue to face different shocks than the EMU core, at least in medium term, they may indeed benefit from retaining the option to adjust their exchange rates.

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**Table 1A Labor-Market Developments and Migration: Czech Republic**

	1991	1992	1993	1994	1995	1996	1997	1998
Unemployment	4.62	2.9	3.89	3.38	3.08	3.79	5.63	7.81
Standard Deviation	1.88	1.41	1.94	1.73	1.7	1.91	2.53	3.06
Coeff. Of Variation [%]	40.7%	48.6%	49.9%	51.2%	55.2%	50.3%	44.9%	39.2%
Wages [CZK]	3745	4571	5551	6411	7661	9056	9757	11239
Standard Deviation	234	361	446	575	656	786	958	1365
Coeff. of Variation [%]	6.2%	7.9%	8.0%	9.0%	8.6%	8.7%	9.8%	12.1%
Gross Migration [%]	n.a.	1.26	1.15	1.01	1.00	0.94	0.98	0.98
Standard Deviation		0.30	0.27	0.27	0.28	0.28	0.33	0.41
Maximum		2.43	2.31	2.29	2.33	2.33	2.57	3.32
Minimum		0.82	0.73	0.62	0.57	0.57	0.57	0.59

**Table 1B Labor-Market Developments and Migration: Slovakia**

	1991	1992	1993	1994	1995	1996	1997	1998
Unemployment	12.89	11.82	16.57	17.7	14.56	14.56	n.a.	n.a.
Standard Deviation	3.23	3.65	4.91	5.89	4.79	5.06		
Coeff. of Variation [%]	25.1%	30.9%	29.6%	33.3%	32.9%	34.8%		
Wages [SKK]	3635	4185	5026	5747	6640	7267	n.a.	n.a.
Standard Deviation	163	323	408	529	664	862		
Coeff. of Variation [%]	4.5%	7.7%	8.1%	9.2%	10.0%	11.9%		
Gross Migration [%]	n.a.	0.85	0.82	0.73	0.62	0.61	n.a.	n.a.
Standard Deviation		0.21	0.21	0.20	0.18	0.23		
Maximum		1.51	1.41	1.39	1.23	1.40		
Minimum		0.42	0.44	0.34	0.29	0.28		

**Table 1C Labor-Market Developments: Poland**

	1991	1992	1993	1994	1995	1996	1997	1998
Unemployment	12.7	14.9	18.2	n.a.	16.8	14.9	11.9	12.0
Standard Deviation	3.6	4.4	5.6	n.a.	5.1	4.8	4.2	4.1
Coeff. of Variation [%]	28.1%	29.5%	31.0%	n.a.	30.3%	32.4%	35.3%	34.5%
Wages [PLZ]	167.73	269.15	358.39	479.2	632.6	797.5	965.7	1115.2
Standard Deviation	13.07	23.31	35.22	54.0	70.5	87.5	109.7	126.9
Coeff. of Variation [%]	7.8%	8.7%	9.8%	11.3%	11.1%	11.0%	11.4%	11.4%
Gross Migration [%]	n.a.	1.3	1.2	n.a.	n.a.	1.1	1.1	n.a.
Maximum	n.a.	1.7	1.6	n.a.	n.a.	1.5	1.6	n.a.
Minimum	n.a.	0.7	0.7	n.a.	n.a.	0.7	0.7	n.a.

**Table 1D Labor-Market Developments: Hungary**

	1991	1992	1993	1994	1995	1996	1997	1998
Unemployment	9.7	9.2	13.1	11.4	11.3	11.6	11.5	10.1
Standard Deviation	3.5	3.2	3.8	3.4	3.4	4.0	4.2	3.9
Coeff. of Variation [%]	35.5%	35.2%	29.1%	29.5%	30.3%	34.0%	36.0%	38.8%
Wages [HUF]		20,315.8	24,753.8	30,960.7	36,200.9	43,080.6	52,458.3	61,338.2
Standard Deviation		2,180.3	2,561.1	3,275.4	4,032.6	5,046.9	6,771.0	8,619.4
Coeff. of Variation [%]		10.7%	10.3%	10.6%	11.1%	11.7%	12.9%	14.1%
Net Migration [%]								
Maximum				-0.5	-0.6	-0.4	-0.6	-0.5
Minimum				1.4	1.4	1.2	1.5	1.5

**Table 1E Labor-Market Developments: Lithuania**

	1996	1997	1998	1999
Unemployment	7.84	6.49	7.65	9.70
Standard Deviation	3.24	2.35	2.82	3.30
Coeff. of Variation [%]	41.3%	36.3%	36.9%	34.0%
Wages [LIT]	532.59	672.39	807.57	849.43
Standard Deviation	126.63	144.78	153.21	158.43
Coeff. of Variation [%]	23.8%	21.5%	19.0%	18.7%
Gross Migration [%]	2.26	2.20	1.77	1.58
Maximum	4.73	4.63	4.04	3.29
Minimum	0.82	0.94	0.61	0.58

**Table 1F Labor-Market Developments: Netherlands**

	1988	1989	1990	1991	1992	1993	1994	1995
Unemployment	9.76	8.73	7.69	5.88	5.98	6.58	7.11	7.33
Standard Deviation	1.76	1.55	1.79	0.95	1.06	1.01	0.96	1.02
Coeff. of Variation [%]	18.0%	17.8%	23.3%	16.2%	17.8%	15.4%	13.5%	14.0%
Wages [ECU]	1995.95	2004.19	2090.13	2185.16	2317.98	2505.45	2585.95	2709.06
Standard Deviation	45.67	46.90	50.77	51.48	59.03	64.22	60.52	64.84
Coeff. of Variation [%]	2.3%	2.3%	2.4%	2.4%	2.5%	2.6%	2.3%	2.4%
Gross Migration [%]	1.61	1.66	1.61	1.59	1.54	1.53	1.53	1.53
Maximum	2.74	2.75	2.66	2.66	2.71	2.76	2.82	2.73
Minimum	1.11	1.12	1.12	1.09	0.95	0.98	0.95	0.98

Note: All observations for *Flevoland* were dropped because of data problems.

**Table 1G Labor-Market Developments: Italy**

	1988	1989	1990	1991	1992	1993	1994	1995
Unemployment	11.31	10.40	9.35	9.13	8.75	10.49	11.54	12.26
Standard Deviation	6.34	6.44	6.16	5.80	4.68	5.48	6.20	6.95
Coeff. of Variation [%]	56.0%	61.9%	65.9%	63.5%	53.4%	52.3%	53.7%	56.7%
Wages [ECU]	1579.92	1747.42	1928.57	2088.01	2126.98	1913.33	1895.32	1785.86
Standard Deviation	139.21	164.17	178.69	190.60	196.74	169.94	173.72	158.35
Coeff. of Variation [%]	8.8%	9.4%	9.3%	9.1%	9.2%	8.9%	9.2%	8.9%
Gross Migration [%]	0.53	0.56	1.86	0.49	0.53	0.50	0.49	0.50
Maximum	1.30	1.36	3.06	1.14	1.24	1.12	1.20	1.22
Minimum	0.33	0.32	0.18	0.28	0.35	0.30	0.31	0.31

**Table 1H Labor-Market Developments: Spain**

	1987	1988	1989	1990	1991	1992	1993	1994
Unemployment	19.08	18.63	16.39	15.39	15.16	16.96	20.90	22.95
Standard Deviation	5.27	4.84	5.24	5.45	5.28	5.21	5.49	5.21
Coeff. of Variation [%]	27.6%	26.0%	32.0%	35.4%	34.8%	30.7%	26.2%	22.7%
Wages [ECU]	956.92	1130.42	1396.54	1676.73	1956.65	2212.69	2098.76	2033.41
Standard Deviation	107.09	119.53	130.15	148.64	153.65	185.62	189.49	172.41
Coeff. of Variation [%]	11.2%	10.6%	9.3%	8.9%	7.9%	8.4%	9.0%	8.5%
Gross Migration [%]	0.45	0.57	0.65	0.64	0.38	0.53	0.55	0.60
Maximum	1.44	2.25	2.26	1.47	1.11	1.28	1.17	1.00
Minimum	0.19	0.27	0.32	0.41	0.21	0.28	0.29	0.34

**Table 1I Labor-Market Developments: Portugal**

	1986	1987	1988	1989	1990	1991	1992	1993
Unemployment	8.30	6.70	6.17	5.06	4.57	4.16	3.87	5.36
Standard Deviation	3.93	3.30	4.26	3.32	2.66	2.30	1.76	1.82
Coeff. of Variation [%]	47.37	49.30	68.99	65.62	58.28	55.27	45.52	33.91
Wages [ECU]	402.92	435.47	471.27	518.11	601.05	721.68	859.86	851.72
Standard Deviation	58.37	48.49	64.86	75.12	56.60	69.16	87.61	89.79
Coeff. of Variation [%]	14.49	11.13	13.76	14.50	9.42	9.58	10.19	10.54
Gross Migration [%]	0.20	0.14	0.20	0.50	0.54	0.18	0.33	n.a.
Maximum	0.65	0.29	0.56	1.10	1.24	0.50	1.02	n.a.
Minimum	0.08	0.03	0.09	0.04	0.11	0.07	0.09	n.a.

**Table 2 Determinants of Inter-regional Migration: Czech Republic 1992 - 1998**

	Inflows		Outflows		Net Inflows		Inflows		Outflows		Net Inflows		Inflows		Outflows		Net Inflows	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	
Constant	0.792	(4.59)	0.772	(7.04)	0.020	(0.14)	0.670	(3.97)	0.678	(5.54)	-0.009	(0.07)	0.951	(3.20)	1.068	(4.80)	-0.126	(0.52)
Unempl. Rate (lagged)	-0.039	(4.40)	-0.016	(2.94)	-0.023	(3.65)	-0.032	(4.32)	-0.012	(2.36)	-0.020	(3.53)	-0.007	(1.14)	-0.005	(1.02)	-0.002	(0.44)
Wage Ratio (lagged)	0.692	(3.75)	0.535	(4.94)	0.156	(1.07)	1.390	(5.89)	1.016	(6.30)	0.376	(2.26)	0.840	(3.76)	0.458	(3.45)	0.385	(2.10)
Population Density [log]							-0.132	(6.54)	-0.088	(5.54)	-0.046	(3.11)	-0.129	(4.47)	-0.036	(1.61)	-0.091	(4.03)
Suburb							0.315	(5.97)	0.163	(4.91)	0.152	(4.57)	0.361	(7.70)	0.209	(6.93)	0.152	(4.66)
Entrepreneurs													0.020	(2.51)	0.011	(1.96)	0.009	(1.67)
Industrial Employment													-0.007	(3.24)	-0.005	(3.54)	-0.002	(1.32)
Agricult. Employment													0.009	(1.13)	0.016	(5.70)	-0.012	(3.51)
University Educated													0.003	(0.27)	0.013	(1.79)	-0.010	(1.03)
Catholics													-0.006	(7.40)	-0.007	(9.22)	-0.001	(1.38)
Retirees													0.021	(3.29)	-0.005	(1.00)	0.026	(4.78)
Romany Minority													0.079	(1.26)	0.186	(4.07)	-0.111	(2.37)
Dummy 1993	-0.175	(3.71)	-0.097	(2.25)	-0.078	(2.75)	-0.161	(3.73)	-0.088	(2.27)	-0.073	(2.44)	-0.121	(3.29)	-0.043	(1.36)	-0.078	(2.53)
Dummy 1994	-0.254	(5.71)	-0.262	(6.44)	0.009	(0.33)	-0.226	(5.44)	-0.243	(6.54)	0.016	(0.62)	-0.203	(5.47)	-0.211	(6.72)	0.010	(0.31)
Dummy 1995	-0.275	(6.13)	-0.293	(7.36)	0.018	(0.66)	-0.229	(5.35)	-0.261	(7.16)	0.033	(1.11)	-0.229	(6.26)	-0.283	(10.09)	0.055	(1.85)
Dummy 1996	-0.328	(6.97)	-0.364	(9.31)	0.037	(1.21)	-0.284	(6.32)	-0.334	(9.36)	0.052	(1.59)	-0.293	(7.60)	-0.360	(12.79)	0.066	(2.13)
Dummy 1997	-0.249	(4.93)	-0.339	(8.80)	0.090	(2.63)	-0.195	(4.10)	-0.302	(8.32)	0.107	(3.09)	-0.215	(5.10)	-0.292	(9.44)	0.076	(2.27)
Dummy 1998	-0.146	(2.28)	-0.287	(7.35)	0.142	(2.93)	-0.102	(1.77)	-0.257	(6.94)	0.156	(3.32)	-0.193	(3.84)	-0.267	(7.41)	0.074	(1.75)
Adj. R <sup>2</sup>	0.170		0.311		0.099		0.348		0.403		0.182		0.536		0.612		0.262	

Notes: Number of observations: 526 (76 districts, average population 135,900 in 1994). T-statistics (heteroskedasticity robust) are reported in parentheses. The dependent variables are the gross inflow and outflow rates and net inflow rate as a percentage of the region's end-year population, respectively. The unemployment rate, the wage ratio and population density are lagged by one year. The unemployment rate and the wage ratio are lagged by one year. Entrepreneurs, Roman Catholics, retirees, university educated and the Romany minority are expressed as the percentage of district population. Employment in the industry and agriculture is the percentage of total employment.

**Table 3 Determinants of Inter-regional Migration: Slovakia 1992 - 1996**

	Inflows		Outflows		Net Inflows		Inflows		Outflows		Net Inflows		Inflows		Outflows		Net Inflows	
	(10)	(11)	(11)	(12)	(12)	(13)	(14)	(14)	(15)	(15)	(16)	(17)	(17)	(18)	(18)	(18)	(18)	
Constant	0.019	(0.10)	0.481	(3.23)	-0.464	(2.57)	-0.080	(0.54)	0.444	(3.47)	-0.526	(3.15)	-0.895	(4.21)	0.174	(1.03)	-1.077	(4.90)
Unempl. Rate (lagged)	-0.004	(1.13)	-0.001	(0.27)	-0.003	(1.37)	-0.004	(1.74)	-0.001	(0.33)	-0.003	(1.60)	-0.006	(2.29)	0.000	(0.15)	-0.006	(2.18)
Wage Ratio (lagged)	0.878	(5.37)	0.428	(3.25)	0.451	(2.74)	0.957	(5.08)	0.298	(2.00)	0.664	(3.73)	0.562	(3.20)	0.263	(1.58)	0.305	(1.92)
Population Density [log]							0.000	(0.02)	0.031	(2.03)	-0.032	(1.35)	0.006	(0.22)	0.077	(3.82)	-0.072	(3.23)
Suburb							0.547	(7.92)	0.388	(12.68)	0.156	(3.02)	0.499	(7.67)	0.323	(9.12)	0.173	(3.57)
Entrepreneurs													0.043	(3.78)	0.013	(1.45)	0.030	(3.19)
Industrial Employment													0.005	(2.14)	-0.004	(2.68)	0.008	(4.11)
Agricult. Employment													0.007	(3.55)	0.000	(0.14)	0.007	(4.50)
University Educated													0.017	(2.01)	-0.018	(2.33)	0.035	(5.06)
Catholics													-0.001	(0.99)	-0.002	(2.53)	0.001	(0.98)
Retirees													0.038	(10.55)	0.020	(5.93)	0.018	(4.89)
Hungarian Minority													0.001	(0.77)	-0.002	(3.81)	0.002	(4.04)
Romany Minority													0.026	(3.67)	-0.002	(0.32)	0.028	(3.36)
Dummy 1993	-0.001	(0.03)	-0.103	(3.37)	0.101	(2.84)	0.002	(0.05)	-0.106	(4.52)	0.110	(3.15)	-0.016	(0.58)	-0.103	(5.25)	0.092	(3.08)
Dummy 1994	-0.102	(2.23)	-0.253	(7.65)	0.149	(4.59)	-0.100	(2.82)	-0.255	(10.85)	0.154	(4.87)	-0.098	(3.93)	-0.256	(12.04)	0.158	(6.41)
Dummy 1995	-0.191	(4.12)	-0.303	(9.20)	0.116	(3.95)	-0.187	(5.26)	-0.313	(13.12)	0.126	(4.34)	-0.186	(7.12)	-0.316	(14.48)	0.126	(5.49)
Dummy 1996	-0.200	(4.17)	-0.319	(10.11)	0.119	(3.44)	-0.197	(5.56)	-0.323	(14.26)	0.127	(3.92)	-0.206	(7.22)	-0.325	(15.64)	0.119	(4.57)
Adj. R <sup>2</sup>	0.277		0.507		0.157		0.571		0.734		0.213		0.737		0.787		0.436	

Notes: Number of observations: 190 (38 districts, average population 141,300 in 1995). T-statistics (heteroskedasticity robust) are reported in parentheses. The dependent variables are the gross inflow and outflow rates and net inflow rate as a percentage of the region's end-year population, respectively. The unemployment rate and wage ratio are lagged by one year. Entrepreneurs, Roman Catholics, retirees, university educated and national minorities are expressed as the percentage of district population. Employment in the industry and agriculture is the percentage of total employment.



**Table 4 Determinants of Inter-regional Migration: Poland 1992–1993 and 1996–1997**

	Inflows		Outflows		Net Inflows		Inflows		Outflows		Net Inflows		Inflows		Outflows		Net Inflows	
					(1)													
Constant	1.342	(7.89)	1.637	(9.62)	-0.541	-4.90	2.049	(14.35)	2.450	(20.91)	-0.760	-6.97	2.253	(7.66)	2.296	(9.14)	0.026	0.24
Unempl. Rate (lagged)	0.018	(6.21)	0.022	(7.34)	-0.008	-5.25	0.008	(1.36)	0.008	(2.52)	-0.008	-2.52	0.001	(0.48)	0.008	(1.95)	-0.008	-6.09
Wage Ratio (lagged)	-0.221	(1.49)	-0.503	(3.49)	0.591	6.13	0.714	(5.42)	0.571	(5.29)	0.301	3.34	0.690	(4.31)	0.754	(6.17)	-0.141	-2.38
Population density [log]							-0.307	(16.07)	-0.358	(20.17)	0.098	7.03	-0.297	(9.83)	-0.298	(10.83)	0.001	0.09
Entrepreneurs [%]													-0.014	(0.82)	-0.024	(1.74)	0.017	2.75
Industrial Employment													-0.004	(0.99)	-0.008	(2.10)	0.007	4.21
Agricult. Employment													-0.003	(1.50)	-0.004	(2.02)	0.000	0.42
University Educated													-0.008	(1.07)	-0.024	(3.40)	0.032	8.14
Retirees													0.007	(0.92)	0.017	(2.50)	-0.020	-6.82
Dummy 1993	-0.098	(2.29)	-0.178	(3.88)	0.018	0.76	-0.068	(2.40)	-0.138	(5.45)	0.008	0.31	-0.062	(2.27)	-0.138	(5.93)	0.014	1.19
Dummy 1996	-0.228	(5.50)	-0.311	(7.17)	0.051	2.41	-0.167	(5.94)	-0.241	(9.19)	0.032	1.64	-0.160	(5.57)	-0.241	(9.44)	0.047	3.98
Dummy 1997	-0.270	(6.94)	-0.298	(7.12)	0.040	1.94	-0.237	(8.17)	-0.260	(10.44)	0.030	1.52	-0.238	(7.96)	-0.260	(10.74)	0.037	2.89
Adj. R <sup>2</sup>	0.288		0.377		0.372		0.668		0.781		0.478		0.658		0.807		0.812	

Notes: Number of observations: (49 districts, average population 788,600 in 1996). T-statistics (heteroskedasticity robust) are reported in parentheses. The dependent variable is the net inflow rate as a percentage of the region's end-year population. The unemployment rate and wage ratio are lagged by one year. The entrepreneurs, retirees, industrial employment and agricultural employment refer to 1993, population density is as of 1994 and the percentage of district residents with university degree is as of 1996. Entrepreneurs, retirees and university educated are expressed as the percentage of district population. Employment in the industry and agriculture is the percentage of total employment.

Data for 1994 and 1995 were not available. Results obtained with separate regressions over 1992-93 and 1996-97 were similar to those above and are therefore not reported.

**Table 5 Determinants of Inter-regional Migration: Hungary 1994–1998**

	Net Inflows		Net Inflows		Net Inflows	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	2.364	4.51	0.685	3.48	0.877	2.10
Unempl. Rate (lagged)	-0.065	-5.11	-0.025	-5.75	-0.040	-8.56
Wage Ratio (lagged)	-1.668	-3.95	0.832	2.62	0.680	1.99
Population Density [log]			-0.254	-7.31	0.002	0.03
Dummy Pest			1.418	27.49	1.124	10.29
Entrepreneurs [%]					-0.004	-0.41
Industrial Employment					-0.001	-0.17
Agricult. Employment					0.002	0.25
University Educated					-0.101	-2.06
Retirees					-0.021	-1.94
Dummy 1995	-0.085	-0.86	-0.021	-0.54	-0.047	-1.14
Dummy 1996	-0.121	-1.19	-0.043	-1.03	-0.071	-1.61
Dummy 1997	-0.066	-0.63	0.002	0.05	-0.021	-0.51
Dummy 1998	-0.103	-0.93	-0.015	-0.39	-0.041	-1.04
Adj. R <sup>2</sup>	0.210		0.888		0.906	

Notes: Number of observations: 100 (20 districts, average population 512,300 in 1995). T-statistics (heteroskedasticity robust) are reported in parentheses. The dependent variable is the net inflow rate as a percentage of the region's end-year population. The unemployment rate and wage ratio are lagged by one year. The entrepreneurs, retirees, industrial employment and agricultural employment refer to 1995, while the population density is as of 1994. Entrepreneurs, retirees and university educated are expressed as the percentage of district population. Employment in the industry and agriculture is the percentage of total employment.

**Table 6 Determinants of Inter-regional Migration: Lithuania 1997–1999**

	Gross Inflow		Gross Outflow		Net Inflow	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	2.936	(10.17)	2.410	(9.99)	0.527	(3.09)
Unempl. Rate (lagged)	-0.107	(0.96)	-0.066	(0.71)	-0.041	(0.63)
Wage Ratio (lagged)	70.074	(0.86)	50.640	(0.74)	19.434	(0.41)
Population Density [log]	-0.123	(3.65)	-0.040	(1.43)	-0.083	(4.17)
Suburb	0.506	(3.97)	0.229	(2.15)	0.277	(3.68)
Dummy 1998	-0.435	(1.82)	-0.351	(1.75)	-0.084	(0.60)
Dummy 1999	-0.468		-0.507		0.040	
Adj. R <sup>2</sup>	0.298		0.228		0.186	

Notes: Number of observations: 168 (56 districts, average population 66,300 in 1996). T-statistics (heteroskedasticity robust) are reported in parentheses. The dependent variables are the gross inflow and outflow rates and the net inflow rate, as percentages of the region's end-year population. The unemployment rate, wage ratio and population density are lagged by one year.

**Table 7 Determinants of Inter-regional Migration: Italy 1984-1995**

	Gross Inflow		Gross Outflow		Net Inflow	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.756	(4.41)	0.683	(3.55)	0.073	(0.53)
Unempl. Rate (lagged)	-0.006	(2.26)	0.018	(5.99)	-0.023	(13.16)
Wage Ratio (lagged)	0.785	(5.57)	0.100	(0.56)	0.684	(5.78)
Population Density [log]	-0.170	(7.25)	-0.076	(3.58)	-0.094	(7.17)
R <sup>2</sup>	0.401		0.241		0.645	

Notes: Number of observations: 219 (20 regions, average population 2,863,400 in 1995). The observation for *Valle d'Aosta* in 1994 was dropped because of missing data; all observations pertaining to 1990 were dropped because of data problems. T-statistics (heteroskedasticity robust) are reported in parentheses. The dependent variables are the gross inflow and outflow rates and the net inflow rate, as percentages of the region's end-year population. The unemployment rate, wage ratio and population density are lagged by one year.

**Table 8 Determinants of Inter-regional Migration: Spain 1984-1994**

	Gross Inflow		Gross Outflow		Net Inflow	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	11.298	(6.35)	9.647	(5.15)	1.650	(1.04)
Unempl. Rate (lagged)	-0.113	(2.40)	-0.058	(1.35)	-0.055	(1.63)
Wage Ratio (lagged)	-3.132	(1.97)	-0.267	(0.16)	-2.865	(2.18)
Population Density [log]	-0.084	(0.40)	-0.589	(2.83)	0.505	(3.03)
R <sup>2</sup>	0.045		0.062		0.045	

Notes: Number of observations: 187 (17 regions, average population 2,293,650 in 1994). Observations for *Ceuta* y *Melilla* were dropped. T-statistics (heteroskedasticity robust) are reported in parentheses. The dependent variables are the gross inflow and outflow rates and the net inflow rate, as percentages of the region's end-year population. The unemployment rate, wage ratio and population density are lagged by one year.

**Table 9 Determinants of Inter-regional Migration: Portugal 1987-1992**

	Gross Inflow		Gross Outflow		Net Inflow	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-0.786	(1.36)	2.583	(2.54)	-3.369	(2.93)
Unempl. Rate (lagged)	-0.026	(2.22)	0.081	(1.22)	-0.107	(1.67)
Wage Ratio (lagged)	2.692	(4.01)	-1.487	(0.93)	4.179	(2.41)
Population Density [log]	-0.278	(4.07)	-0.240	(1.41)	-0.0378	(0.22)
R <sup>2</sup>	0.446		0.364		0.394	

Notes: Number of observations: 32 (7 regions, average population 1,408,610 in 1992). Several observations pertaining to 1987 and 1988 were dropped because of missing wage or unemployment data. T-statistics (heteroskedasticity robust) are reported in parentheses. The dependent variables are the gross inflow and outflow rates and the net inflow rate, as percentages of the region's end-year population. The unemployment rate, wage ratio and population density are lagged by one year.

**Table 10 Determinants of Inter-regional Migration: Netherlands 1989–1995**

	Gross Inflow		Gross Outflow		Net Inflow	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	5.921	(3.11)	5.886	(3.07)	0.037	(0.05)
Unempl. Rate (lagged)	0.070	(2.47)	0.044	(1.61)	0.026	(2.28)
Wage Ratio (lagged)	-3.410	(1.89)	-3.397	(1.74)	-0.014	(0.02)
Population Density [log]	-0.217	(2.82)	-0.182	(2.25)	-0.036	(1.43)
Adj. R <sup>2</sup>	0.174		0.097		0.115	

Notes: Number of observations: 77 (11 provinces, average population 1,378,300 in 1995). All observations for *Flevoland* were dropped because of data problems. T-statistics (heteroskedasticity robust) are reported in parentheses. The dependent variables are the gross inflow and outflow rates and the net inflow rate, as percentages of the region's end-year population. The unemployment rate, wage ratio and population density are lagged by one year.

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