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Labour mobility within the EU in the context of enlargement and the functioning of the transitional arrangements

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Regional effects of labour mobility

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Abstract

This deliverable analyses the regional impact and distribution of migration and cross-border commuting in the EU27 using European Labour Force data. Furthermore a case study of migration and commuting potentials in one of the border regions, which can be deemed to be most affected from these flows (the border region of the new member states to Austria) is conducted by using the first two waves of the LAMO household survey conducted in the CENTROPE region in 2004-2005 and 2006-2007.

With respect to the regional structure of migration in the EU we find the largest local clusters of migrants in the EU 15 in the Île de France as well as Inner and Outer London and a markedly different settlement structure of migrants relative to natives: 23.9% of all migrants would have to change their region of residence in order to achieve a uniform distribution of migrants across EU-15 NUTS 2 regions. Migrants from the NMS-8 show a lower degree of concentration than those from Bulgaria and Romania or the candidate countries, while they are more regionally concentrated than migrants from other countries. The biggest local clusters of NMS migrants can be observed in the London areas and Vienna. Looking at individual sending countries, Polish migrants show the lowest tendency to cluster regionally among migrants from the NMS. Furthermore, low skilled migrants with primary education are much more spatially concentrated than migrants with secondary or tertiary education, which confirms earlier findings.

The concentration of migrants did not differ substantially between migration cohorts: those who moved during the last 10 years are about as concentrated as those who migrated earlier. However, the target regions of more recent migration waves are considerably different from those of earlier cohorts. This applies in particular to migrants from the NMS-8, where the different institutional regimes since accession have shifted the target country structure, which also affects the regional patterns of migration. Although the geographical concentration increased for more recent cohorts of migrants from the NMS-8, the correlation of local concentrations across time is rather low and even insignificant for some CEE countries. However, a regression analysis shows that—even

after controlling for geographic and economic characteristics of the regions—ethnic networks do play a significant role in explaining the location choice of migrants

Cross-border commuting in the EU 27 in general is limited to individual border regions and has a relatively low magnitude when considering the overall European labour market. In the two years observed cross-border commuters accounted for only 0.5% of total employment in the EU. Cross-border commuting is of relevance in a small number of border regions, only. These are mostly located at the German-French and French-Belgian borders, on the Austro-German border, at the Czech-Slovak border, in the Baltic countries and in Western Hungary as well as the German-Polish border and potentially southern Sweden. These borders are mostly characterised by strong linguistic, historic or institutional ties. In these border regions usually slightly more than 1% of the employed commute across borders and in individual cases cross-border commuting may surpass the 5% mark. For most border regions outside these "hot spots" out-commuting is below 0.5% of the employed.

There are also some differences in the importance of cross-border commuting between the EU 15 and NMS 12. In particular, NMS 12 countries receive much fewer cross-border commuters than EU 15 countries as a percentage of the employed in the country of work. In addition outbound cross-border commuting from the NMS 12 is strongly oriented towards the EU 15 countries rather than non-EU countries. By contrast, outbound cross-border commuting in the EU 15 is more strongly oriented to non-EU countries rather than to the NMS 12.

Cross-border commuters - in contrast to internal commuters in the EU 27 - are also not necessarily better qualified than non-commuters and are drawn more than proportionately from manufacturing workers, males and the age group of the 20 to 29 year olds. These characteristics apply even more strongly to cross-border commuters from the NMS 12 than to commuters from the EU 15. While these results are largely consistent with the findings of earlier case studies in the literature, they also suggest that cross border commuters – in contrast to migrants – are not as strongly positively selected on educational criteria, but stem primarily from the intermediate qualification level.

Finally, - while our results in this respect are subject to a rather unsatisfactory data situation, our findings also imply that after controlling for other influences on cross-border commuting - flows from the NMS 12 to the EU 15 are not significantly smaller than those among the EU 15 countries, while flows from the EU 15 to the NMS 12 are significantly lower than those among the EU 15. The primary difference in the factors determining cross-border migration in the NMS 12 and the EU 15 seems to be a closer association of cross-border commuting with the industrial specialisation in the NMS 12 than the EU 15.

In our case study of the CENTROPE region we analyse migration and commuting potentials in the border regions of the new member states to Austria using two waves of a household survey conducted in the Austrian-Czech-Slovak-Hungarian border region in 2004-2005 and 2006-2007. 10.9% of the interviewed in the CENTROPE regions of the Czech Republic, Hungary or Slovakia expressed the wish to migrate to one of the EU 15 in the future (and thus belonged to the general migration potential). 3.8% of the population in the region were willing to migrate and had taken first steps to prepare for cross border migration or commuting. They belonged to the expected migration potential. 1.3% of the population applied for a work permit and or already had a job offer abroad (real migration potential) in 2006-2007. An additional 5.6% of the population in the region under consideration expressed the wish to commute to the EU 15 in the future

(and belonged to the general commuting potential). 1.4% of the population in the region were willing to commute had taken first preparatory step. 0.8% of the population had applied for a work permit and/or already had a job abroad (real commuting potential) in 2006-2007.

Relative to the first wave of interviews in 2004-2006 this represents a decrease in the migration potential of between 1.5 percentage points (general migration potentials) and 0.1 percentage points (real migration potential) of the population. Commuting potentials declined more strongly for the general and expected commuting potentials, while the real commuting potential increased slightly. A comparison with the Austrian subregions suggests that the general migration potential in Austria is as high as in the NMS-regions.

Analysing the determinants and structure of potential commuters and migrants suggests that, the presence of kids or a spouse in the household is a more serious impediment for the willingness to migrate than for the willingness to commute; gender differences in the willingness to commute are larger than for the willingness to migrate (although women are both significantly less willing to commute and to migrate), and the willingness to migrate reduces much more strongly with age than does the willingness to commute. Also both those willing to commute as well as those willing to migrate are disproportionately often drawn from the two extremes of the educational distribution, and are thus often either highly or less educated. When, however, including education in a multivariate regression analysis we find that education has no significant effect on both the willingness to migrate and to commute. This implies that potential migrants as well as potential commuters in the region considered are neither positively nor negatively selected.

The willingness to commute also decreases much more rapidly with distance to the nearest potential workplace than the willingness to migrate while the latter is positively influenced by English and other foreign language knowledge. The willingness to commute is, however, more strongly associated with German language knowledge. In addition, the willingness to migrate is also more strongly influenced by the presence of networks and previous experience of working abroad than the willingness to commute.

Analysing the changes in the preferences associated with the willingness to migrate and commute, our data suggests that the proportion of those willing to migrate to Germany and Austria is about 40% and thus substantially lower than in previous studies. On the other hand, the share of potential migrants preferring the United Kingdom is substantially higher than in the earlier literature. Those who prefer Austria do so mainly because of its geographical proximity and its high wage level. All other motives, such as language skills, resident family members, relatives or friends, education or training opportunities as well as the relative easiness of obtaining a residence or work permit speak for the UK.

Contents

1   Introduction

Spatial labour mobility (i.e. commuting and migration) by definition always involves a change in place of work. Thus the analysis of cross-border labour mobility also always involves a regional component. This applies both to the choice of the region of residence as well as to the method in by which spatial labour mobility is achieved. These regional issues have also received increasing attention in the recent literature. For instance with respect to the choice of method of mobility recent literature (e.g. Zax, 1994, Rowendal, 1998, Van Ommeren, Rietveld and Nijkamp, 2000) has repeatedly stressed that spatial labour mobility can be achieved either by migration or by commuting. As pointed out by this literature these two processes are closely related: a person residing in a region and receiving an job offer in another region can either choose to work in this other region without changing place of residence, in which case she will become a commuter, or she may choose to move both her place of residence as well as place of work. In this case she will become a migrant. Furthermore, studies (see Renkow and Hoover, 2000, Clark and Whithers, 1999, Rowendahl, 1999, Van Ommeren, Rietveld and Nijkamp, 1999, Elliason, Lindgren and Westerlund, 2003) which consider this relationship empirically and primarily concentrate on migration and commuting choices within a specified metropolitan area, find a strong relationship between migration and commuting.

Similarly, with respect to migration, the high regional concentration of migrants in certain geographic locations is one of the most robust stylised facts repeatedly stressed in the economic literature on migration. In her seminal paper Bartel (1989) shows that in the US close to 75% of the migrants live in the 25 largest SMAS of the United States, although only 50% of the native population resides in these regions. Similar stylised facts have been found to apply in the few studies that have conducted similar analyses for countries other than the US (e.g. Huber, 2002 for Austria, Chiswick, Lee and Miller, 2002 for Australia, Edin, Fredrikson and Aslund, 2001 for Sweden, Hou, 2005 for Canada, and Blom 1999, for the Oslo metropolitan area).

Furthermore Bartel (1989) and the related literature show a number of further stylised facts. In particular this literature suggests that:

1. Education plays an important role in the location choice of migrants, with the degree of geographic concentration decreasing with increasing education of migrants.

2. There are important differences in the geographic concentration of migrant groups depending on their ethnicity, where in general the concentration decreases with increasing duration of residence and increasing average educational attainment but increases with the degree to which the tastes of the migrant group under consideration differ from those of the native population.

3. There are also important differences as to the geographic distribution of migrants according to ethnicity, with certain migrant groups locating in different parts of the country. In particular with respect to migrant groups from nearby sending countries

proximity to the home country seems to play an important role in determining the region of residence.

4. Migrants are also more mobile than natives within the country of residence, where in general migrants tend to move out of their ethnic enclaves as their stay in the host country prolongs (see also Rephann and Vencatasawmy, 2000, Sündeln, 2007).

By contrast the literature on commuting suggests that commuting flows may differ from migration flows in a number of important ways. For instance commuting flows are much more dependent on distance between sending and receiving regions than migration flows. Since this is also to be expected from cross-border commuting flows, this implies a regionally asymmetric impact of cross-border commuting, which, - in contrast to migration flows, which as shown in the last chapter are often concentrated in the urban centres of a country – on account of their high distance dependence should be expected to be concentrated in border regions.

There may, however, also be more subtle differences between migration and cross-border commuting flows. In this respect for instance White (1986) as well as Rouwendahl (1999) show that commuting within a country is strongly focused on males. This can be explained by the higher alternative costs of travelling time for women, which arise on account of their role in childcare and household production, as well a higher share of part time workers among women, which leads to higher commuting costs per work hour. Furthermore commuters within a country may differ from non-commuters with respect to age and education. Rouwendahl (1999) find that the willingness for mobility decreases with age, and Van Ommeren (1999), Hazans (2003) as well as Rouwendahl (1999) all find that higher educated workers are more likely to be commuters within a country than less educated workers.

One could expect that some of these "stylized facts" carry over to cross-border commuters while others may differ. Indeed some of the recent case studies (see: Buch et al, 2008 and Gottholmseder and Theurl 2006, 2007) confirm that cross border commuters are mostly male but also suggest that cross-border commuters differ from commuters within a country both with respect to education and age structure. Comparing cross-border commuters from Vorarlberg to Switzerland to internal commuters and non-commuters in the same region Gottholmseder and Theurl 2006 find that on account of a low commuting share among the under 25 year olds there is no clear evidence that cross-border commuters are younger than non commuters, and according to the regression results in Gottholmseder and Theurl (2007) neither age nor education is a significant determinant of cross-border commuting. This thus suggests that with respect to age and education the process of selection of cross-border commuters differs from that of internal commuters.

In the context of European integration these regional issues of labour mobility are becoming increasingly relevant both from an analytical as well as from a policy perspective. This is because with respect to cross-border commuting and migration and their interrelationship recent results suggest that cross-border labour markets may be

emerging in the European Union. For instance Overmann and Puga (2000) find that regional linkages in unemployment rates are equally strong across national borders as within countries. Furthermore, issues of the interrelationship between cross-border commuting and migration have also received heightened attention by policy makers in the context of the debate on enlargement of the EU by the 10 new member states which joined the EU in 2004. In this debate in particular Austrian and German policy makers repeatedly argued that due to the vicinity to of major centres to the external border of the EU, cross-border commuting flows may be an additional impact on migration and should be considered in a debate on potential derogation periods (see Huber 2001, Untiedt and Alecke 2001).

Furthermore, the regional concentration of migrants raises issues as to whether migration has a differential impact on different regional economies (see Card and Lewis, 2005 for a recent contribution), whether the potential formation of enclaves has a negative or positive effect on the probability of integration of foreigners (see Borjas, 1995, Betrand, Luttmer and Mullainathan, 2000, Cutler and Glaeser, 1997, Chiswick and Miller, 2002, Cardak and McDonald, 2004 for contributions analysing the implications of enclaves on the economic and social success of migrants) and what policy activities could help those regional labour markets most strongly affected by migration and commuting in the double task of integrating the new arrivals and adjusting to the increase in labour supply (see Edin, Fredrikson and Aslund, 2001a for a contribution to this literature focusing on a European country).

In this report on deliverable 7 to the study "Labour Mobility within the EU in the context of enlargement and the functioning of the transitional arrangements" our primary aim is to describe the regional concentration of migrants in Europe and to analyse both the regional and the educational structure of cross-border commuters, with particular emphasis on labour mobility from the new member states and candidate countries. We address this issue by first focusing on a descriptive analysis of European Labour Force survey data and second conducting a case study of the Austrian-Czech-Hungarian-Slovak border regions in which special attention is paid to potential commuting and migration choices.

With respect to the analysis of data from the European Labour Force Suvey in the first two chapter of this deliverable we assess the regional impact of migration and commuting at the level of NUTS2 regions. This part of the study thus gives answer to the questions of where foreign born citizen (resp. citizen of foreign nationality) in the EU live and how the distribution of foreign born individuals (resp. citizen of foreign nationality) evolved over the last decades. To this end in chapter 2 of this report we use LFS data on the nationality and country of birth to estimate the number of foreign born (resp foreign nationals) residing in the EU NUTS 2 regions, for those regions where the data is reliable (i.e. representative) and analyse the regional settlement structure of foreign born (foreign nationals) by country group (i.e. other EU15 countries, New EU member States, other countries) and by educational characteristics. Finally we also follow the literature by

estimating a single equation model to determine which factors determine the location choices of migrants.

In chapter 3, by contrast, we use data from the European Labour Force Survey to analyse the extent of cross-border commuting in the EU. In contrast to previous literature (see for example: Buch et al, 2008, Gottholmseder and Theurl , 2006, 2007, van der Velde, Jansen and van Houtum, 2005, Greve and Rydbjerg, 2003a, 2003b, Bernotat and Snickars, 2002) which mostly focused on case studies for individual regions, we focus on the complete EU 27. Given the paucity of empirical results on the extent and structure of cross-border commuting for the EU 27, our aims are primarily descriptive: In particular we first of all want to know how many people can be assumed to commute across borders in the EU 27 currently and how their demographic structure differs from that of both commuters within a country and persons, who both live and work within the same region (i.e. non-commuters). Second of all we want to know in which regions and countries of the EU 27 cross-border commuting currently plays an important role and thirdly – with respect to labour mobility from the 12 new member states (NMS 12) to the 15 old member states (EU 15), - we want to know how both the structure and extent of current cross-border commuting from the NMS12 (which are still influenced by the transitional periods applied in a number of EU countries) differs from cross-border commuting flows in the unregulated regime of the EU 15.

In chapters 4 to 7 of this study we then conduct a case study of the CENTROPE region (see: Palme and Feldkircher, 2006, Huber and Mayerhofer, 2006) as an example of a region that may be particularly strongly affected by commuting and migration. This region encompasses Czech, Slovak and Hungarian borders and the metropolitan areas of Vienna and Bratislava as well as the Eastern regions of Austria. It is probably one of most affected by migration and commuting and thus provides a unique area for studying the effects of labour mobility associated with enlargement. This case study evolves around three questions:

- First, we analyse the development of cross-border commuting and migration potentials in the border region surrounding Austria,

- Second, we analyze how the structure of those willing to migrate or commute differs from stayers and whether it has changed over time.

- Third, we want to assess whether cross border migrants, commuters and stayers differ with respect to their motives for becoming mobile or not.

Thus, after a short description of the economic background of the CENTROPE region in chapter 4, chapter 5 presents a description of the data and the cross-border commuting and migration potentials in the region. Chapter 6 investigates the determinants of mobility as well as the choice between migration and commuting and Chapter 7 presents data about the motives of prospective migrants and commuters. Finally, chapter 8 draws some conclusions for the study.

2 Regional Concentration of Migrants in Europe

2.1 Introduction

A common characteristic of migration movements is that migrants tend to cluster in specific regions of the host countries. Some of these concentrations can be explained by the fact that a region serves as a "port of entry" (both literally as well as figuratively) or by favourable labour market conditions. But looking closer, it can be observed that many migrant clusters consist predominantly of individuals with the same ethnic background. This indicates that immigrants tend to settle where other migrants from the same source country have gone, leading to regional ethnic concentrations of migrants.

This concentration not only has important implications for regional housing and labour markets, but also increases the risk of emerging parallel societies and affects local governments: depending on social security regulations, large clusters of migrants can lead to an increased burden for local (and national) welfare institutions if they are associated with a higher welfare participation among its members.

Against this background in this chapter we analyse the concentration of migrants in the EU-15 using recent data from the European Labour Force Survey to shed light on questions such as: where can we observe the largest concentrations of migrants in Europe? Do more recent migration waves differ in their concentration from previous migrants? Does the concentration in specific regions differ by age cohorts? Are more educated migrant groups less concentrated in specific areas while low-skilled workers rely on networks? Does the concentration of migrants differ by country of origin? Which trends in regional preferences of migrants can be observed in the EU-15, and is there evidence of network or herd migration?

2.2 Why do migrants concentrate in specific areas?

Several hypotheses have been developed in the economic literature on the topic of migrant's locational choice within the receiving country. Apart from some regions being "natural hubs" for migrants—e.g., cities which act as "ports of entry" because of infrastructure endowments (like sea- or airports) or administrative institutions (like central immigration offices)—, regional concentrations can e.g. also arise in high-wage areas with favourable labour market conditions.[1]

This can however not fully account for the observation that migrants tend to settle where other migrants from the same country of origin migrated before, resulting in a geographic concentration of migrants with similar ethnicity in specific locations. Since a seminal

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[1] This applies both to labour market conditions in the "official" labour market as well as in the informal sector (Amuendo-Dorantes and de la Rica 2005).

study on ethnic migrant concentration in the U.S. by Bartel (1989), several hypotheses have been developed to explain this phenomenon.

2.2.1 Migration networks

One of the most frequently cited theories is that clustering allows the formation of migrant networks which produce externalities for members of the same ethnic group because the costs of migration decreases with the number of previous migrants. This leads to "self-perpetuating" migration (Massy et al. 1993; Carrington, Detragiache, and Vishwanath 1996) from a specific source country. Above reducing migration costs, networks can also provide help with the settlement process or decrease the perceived alienation in the host country (Bauer, Epstein and Gang 2000).

Furthermore, networks can provide their members with ethnic goods like food, clothing, social organisations, religious services, media (like radio, newspapers, etc.) or marriage markets (Chiswick and Miller, 2005). The provision of ethnic goods can be expected to increase with the stock of migrants with similar ethnic background, creating incentives for other immigrants to settle in these regions where they can enjoy a larger supply of ethnic goods. The concentration of migrants will be more pronounced, the higher the share of ethnic goods in the migrants' consumption basket and the more dissimilar the source and target cultures. If there are economies of scale in the production of ethnic goods (as can be expected, e.g., for religious services or media), the lower price of ethnic goods in regions with large ethnic concentrations reduces the costs of living there, which is an incentive for immigrants to move into this region even if they could earn a higher wage somewhere else (Chiswick and Miller, 2005).[2]

Regions with large networks can also be attractive because they increase the labour market prospects of new migrants: they can benefit from a better availability of information in the network which increases labour market opportunities (Gross and Schmitt 2003). E.g., Edin, Fredriksson and Åslund (2001) found a statistically significant positive effect of ethnic concentration on migrant earnings. Other studies, however, showed that clustering negatively influences the economic success of migrants (Bartel 1989, p. 388). One explanation for this is that migrant concentration is negatively correlated with foreign language fluency (Lazear 1999), which is in turn a prerequisite for integrating into the host countries labour market.[3]

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[2] While networks will thus have a positive impact on imports (e.g., of ethnic goods) from the source to the host country, they can have a positive influence on exports to the source country of migrants as well (Bandyopadhyay, Coughlin and Wall 2008).

[3] Migration also affects the local labour market for natives in the host country, Whether migration is welfare-enhancing or welfare-decreasing depends, however, on the relative skill composition of migrants compared to natives, which determines the substitutability of native vs. Migrant labour (Bartel 1989, Borjas 1999).

However, if employers with migration background prefer to employ other migrants (of similar ethnic origin) instead of natives, a separate migrant labour market can emerge.[4] Gross and Schmitt (2003) show that a small and homogeneous market for migrant labour can even sustain a higher wage than the larger anonymous "general" labour market. For such a migrant labour market to be sustainable, the ethnic community must neither be too small nor too large.

Network size is thus crucial not only for new arrivals, but also for previous migrants already living in the region (Heitmueller 2006). As the concentration of migrants increases, there can, however, also be negative effects on previous migrants' utility: continuing migration reduces the income differentials between sending and receiving countries and the wages of the previous migrant cohorts. A similar effect will arise if housing prices increase following an influx of migrants into a region. This negative effect of decreasing wages and/or increasing housing prices will at some point dominate the positive network externality effect, leading to a decline in the attractiveness of a formerly popular migrant cluster (Portnov 1999). There will thus be an optimal size of the regional network beyond which every new migrant decreases the utility of previous migrants already living in this region.[5]

Local networks can, however, still grow beyond this optimal size (from the point of view of migrants already living in the region), if the region still provides the maximum utility compared to all other available regions, even if new migrants take into account that their utility will decrease with every other migrant that follows (Bauer, Epstein and Gang 2002). Even if migrants already living in the region could theoretically provide no more positive network effects (e.g., by withholding information or refusing to help with job or residence search) it has been shown by Heitmueller (2006) that, in the absence of coordination and a collective sanctioning mechanism, there is an incentive to increase the network beyond the optimum. This can occur because the utility gain arising from an increased personal network (e.g., family and friends) exceeds the utility decline from the potential wage loss arising from one additional migrant.

Networks can also affect the selection of migrants by skills. Miranda (2007) analysed the effect of migrant networks on educational achievement of family and friends in the source countries. He concluded that migrant networks have a positive effect on the education of family members at home if remittances are used to enhance the educational achievement of family members (provided the qualifications are portable). However, as networks facilitate family chain migration, they can also generate incentives to drop out of education at an early stage, especially if education is non-portable. Thus, remittances can lead to a negative selection of migrants, inducing the migration of low-skilled followers.

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[4] E.g., self-employed migrants tend to prefer hiring other migrants with the same ethnic background (Andersson and Wadensjö 2007). The same result can arise if natives are reluctant to work in firms led by migrants.

[5] If prospective emigrants take this into consideration when deciding where to migrate to, an inversely U-shaped effect of network size on the probability of moving to a specific region can arise (Bauer, Epstein and Gang 2002).

This is consistent with the proposition often found in the literature that the "pioneers" (i.e., those among the first wave of migrants) are "likely to be the most able" (Lazear 1999, p. 118), e.g. because they can expect the highest returns from migration and will thus find it easier to cover migration costs. Low-skilled followers on the other hand will find it worthwhile to wait until the network has grown and migration costs have fallen. Furthermore, as Stark (1994) has shown, under asymmetric information—i.e., when employers have no information on the true skill (or effort) of applicants—low-skill (or low-effort) workers might choose to relocate to regions where a considerable stock of high-skilled migrants settled before. By doing so, they can mingle with these high-skilled (or high-effort) migrants to obscure their skill signals to employers. E.g., if employers observe that migrants with a specific ethnic background have good skills and/or show high work efforts, they might be predisposed to hire other workers with the same ethnic background. If employers cannot observe skill or effort beforehand, low-skilled followers can use this predisposition to earn higher wages, leading to a negative selection of migrants by skills. Eventually, if the proportion of low-skilled migrants becomes too large, this predisposition might cease or reverse, and followers are no longer able to exploit employers' asymmetric information. High-skilled followers will then no longer find it profitable to move to this region, and high-skilled migrants already living there will consider relocating to other areas where their skills are not obscured by low-skill migrants. This is consistent with the observation that high-skilled migrants are more dispersed and less concentrated in specific areas, while concentration was found to be highest among low-skilled workers (Bartel 1989).

A negative selection can also occur because networks attract migrants with poor native language skills: if the network is large enough, knowledge of the host language might no longer be necessary, because all transactions can be carried out within the network. This decreases the opportunity costs of not learning the host language. Large ethnic concentrations can thus act as "language traps", sustaining the migrants' poor language abilities (Bauer, Epstein and Gang 2005) which can have a negative effect on earnings. This separation between migrants and natives tends to increase with the cultural distance between the immigration group and the native population (Blom 1999). Furthermore, networks can aggravate negative selection if they facilitate access to welfare provisions. Bertrand, Luttmer and Mullainathan (2000) have shown that a larger network increases the probability of welfare participation for individuals from high welfare language groups, and that social networks strongly influence welfare participation. Regions with high concentrations of migrants can thus face an increased burden in terms of social security provisions as well as a higher demand for public goods (Bartel 1989, p. 390). This applies especially to regions with more generous welfare provisions.[6]

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[6] Furthermore, Lazear (1999) shows that government transfers can reduce the incentives to assimilate, thus counteracting integration efforts by governments.

2.2.2 Herd behaviour

Herd behaviour can constitute another explanation for the clustering of migrants in specific regions. Herd behaviour can occur if there is imperfect information as to which among alternative target locations provides the highest utility. If a potential migrant observes only the outcome of previous migrants' destination choices, but not the "signal" that determined their choice, she might discount her private information about alternative target regions and follow the flow of previous migrants (Epstein 2002; Bauer, Epstein and Gang 2005) in the belief that they must have had information which is not available to her. E.g., an individual might migrate to a specific city simply because she has observed other migrants from her country doing so, even though she would have migrated to another region based on her private information.

Herd behaviour can lead to inefficiencies if previous migrants also discounted their private information in favour of the belief that those who went there before them had information they do not have, while they could have gained a higher utility by following their private information. Herd behaviour and network effects are—although conceptually different—not mutually exclusive: both effects can exist simultaneously and determine the location decisions of migrants. The presence of network externalities in this context can even increase the probability that herd behaviour will be observed (Epstein 2002). Herd behaviour, on the other hand, can lead to a steady inflow of new migrants even if the negative wage or housing price effects already dominates the network externality effect in the target country.

2.3 Measuring the regional concentration of migrants

Following Bartel (1989) we measure the regional concentration of migrants by the coefficient of geographic association. Individuals are considered migrants if they were born in a country different from their current country of residence. Suppose there are I groups of migrants living in the geographical area under investigation, which consists of R regions. These groups of migrants can, e.g., be defined by country of origin, skill level, age, years since arrival in their current country of residence or other characteristics. Define m_{rj} as the number of migrants from a specific group $j \in I$ living in a specific region $r \in R$, n_r as the number of natively born individuals living in region r and $\sum_{i=1}^{I} m_{ri}$ as the total number of migrants from all groups I in this region with $i, j \in I$. The coefficient of geographic association can then be defined as:

$$G_j = \sum_{r=1}^{R} \max\left(\frac{m_{rj}}{\sum_{r=1}^{R} m_{rj}} - \frac{n_r + \sum_{i=1}^{I} m_{ri}}{\sum_{r=1}^{R} \left(n_r + \sum_{i=1}^{I} m_{ri} \right)}, 0 \right)$$

The index is constructed by taking the sum over the (positive) differences between the percentage of migrants from group j living in region r and the percentage of the total population living in r. The index G_j can be interpreted as the proportion of this specific

group that would need to change its region of residence—together with a similar number of members of the rest of the population—in order to achieve an allocation of migrants j over regions which follows the distribution of the total population without changing the share of the region's population in total population (i.e., leaving the total number of individuals residing in each region unchanged).

In the case of $G_j = 0$, there is no difference between the geographic distribution of group j and the total population, and the members of this group are not regionally concentrated. In the case of total segregation—i.e., if all members of j live in only one region r where no natives or members of other groups reside—the index takes on the value $G_j = 1 - m_{rj} / \sum_R \left(n_r + \sum_I m_{ir} \right)$, which corresponds to one minus the proportion of group j in total population. E.g., if group j constitutes 10 % of total population, 90% of its members (together with a similar number of natives and members of other migrant groups) would have to change their region of residence in order to achieve a uniform distribution of group j across regions without changing the general distribution of the total population. Because of this appealing interpretation the coefficient of geographic association has been used in a variety of studies on the regional concentration of migrants.[7] The coefficient of geographic association is, however, prone to the "modifiable areal unit problem" (MAUP): results vary with the geographical unit of analysis. Generally speaking, the higher the level of aggregation, the smaller the coefficient. Therefore, comparisons across countries are of limited usefulness if the regional units are not similar in characteristics (such as population, size etc.). This also applies to the present analysis: although the "nomenclature des unités territoriales statistiques" (NUTS) ensures at least some comparability, the characteristics of the regions in the EU are far too heterogeneous to allow a direct comparison of migrant concentrations across countries.[8] It is therefore not possible to compare, e.g., the concentration of migrants in Germany to the concentration of migrants in Ireland because German and Irish regions are not directly comparable. This also makes comparisons between the concentration of migrants in Europe to that found in other studies—e.g. of the U.S.A. or Australia—difficult. G_j can, however, be compared among different groups of migrants (e.g., by nationality or skill

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[7] An alternative to the coefficient of geographic concentration is the index of dissimilarity (Duncan and Duncan 1955) which is defined as:

$$D_j = \frac{1}{2} \times \sum_{r=1}^{R} \left| \frac{m_{rj}}{\sum_{r=1}^{R} m_{rj}} - \frac{n_r}{\sum_{r=1}^{R} n_r} \right|$$

The dissimilarity index gives the percentage of members of group j which would have to change residence in order to achieve a geographical distribution similar to that of the natively born population. Because the index of geographic concentration is more widely used in the literature (see, e.g., Bartel 1989, Chiswick, Lee and Miller 2002), we do not consider the dissimilarity index.

[8] As an example, the NUTS 2 regions in the EU-15 differ substantially by population, from more than 11 Mio. persons living in Île de France to Åland's (Finland) 26,800 inhabitants. They are also heterogeneous with respect to size: Övre Norrland (Sweden), for example, has an area of more than 165,000 km² (and about 3 inhabitants per km²), while Bruxelles-Capitale is smaller by a factor of more than 1,000 (161 km², with about 6,200 inhabitants per km². Source: Eurostat). The coefficients for different groups of target regions are therefore not generally comparable.

level) within the EU to assess whether they show a higher or lower level of geographical concentration.

2.4 The regional concentration of migrants in Europe

To analyse the regional concentration of migrants in Europe, the coefficient of geographical association is calculated for all NUTS 2 regions in the EU-15 using the most recent European Labour Force Survey (LFS) data available (2007). The LFS is a regular questionnaire surveyed among a representative sample of households in all countries of the EU-27. We define as migrants all individuals who were not born in the member state they reside in, while all those who still live in their country of birth are considered "natives".[9]

2.4.1 Regional concentration: facts and figures

At the NUTS 2 level of aggregation, the coefficient of geographical association in the EU-15 is $G_j = 0.239$:[10] 23,9% of all migrants in Europe would have to change their place of residence (together with a similar number of "natives", i.e., those who still live in the country they were born in) in order to achieve an even distribution of migrants across Europe without changing the relative population across regions (see table 2.1).

The region with the largest share of migrants in Europe is the Île de France region including the French capital Paris: 5.7% of all migrants in Europe live in this region. Large proportions of migrants can also be found in Outer (3.2%) and Inner London (2.8%) as well as Cataluña and the Comunidad de Madrid in Spain (both 2.7%). Île de France is also the European region with the largest difference between the percentage of migrants and the percentage of the total population in Europe (the "local concentration")[11], closely followed by Inner and Outer London. The Darmstadt region

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[9] EU-15 citizens can either be natives or migrants, depending on whether they still reside in their country of birth or in another EU-15 member state. Individuals who provided no information on this question were classified as natives.

[10] As mentioned in section 2.3, the coefficient of geographical association cannot be directly compared across studies because of the MAUP. However, to get a sense of the size of the coefficient, the value found here is about the same in magnitude as the one found by Chiswick, Lee and Miller (2002) for Australia ($G_j = 0.221$), but considerably smaller than the values reported by Bartel (1989) in her comparison among 29 U.S. SMSAs ($G_j = 0.308$ to $G_j = 0.525$).

[11] The „local concentration" is defined formally as:

$$g_{rj} = \frac{m_{rj}}{\sum_{r=1}^{R} m_{rj}} - \frac{n_r + \sum_{i=1}^{I} m_{ri}}{\sum_{r=1}^{R}\left(n_r + \sum_{i=1}^{I} m_{ri}\right)}$$

where, of course, $G_j = \sum_{r=1}^{R} \max\left(g_{rj}, 0\right)$.

(including the city of Frankfurt am Main) and the Comunidad de Madrid can also be found among the regions with the highest local concentration (see figure 2.1).[12]

Figure 2.1: Local concentration of migrants in the EU-15
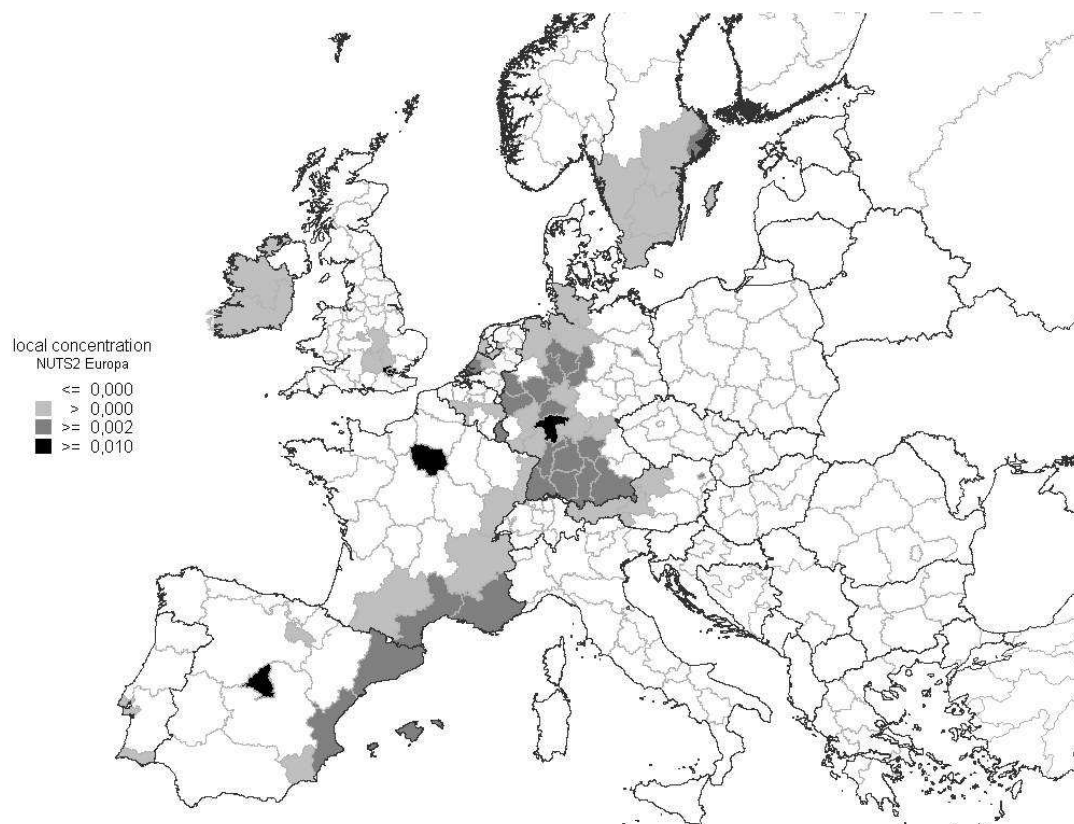
Source: European Labour Force Survey 2007, Eurostat, WIFO.

The data also show that more recent migration waves do not differ substantially in their concentration from previous migrants: the coefficient of geographical association for those who moved to their current country of residence more than 10 years ago is G_j =0.296, while it is only slightly smaller for those who migrated during the last 9 years (G_j =0.288). However, the target regions of more recent migration waves are considerably different from those of earlier cohorts.[13] While the largest local concentration of migrants who moved more than 10 years ago can be found in the Île de France, Inner and Outer London, Darmstadt and Provence-Alpes-Côte d'Azur regions, the more recent cohorts concentrated in Spain (Cataluña, Comunidad de Madrid and

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[12] The largest relative concentration, defined as the ratio of the proportion of migrants living in this region among all migrants in the EU-15 to the proportion of all non-migrants living in this region among all non-migrants in the EU-15 can be found, however, in Inner London: the percentage of migrants living there is 3.8 times larger than the share of native population. Luxembourg (relative ratio of migrants to natives 3.3), the Brussels region (3.1), Outer London (2.8) and Vienna (2.7) also show a high degree of relative concentration.

[13] It cannot be ruled out that the more recent migration waves also include repeat migrants, i.e. individuals who migrated more than 10 years ago and repeated again in the meantime. The "true" target regions of all previous migrants can therefore not be observed.

Comunidad Valenciana)[14]. The correlation between the local concentration of earlier and more recent cohorts is rather low (r_{xy} =0.159) and significant only at the 5 percent level. This indicates that there has been a shift in regional preferences of migrants.

2.4.2 Does regional concentration differ by individual characteristics?

The coefficient of geographical association differs noticeably with age: older migrants are more concentrated than younger migrants. E.g., the age group of 50-59 years has a coefficient of G_j =0.309, while it is only G_j =0.251 for individuals in their twenties and even lower for those between 30 and 39 (G_j =0.234). With respect to preferred target regions, the age groups differ only slightly. Inner and Outer London, Cataluña, the Comunidad de Madrid and Île de France comprise the 5 regions with the highest local concentration for younger migrants, while the region Provence-Alpes-Côte d'Azur as well as the German agglomerations Darmstadt, Düsseldorf and Stuttgart are also popular with migrants age 50 and older (see table 2.1).

Taking into account time since migration, we can roughly compare cohorts of similar age. It can be seen that the concentration of younger migrants from more recent waves is slightly higher than that of earlier waves (table 2.1): e.g., for migrants in their twenties who migrated during the last 10 years, the coefficient of geographical association is 0.309, while it is only 0.259 for those who migrated more than 10 years ago or earlier and who are now in their thirties. The same can be observed, albeit less pronounced, for those in the 30-39 age group who migrated during the last decade (G_j =0.305 vs. G_j =0.283 for those who migrated more than 10 years ago and who are now in their forties). Interestingly, the opposite is true for the cohorts of 40-49 and 50-59, who are now less concentrated among regions than earlier groups of working-age migrants of the same age (see table 2.1).

These changes in concentration were accompanied by changes in target regions. German (industrial) regions like Darmstadt, Stuttgart, Detmold (with cities of Bielefeld and Paderborn) or the Ruhr Area regions of Arnsberg (Dortmund, Bochum etc.) and Düsseldorf were especially popular with earlier migration waves alongside the London areas, Île de France, South Holland (Rotterdam, The Hague etc.) and Provence-Alpes-Côte d'Azur. However, while more recent migrants also concentrated in the (Inner and Outer) London areas, the Spanish regions of Cataluña, Cumunidad de Madrid, Comunidad Valenciana and Andalucía were amongst the regions with the highest local concentration while at the same time there are only minor differences across age groups. It can thus be

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[14] These are also the regions with the largest absolute inflows of migrants during the last decade. Outer and Inner London and the Île de France also experienced large concentrations of recent migrants, as have Southern and Eastern Ireland as well as other Spanish regions (Andalucía, Región de Murcia and Canarias).

concluded that the regional concentration does not vary as strongly with age as it does with timing of migration.[15]

Table 2.1: Coefficients of geographical association and local concentration in the EU-15 General, by age and education

Migrant group	Time since migration	G_j	Top 3 regions by g_{rj} (NUTS2)		
General	Total	0.239	FR10	UKI1	UKI2
	≤ 10 years	0.288	ES51	ES30	ES52
	> 10 years	0.296	FR10	UKI1	UKI2
Age 15-19	Total	0.241	ES30	ES51	UKI1
	≤ 10 years	0.318	ES30	ES51	UKI1
	> 10 years	0.314	UKI1	DE71	-
Age 20-29	Total	0.251	UKI1	UKI2	ES51
	≤ 10 years	0.309	ES51	UKI2	ES30
	> 10 years	0.317	FR10	UKI1	DEA5
Age 30-39	Total	0.234	UKI1	ES52	ES30
	≤ 10 years	0.305	ES51	ES30	ES52
	> 10 years	0.259	FR10	UKI2	UKI1
Age 40-49	Total	0.243	FR10	UKI1	UKI2
	≤ 10 years	0.319	ES30	ES51	ES52
	> 10 years	0.283	FR10	UKI2	UKI1
Age 50-59	Total	0.309	FR82	DE71	DEA1
	≤ 10 years	0.333	ES30	ES52	ES51
	> 10 years	0.353	FR10	UKI2	FR82
Age 60 +	Total	0.371	FR10	FR82	DE11
	≤ 10 years	0.386	ES52	ES61	-
	> 10 years	0.388	FR10	FR82	DE11
Primary education	Total	0.377	FR10	ES51	FR82
	≤ 10 years	0.409	ES51	ES30	ES52
	> 10 years	0.432	FR10	FR82	FR71
Secondary education	Total	0.243	UKI2	UKI1	FR10
	≤ 10 years	0.288	ES30	UKI2	ES51
	> 10 years	0.316	DE71	DE11	FR10
Tertiary education	Total	0.279	FR10	UKI1	UKI2
	≤ 10 years	0.359	UKI1	ES30	FR10
	> 10 years	0.292	FR10	UKI2	UKI1

Notes: Empty cells indicate that the number of migrants with the respective characteristic in this region is below reliability limits according to the EU LFS publishing guidelines. See the appendix for a list of NUTS 2 codes used.

Source: European Labour Force Survey 2007, Eurostat, WIFO.

Education does also play an important role in explaining the regional concentration of migrants. Broken down by educational levels, table 2.1 reveals that low skilled migrants

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[15] These concentrations of earlier migrants in German regions can partly be explained by the German "guest worker" scheme implemented until the 1970s, where workers were actively recruited abroad by German government offices. Many of these guest workers did not move back to their home countries, but stayed in Germany. Family reunion laws, network and herd migration will have led to an ongoing in-migration into these regions even after the 1970s. The high local concentrations in Spanish regions of more recent

with primary education are much more concentrated (G_j =0.377) than migrants with secondary (G_j =0.243) or tertiary education (G_j =0.279).[16] This accords with the findings of Bartel (1989) for the U.S.A. and suggests that migrant networks are more important for low-skilled workers: they need to rely on networks to find jobs, while medium- and high-skilled workers, who are more likely to know the host country's native language, tend to disperse more. The concentration of high-skilled migrants who moved during the last 10 years (G_j =0.359) has, however, increased (compared to those who migrated 10 years ago or earlier, G_j =0.292), while it has decreased for more recent migrants with primary and secondary education (from G_j =0.432 to 0.409 and from G_j =0.316 to 0.288, respectively).

Comparing the largest local clusters shows that more recent migrant cohorts tend to prefer Spanish regions. This observation is most pronounced, but not limited to, low-skilled migrants: while those with primary education who migrated more than 10 years ago mainly concentrated in French regions (with 13.7% living in the Île de France), low-skilled workers who migrated during the last decade can mainly be found in Spain, especially in Cataluña (12.6%). Nevertheless, the correlation between the local concentrations of earlier and more recent low-skill migrants is statistically significant at the 5 percent level, albeit rather small (r_{xy} =0.137). Migrants with secondary education, on the other hand, tended to migrate to Germany more than 10 years ago: apart from the Île de France, Darmstadt, Stuttgart, Arnsberg, Düsseldorf and Cologne are among the regions with the highest concentrations of medium-skilled earlier migrants. More recent cohorts with secondary education, however, also prefer Spain (e.g., the Comunidad de Madrid, Cataluña or Comunidad Valenciana), while not a single German region can be found among the 10 regions with the highest local concentration of migrants in this skill group. The local concentrations of the migration waves are also not significantly correlated, pointing to a substantial change in regional preferences of medium-skilled migrants.

Finally, many Spanish regions can also be found among the most highly concentrated regions for recent high-skill migrants while Stockholm, Darmstadt, South and North Holland (with the Dutch capital Amsterdam), the Provence-Alpes-Côte d'Azur or Brussels regions (which were important for earlier high-skill migrants) are no longer among the preferred destinations for this skill group. Nevertheless, there is a high and significant correlation between the local concentrations of earlier and more recent migrant cohorts with tertiary education (r_{xy} =0.598).

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migration waves can be attributed to large in-migration from Morocco, Ecuador and Columbia during the last 10 years, which may be due to language similarities.

[16] Primary education: ISCED levels 0 or 1; secondary education: ISCED 2-4; tertiary education: ISCED 5 and 6.

2.4.3 Ethnic migration clusters

To investigate the possibility of network or herd migration, we also analyse the regional concentration of migrants by ethnicity. We define ethnicity using the migrants' country of origin, although this could be considered a very simplified definition by social anthropology standards as ethnicity must not necessarily coincide with national boundaries. The migrants' country of origin can either be deduced from the country of birth or from the nationality of the migrants. Unfortunately, while the latter is a more vague definition (migrants might attain their host country's nationality, in which case their true country of origin is no longer observed), the former is not available for migrants in all EU-15 countries. E.g., Germany does not ask for the country of birth in its Labour Force Survey questionnaire, only for nationality. Unfortunately, neither the nationality nor the country of birth is available for migrants in Ireland.

Using country of birth, the coefficient of geographical association can therefore only be calculated for 13 EU countries excluding Germany and Ireland. For migrants from the eight new CEE member states which joined the EU in 2004 (NMS-8), a concentration coefficient of G_j =0.451 can be observed, which is smaller than the coefficient for Bulgaria and Romania (G_j = 0.542, see table 2.2). While the latter are mostly concentrated in Spain and Italy, the former show a high degree of concentration in (Outer and Inner) London and eastern Austria (Vienna and Lower Austria). However, other U.K. regions (e.g., East Anglia, Leicestershire, Rutland and Northamptonshire, West Yorkshire, Gloucestershire, Wiltshire and Bristol/Bath Area) as well as Southern Sweden and Stockholm are also among the most highly concentrated regions in the EU-15 (see figure 2.2).

Migrants from the candidate countries Turkey, Macedonia and Croatia show a degree of concentration which is about equal in size to that of migrants from Romania and Bulgaria (0.556). Migrants from other countries, which make up for 65.9% of all migrants in Europe according to this definition, are more evenly distributed across regions. The coefficient associated with these migrants (G_j =0.284) is even lower than the one for migrants from EU-15 countries (0.307).[17]

It could be expected that using citizenship to define country of origin will put some of these results into perspective, especially since a large proportion of all migrants in Europe (28.3%) live in Germany, for which data on country of birth is not available. The results do, however, not change considerably. The coefficient of geographical association is only slightly different from that measured using country of birth to define ethnicity (G_j =0.458). Migrants from the NMS-8 are still most concentrated in Outer and Inner London as well as Vienna (see figure 2.3). The distribution of migrants from Bulgaria and Romania is also largely unchanged, although the coefficient of geographical association

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[17] It should, however, be noted that this even distribution is in past also due to the ethnic heterogeneity of the migrants subsumed under the category of other countries.

increases slightly from 0.542 to 0.605. Changing the definition of ethnicity from country of birth to nationality thus increases the coefficients slightly, but leaves most results unchanged.

Table 2.2: Coefficients of geographical association and local concentration in the EU-15 by country groups

Migrant group	Time since migration	G_j	Country of birth		
			Top 3 regions by g_{rj} (NUTS2)		
EU-15	Total	0.307	FR10	UKI1	LU00
	≤ 10 years	0.370	UKI1	ES52	LU00
	> 10 years	0.307	FR10	FR82	LU00
NMS-8	Total	0.451	UKI2	AT13	UKI1
	≤ 10 years	0.578	UKI2	UKI1	UKH1
	> 10 years	0.453	AT13	AT12	SE22
Bulgaria and Romania	Total	0.542	ES52	ES30	ES61
	≤ 10 years	0.592	ES52	ES30	ES61
	> 10 years	0.551	ITE4	ES30	AT13
Candidate countries	Total	0.556	AT13	NL33	AT12
	≤ 10 years	0.538	AT13	ITD3	UKI1
	> 10 years	0.581	AT13	NL33	AT12
Other	Total	0.284	FR10	UKI1	UKI2
	≤ 10 years	0.334	ES51	ES30	UKI2
	> 10 years	0.316	FR10	UKI1	UKI2

Migrant group	Time since migration	G_j	Nationality		
			Top 3 regions by g_{rj} (NUTS2)		
EU-15	Total	0.301	FR10	UKI2	UKI1
	≤ 10 years	0.287	UKI1	UKI2	FR10
	> 10 years	0.314	FR10	UKI2	FR82
NMS-8	Total	0.458	UKI2	UKI1	AT13
	≤ 10 years	0.537	UKI2	UKI1	UKH1
	> 10 years	0.498	AT13	ES30	DE11
Bulgaria and Romania	Total	0.605	ES52	ES30	ES61
	≤ 10 years	0.626	ES52	ES30	ES61
	> 10 years	0.656	ES30	ITE4	ES52
Candidate countries	Total	0.591	DE30	DEA1	DE71
	≤ 10 years	0.530	AT13	-	-
	> 10 years	0.635	DE30	DEA1	DE71
Other	Total	0.320	ES51	FR10	ES30
	≤ 10 years	0.362	ES51	ES30	ES52
	> 10 years	0.323	FR10	UKI1	ITC4

Notes: Country of birth: Germany and Ireland not included. Nationality: Ireland not included. Empty cells indicate that the number of migrants with the respective characteristic in this region is below reliability limits according to the EU LFS publishing guidelines. See the appendix for a list of NUTS 2 codes used.

Source: European Labour Force Survey 2007, Eurostat, WIFO.

Figure 2.2: Local concentration of NMS-8 migrants in the EU-15
Based on country of birth

local concentration
NUTS2 Europa

<= 0,000
> 0,000
>= 0,002
>= 0,010
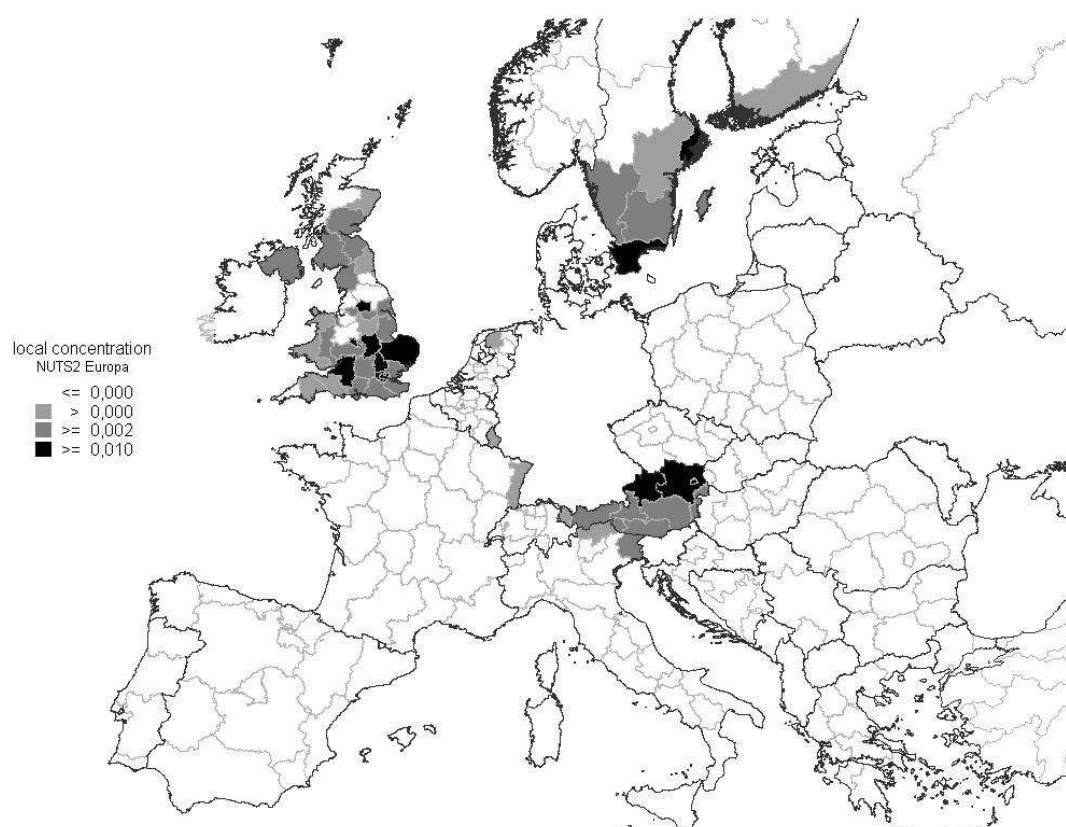
Source: European Labour Force Survey 2007, Eurostat, WIFO. Germany and Ireland not included.

Large differences can, however, be observed for migrants from candidate and other countries. Although the concentration coefficient for migrants from Turkey, Croatia and Macedonia increases by only 0.035 points, it is clear from table 2.2 that migrants from these countries are mostly concentrated in Germany, especially in Berlin, Düsseldorf and Darmstadt, Stuttgart and Oberbayern. The regional distribution of migrants from other countries, which make up for only 29.2% of all migrants in the EU-15 (excluding Ireland) according to this definition, does also change significantly if citizenship is used to define ethnicity.

Looking at the individual countries of origin in more detail (see table 2.3), it can be seen that the regional concentration of migrants differs substantially between migrants with different backgrounds and that there are some substantial differences depending on the definition of ethnicity (by country of birth—and thus excluding Germany—or by nationality). The largest concentration of migrants from NMS-8 countries can be found among Estonians: Using country of birth as the proxy for ethnic background, the coefficient of geographical association is $G_j = 0.877$, which is slightly lower than if nationality is used as a proxy ($G_j = 0.897$). The largest local concentration can be found in the geographically close region of Southern Finland, where more than 40% of all Estonian migrants in the EU-15 reside. Relatively high concentrations of migrants can also be found for the other Baltic states, Latvia (0.765) and Lithuania (0.747).

Figure 2.3: Local concentration of MNS-8 migrants in the EU-15
Based on nationality
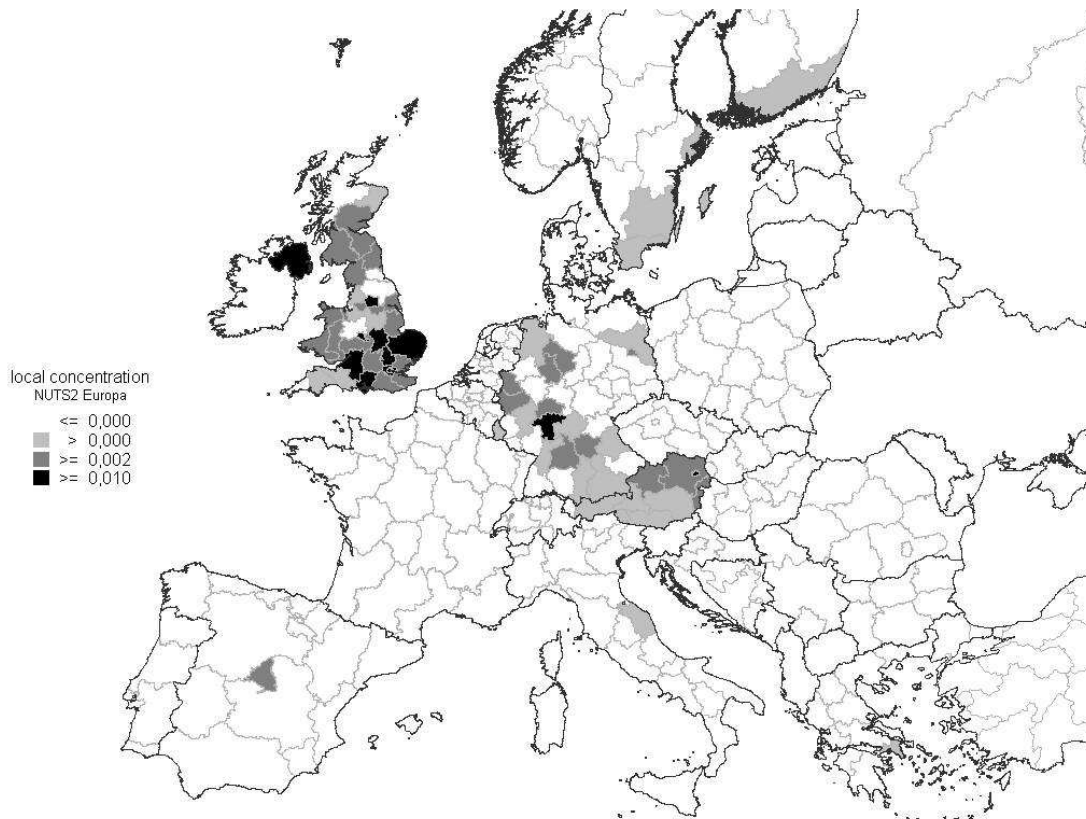
Source: European Labour Force Survey 2007, Eurostat, WIFO. Ireland not included.

Migrants from Slovenia also show a high degree of concentration (G_j =0.834-0.878, depending on definition). Migrants from Slovakia are substantially more concentrated than Czech or Hungarian migrants, although for the latter this depends on the definition of ethnicity. The lowest concentration of all NMS-8 countries can be found for Polish migrants (G_j =0.443-0.477) which are mostly concentrated in the U.K. (especially in the London areas, East Anglia and West Yorkshire) and in Vienna.

By country of birth and nationality Polish workers abroad are thus less concentrated than migrants from the EU candidate countries Turkey and Croatia. Using nationality to define ethnicity, the largest concentrations of migrants from these countries can be found among German regions (Düsseldorf, Berlin and Darmstadt for Turkish, Stuttgart for Croatian migrants) as well as Vienna (which experienced a large inflow of Croatian migrants during and following the Yugoslav wars). Migrants from the third candidate country, Macedonia, cluster mainly in Italy (Veneto).

Table 2.3: Coefficients of geographical association in the EU-15 by country of origin

Country of Origin	Country of birth G_j	Nationality G_j
Poland	0.443	0.477
Czech Republic	0.619	0.656
Hungary	0.637	0.741
Slovakia	0.755	0.767
Estonia	0.877	0.897
Lithuania	0.747	0.756
Latvia	0.765	0.837
Slovenia	0.834	0.878
Bulgaria	0.581	0.624
Romania	0.562	0.637
Turkey	0.614	0.623
Croatia	0.689	0.719
Macedonia	0.722	0.777
Morocco	0.500	0.568
Algeria	0.734	0.734
Ecuador	0.769	0.814
India	0.611	0.686
Albania	0.762	0.798
Pakistan	0.688	0.711
Tunisia	0.640	0.711
China	0.425	0.463
Columbia	0.722	0.811

Notes: Country of birth: Germany and Ireland not included. Nationality: Ireland not included.

Source: European Labour Force Survey 2007, Eurostat, WIFO.

Other large migrant groups show varying degrees of concentration. Migrants from Morocco (G_j=0.500-0.568) and Algeria (0.734), the (based on country of birth) two largest migrant groups in Europe, are mainly concentrated in France or Spain, which can be explained by former colonial ties. This holds, in part, also for Tunisian migrants. They all are, however, less concentrated than migrants from Ecuador[18], who moved almost exclusively to Spanish regions, especially the Comunidad de Madrid, Cataluña and Valencia (G_j=0.769-0.814). A similar pattern can be observed for migrants from Colombia. For both Ecuadorian as well as Colombian migrants, language can be expected

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[18] Ecuadorians are a sizeable group among non-EU migrants in the EU15. In Spain they account for over 600.000 migrants.

to be the main driving force for migrating to Spain. Former colonial ties also play a role for Indian and Pakistani migrants, who mostly cluster in U.K. regions. Large local concentrations of migrants from Albania can be found in the nearby Greek region of Attiki as well as in Italy (Tuscany and Lombardy).

Table 2.4: Coefficients of geographical association within EU-15 countries by sending country groups

| Receiving country | G_j by sending countries | | | |
	EU-15	NMS-12	Candidates	Other
Austria	0.202	0.231	0.257	0.266
Belgium	0.286	0.342	0.350	0.324
Germany	0.115	0.251	0.307	0.233
Denmark	0.122	0.185	0.249	0.114
Spain	0.205	0.257	-	0.223
Finland	0.082	0.334	-	0.247
France	0.204	0.311	0.308	0.284
Greece	0.180	0.264	0.412	0.159
Italy	0.099	0.250	0.352	0.163
Netherlands	0.150	0.129	0.160	0.205
Portugal	0.143	0.539	-	0.347
Sweden	0.119	0.220	0.248	0.120
United Kingdom	0.231	0.263	0.624	0.353

Notes: Calculations for Germany based on nationality, country of birth otherwise. Ireland and Luxembourg not included. Empty cells indicate that the number of migrants from the respective country group is below reliability limits according to the EU LFS publishing guidelines for all regions with positive local concentrations.

Source: European Labour Force Survey 2007, Eurostat, WIFO.

2.4.4 An analysis by receiving country

The preceding results are, however, based on data for all EU-15 regions and could thus be influenced by differences in national migration regimes. To account for this possibility, table 2.4 reports the coefficient of geographic concentration for different sending country groups within all EU-15 countries for which data can be considered representative and which are composed of more than one region. Controlling for national differences in this way reduces the measure of geographic concentration somewhat. While table 2.2 suggests that between 30% and 60% of the foreign born would have to change region of residence to achieve a distribution equivalent to that of natives (depending on their region of origin), on a within-country basis this figure reduces to 20% to 40% of migrants which would have to change residence within a country. This reduction, however, was to be expected, since now a much smaller number of regions is considered in calculation.

It must be borne in mind, however, that comparisons across countries are not possible in table 2.4 due to the MAUP. Comparisons between different sending country groups in the same country are, however, possible. These suggest that migrants from the candidate countries are the most concentrated in almost all EU-15 countries. The coefficients of geographic concentration of other migrant groups are higher only in Austria, France and the Netherlands. By contrast, migrants from other EU-15 countries are the least concentrated in all countries except for Greece the Netherlands and Denmark. Finally migrants from both the 12 new member states and other countries typically have coefficients of geographic concentration between these two extremes.

2.4.5 Is there evidence of network or herd migration?

The local concentrations of migrants with similar ethnic background can also be compared across migration waves: if migrants who moved during the last 10 years concentrated in the same regions as those who migrated more than 10 years ago, this could be seen as evidence for either network or herd migration. Whether this is the case will be tested by computing the coefficient of correlation between the local concentration of these different migrant cohorts. As mentioned above, there is a measurement error in the concentration of migrants across EU-15 NUTS 2 regions if ethnicity is defined by nationality, because some migrants will have acquired the citizenship of the country they live in. This is especially true for those who migrated more than 10 years ago.[19] Thus, comparisons across migration waves are more meaningful if ethnicity is defined by country of birth, but in this case, German regions could not be included in this comparison. Therefore, comparisons across migrant waves where nationality was used to define ethnicity are also reported, although they should be interpreted with caution as they are probably biased.

As table 2.4 shows, the coefficients of concentration change little between cohorts for most ethnic groups. For migrants from some NMS-8 countries, the coefficient has decreased: especially more recent migrants from the Czech Republic, Slovakia, Lithuania and Latvia are considerably less concentrated than their predecessors, at least if nationality is used to define the country of origin. But generally, an increase in geographical concentration between migrant cohorts can be observed: e.g., more recent Polish emigrants are more concentrated than their predecessors (G_j =0.586, vs. 0.449 using country of birth). The increase in regional concentration is however less impressive if nationality defines ethnicity.

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[19] If migrants would acquire citizenship randomly with the same rate across regions (i.e., if each period a constant (across regions and across ethnicities) percentage of migrants would acquire citizenship of the country of residence), the relative concentration would remain unchanged. In this case, nationality could also be used to derive ethnicity. However, because of differences in citizenship laws across Europe, the concentration coefficients cannot be expected to remain unbiased.

Table 2.5: Cohort differences in regional concentration by countries and correlation between local concentrations

Country of origin	Country of birth			Nationality		
	> 10 years	≤ 10 years	Correlation	> 10 years	≤ 10 years	Correlation
	G_j		r_{xy}	G_j		r_{xy}
Poland	0.449	0.586	0.205***	0.529	0.555	0.102
Czech Republic	0.696	0.704	0.221***	0.820	0.712	0.121*
Hungary	0.669	0.758	0.399***	0.806	0.830	0.322***
Slovakia	0.902	0.767	0.464***	0.940	0.790	0.123*
Estonia	0.936	0.903	0.822***	0.972	0.906	0.723***
Lithuania	0.864	0.779	0.427***	0.945	0.776	0.138**
Latvia	0.885	0.779	0.105	0.980	0.852	-0.016
Slovenia	0.842	0.958	0.674***	0.903	0.966	0.101
NMS-8	0.453	0.578	0.256***	0.490	0.537	0.159**
Bulgaria	0.634	0.626	0.552***	0.772	0.645	0.567***
Romania	0.575	0.614	0.372***	0.709	0.664	0.571***
Turkey	0.638	0.599	0.767***	0.656	0.583	0.832***
Croatia	0.696	0.810	0.699***	0.740	0.800	0.620***
Macedonia	0.739	0.767	0.735***	0.828	0.811	0.843***
Morocco	0.523	0.541	0.450***	0.574	0.609	0.676***
Algeria	0.764	0.659	0.889***	0.784	0.704	0.921***
Ecuador	0.759	0.775	0.824***	0.854	0.851	0.844***
India	0.633	0.640	0.917***	0.732	0.707	0.846***
Albania	0.783	0.745	0.818***	0.829	0.786	0.819***
Pakistan	0.731	0.669	0.889***	0.745	0.721	0.839***
Tunisia	0.675	0.658	0.920***	0.746	0.739	0.835***
China	0.470	0.457	0.632***	0.624	0.465	0.544***
Columbia	0.637	0.782	0.669***	0.825	0.828	0.553***

Notes: *** significant at 1%, ** significant at 5%, * significant at 10% level. See the appendix for a list of NUTS 2 codes used.

Source: European Labour Force Survey 2007, Eurostat, WIFO.

In either case, the target countries of recent Polish immigration waves have shifted considerably: while earlier emigrants concentrated mostly in Vienna and the Comunidad de Madrid, later migrant waves have shifted to U.K. regions (especially the London areas, East Anglia and West Yorkshire). This holds irrespective of the definition of ethnicity. Accordingly, the correlation of local concentration values between migration waves is rather low and insignificant if computed using nationality. This is also the case for most other NMS-8 countries, suggesting that recent migration patterns did not follow network motives strongly. Only among Estonians (and, albeit less strongly, in Hungarians) a high correlation can be observed which indicates a strong tendency towards network migration (especially to Southern Finland). Considering migrants from the NMS-8 as a single group,

the correlation between the local concentrations of different migration cohorts is rather low.

Table 2.6: Cohort differences and correlation between local concentrations within EU-15 countries

Receiving country	EU-15 > 10 years	≤ 10 years	Correlation	NMS-12 > 10 years	≤ 10 years	Correlation
	G_j		r_{xy}	G_j		r_{xy}
Austria	0.173	0.249	0.960***	0.221	0.318	0.949***
Belgium	0.289	0.317	0.624**	0.251	0.518	0.885***
Germany	0.122	0.178	0.325**	-	-	-
Denmark	0.117	0.195	0.816*	0.289	-	-
Spain	0.196	0.263	0.852***	0.577	0.241	0.612***
Finland	0.096	0.316	-0.123	0.375	0.281	0.982***
France	0.212	0.274	0.486**	0.298	0.417	0.874***
Greece	0.187	0.249	0.265	0.261	0.283	0.922***
Italy	0.106	0.160	-0.045	0.279	0.246	0.796***
Netherlands	0.149	0.156	0.930***	0.090	0.212	0.818***
Portugal	0.179	-	-	-	-	-
Sweden	0.141	0.146	0.056	0.219	0.235	0.866***
UK	0.201	0.354	0.737***	0.316	0.263	0.884***

Receiving country	Candidate countries > 10 years	≤ 10 years	Correlation	Other countries > 10 years	≤ 10 years	Correlation
	G_j		r_{xy}	G_j		r_{xy}
Austria	0.259	0.249	0.986***	0.253	0.293	0.985***
Belgium	0.330	0.405	0.886***	0.341	0.329	0.986***
Germany	0.308	-	-	0.284	0.216	0.657***
Denmark	0.236	0.292	0.977***	0.197	0.054	0.808*
Spain	-	-	-	0.207	0.240	0.723***
Finland	-	-	-	0.283	0.201	0.990***
France	0.315	-	-	0.286	0.299	0.924***
Greece	0.430	-	-	0.178	0.157	0.892***
Italy	0.315	0.441	0.878***	0.140	0.233	0.777***
Netherlands	0.175	-	-	0.211	0.181	0.963***
Portugal	-	-	-	0.291	0.454	0.987***
Sweden	0.263	0.236	0.899***	0.136	0.114	0.897***
UK	0.737	0.596	0.756***	0.369	0.333	0.988***

Notes: *** significant at 1%, ** significant at 5%, * significant at 10% level. Calculations for Germany based on nationality, country of birth otherwise. Ireland and Luxembourg not included. Empty cells indicate that the number of migrants from the respective country group is below reliability limits according to the EU LFS publishing guidelines for all regions with positive local concentrations.

Source: European Labour Force Survey 2007, Eurostat, WIFO.

For the two countries which joined the EU in 2007, there is still a strong correlation between the local concentration of earlier and more recent migration waves, as is also the case for the three candidate countries, especially Turkey and Macedonia. Highly

significant and positive correlations can also be observed for migrants from other countries with a high number of migrants in the EU-15 like Algeria (with the largest cluster in Île de France), Ecuador (Comunidad de Madrid), India (Outer London), Tunisia (Île de France), Albania (Attiki) or Pakistan.

These results suggests a substantial change of migration patterns for migrants from the NMS. However, part of these differences in the settlement structure of migrant cohorts are due to institutional changes in migration regimes in the EU-15 during the last decade, in particular with respect to enlargement. Performing the same analysis as in table 2.5 for migrants within a country (see table 2.6) corroborates this finding. While there are no unambiguous patterns in the concentration of different cohorts within countries (except for the case of migrants from the EU-15, where the more recent cohort is unambiguously more concentrated), within-country correlation coefficients are much larger. This is especially true for migrants from the 12 new member states, the candidate countries and other countries. This thus suggests that, after the choice of country is fixed, network effects and/or herd effects are still important for the decision where to settle within a country. The only exception to this are migrants from the EU-15. Here coefficients of correlation are mostly rather low or even negative.

Thus, even though the preferences of migrants over target regions have apparently changed between cohorts, it can not be concluded that network and/or herd effects do not affect the locational choice of migrants in the EU-15. These changes are rather the result of changes in immigration laws during the last years, especially due to EU enlargement and thus rather reflect national migration regimes than the absence of network migration.

In order to measure the importance of networks on migration decisions, a conditional logit regression[20] is estimated which measures the influence of network size on the probability of migration to a specific region after controlling for other factors affecting locational choice. The empirical estimation is based on a theoretical model where a migrant can choose among all available locations. The observed move of an individual to a specific region can then be interpreted as a move to the location which provides maximum utility (see Bartel, 1989 for details).

As explanatory variables in the regression, the population and area of the target region are used alongside the unemployment rate and the average income per employed person. The local network size is defined using the proportion of migrants from the same country of origin living in this region for more than 10 years. To allow for a decreasing marginal utility of networks, the squared value of this variable also enters the regression.

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[20] See also Bartel (1989), Bauer, Epstein and Gang (2000, 2002, 2005) or Jaeger (2007).

Table 2.7: Conditional logit regression of locational choice

	Country of birth					
Source country Model	All (1)	NMS-8 (2)	Bulgaria and Romania (3)	All (4)	NMS-8 (5)	Bulgaria and Romania (6)
Population (2006, in 100,000)	1.250***	1.298***	1.199***	1.268***	1.324***	1.202***
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Area (in 1,000 km²)	1.001***	1.014***	1.021***	1.001***	1.023***	1.024***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Unemployment rate (2006, in %)	0.968***	0.975***	0.981***	0.964***	0.989***	0.999***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ø yearly income per employee (2004, in 1,000 €)	1.021***	1.017***	1.028***	1.022***	1.006***	1.019***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Capital region	0.723***	0.613***	0.738***	0.720***	1.093***	0.912***
	(0.001)	(0.002)	(0.003)	(0.001)	(0.004)	(0.004)
Distance between region and country of origin (in 1,000 km)				0.502***	0.029***	0.731***
				(0.000)	(0.000)	(0.014)
Squared Distance between region and country of origin (in 1,000 km)				1.017***	1.368***	0.863***
				(0.000)	(0.004)	(0.004)
Proportion of migrants from same country living in region (in %)	1.287***	1.388***	1.690***	1.267***	1.332***	1.759***
	(0.000)	(0.001)	(0.003)	(0.000)	(0.001)	(0.003)
Squared proportion of migrants from same country living in region(in %)	0.996***	0.995***	0.971***	0.996***	0.994***	0.967***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pseudo-R²	0.206	0.201	0.317	0.215	0.227	0.321

	Nationality					
Source country Model	All (7)	NMS-8 (8)	Bulgaria and Romania (9)	All (10)	NMS-8 (11)	Bulgaria and Romania (12)
Population (2006, in 100,000)	1.296***	1.357***	1.237***	1.314***	1.376***	1.239***
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Area (in 1,000 km²)	1.000***	1.013***	1.021***	1.001***	1.024***	1.023***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Unemployment rate (2006, in %)	0.977***	0.976***	0.972***	0.970***	0.987***	0.987***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ø yearly income per employee (2004, in 1,000 €)	1.020***	1.018***	1.041***	1.021***	1.004***	1.034***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Capital region	0.712***	0.633***	0.626***	0.740***	1.254***	0.760***
	(0.001)	(0.002)	(0.003)	(0.001)	(0.005)	(0.004)
Distance between region and country of origin (in 1,000 km)				0.383***	0.018***	0.866***
				(0.000)	(0.000)	(0.016)
Squared Distance between region and country of origin (in 1,000 km)				1.030***	1.456***	0.864***
				(0.000)	(0.004)	(0.003)
Proportion of migrants from same country living in region (in %)	1.186***	1.207***	1.362***	1.160***	1.183***	1.377***
	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)
Squared proportion of migrants from same country living in region(in %)	0.998***	0.997***	0.990***	0.998***	0.997***	0.989***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pseudo-R²	0.195	0.194	0.327	0.211	0.227	0.330

Notes: Odds ratios reported. Standard errors in parentheses. *** significant at 1%, ** significant at 5%, * significant at 10% level. Dependent variable: locational choice by NUTS 2 regions. Ireland, overseas territories and exclaves excluded in both models. Germany excluded in model based on country of birth. Coefficients of country dummies not reported.

Source: European Labour Force Survey 2007, Eurostat, WIFO.

To control for national differences in immigration laws as well as other country-fixed effects, dummies for the receiving countries are included as is a dummy variable for

those regions which comprise national capitals. To proxy for the costs of migration (or the costs of visiting relatives at home), the distance of migration[21] and its squared value are also included in a second specification. Table 2.7 shows the results of the conditional logit regression. The coefficients shown can be interpreted as odds ratios, with values larger than 1 indicating an increase in the odds while values smaller than 1 indicate a decrease in the odds of an event occurring (i.e., choosing a specific region) when the independent variable changes by one.

As the table shows, there are only minor differences between the regression based on country of birth (excluding Germany and Ireland) and nationality (excluding Ireland). Differences between a general estimation including migrants from all countries and restricted estimations including only migrants from the NMS-8 or Bulgaria and Romania are also to a large extent similar. Both population and area have a positive effect on the choice of the preferred target region: the larger the region, the higher the probability that it will be chosen as preferred destination of migration. Higher unemployment is associated with a lower probability of choosing this region: an increase in the unemployment rate of 1 percentage point decreases the odds of migrating to this region between 2.3% in model (7) and 3.2% in model (1). The attractiveness of a region increases with the average annual income per employee: the odds of choosing a region increase by about 2% if average yearly income is € 1,000 higher, all else equal.

Surprisingly, capital regions are significantly less attractive, ceteris paribus, than other regions, even after controlling for country specific fixed effects: Generally, the odds of a migrant choosing a capital city region are 27.3% (or 19.6%, respectively, if nationality is used to define country of origin) lower than otherwise. This thus suggests that migrants prefer larger urban areas (as illustrated by the positive effects of region size), but not necessarily capitals. The distance between the region of residence in the EU-15 and the country of origin also significantly affects locational choice. There are, however, differences between regions of origin. Generally, the probability of choosing a region ceteris paribus decreases with the distance from the home country. This negative effect however becomes smaller as the distance increases, as is shown by the odds ratio > 1 of squared distance in models (4), (5), (10) and (11). For migrants from Bulgaria and Romania, however, the effect is increasingly negative. The effect of distance is thus not unambiguous when looking at different groups of origin countries.

Even after controlling for these demographic, geographic and economic factors, networks show a significant effect on locational choice: the higher the share of migrants from the same country of origin already living in the region, the higher the probability that more recent migrants choose the same region. This supports the hypothesis that network and herd effects positively influence the migration of subsequent cohorts. However, a decreasing effect of network size on the probability of choosing a particular region can be observed. Generally, for migrants from all countries the effect of ethnic networks

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[21] The distance is measured as the crow flies between the capital of the migrants' home countries and the largest city within their region of residence in the EU-15.

becomes negative at a network size of 29.7% (model 1, 40.1% according to model 7): if more than 29.7% of all migrants from a given country of origin already live in this region, it will become less attractive for following migrants with the same ethnic background. This indicates that there is an "optimum size" for migrant networks. If the network grows beyond this size, there will be negative effects for both "newcomers" as well as established migrants, e.g. because of decreasing wage levels or increased housing and rental prices (Portnov, 1999), and migrants will no longer want to migrate to this region. For migrants from the NMS-8 (models 2 and 8), the optimal network size is also about 30%, which is considerably larger than for migrants from Bulgaria and Romania, as shown by models (3) (9.0%) and (9) (15.4%).[22]

2.5 Summary

This chapter analysed the regional (NUTS2 level) concentration of migrants in the EU-15 using recent data from the European Labour Force Survey. We observe the largest local clusters of migrants in the Île de France as well as Inner and Outer London and substantial differences in the settlement structure of foreigners and natives. Generally, 23.9% of all migrants would have to change their region of residence (together with a similar number of natives) in order to achieve a uniform distribution of migrants across Europe (and leave the relative population of the regions unchanged). This concentration does not differ substantially between different cohorts: those who migrated during the last 10 years are about as concentrated as those who migrated earlier. However, the target regions of more recent migration waves are considerably different from those of earlier waves, indicating a shift in regional preferences of migrants.

Comparing the regional concentration by individual characteristics shows that low skilled migrants with primary education are much more concentrated than migrants with secondary or tertiary education. This points to the importance of networks for low-skilled groups, confirming results found, e.g., by Bartel (1989). However, high-skilled migrants who moved during the last 10 years are today more concentrated than those who moved more than 10 years ago, while the opposite is true for the medium- and low-skilled. Our data show a substantial change in target regions for all skill groups across time: more recent migrant cohorts tend to prefer Spanish regions. This change is most pronounced, but not limited to, the low-skilled, while for highly skilled migrants a significant correlation between the local concentrations of recent and earlier migrant cohorts can still be observed. This indicates that regional preferences did not change as much for high-skill migrants as they did for the medium- and low-skilled.

Analysing the concentration by country of origin, a smaller geographical association can be observed for migrants from the 8 new CEE member states than, e.g., for migrants from Romania and Bulgaria or the candidate countries. Migrants from the NMS-8 are thus

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[22] The optimal network size computed from the other models is: model (4) 30.1%, model (5) 25.5%, model (6) 8.3%, model (10) 41.2%, model (11) 28.6%, model (12) 14.6%.

less concentrated in specific regions than Bulgarians or Romanians. The biggest local clusters of NMS migrants can be observed in the London areas and Vienna. Looking at the individual countries, the largest concentration of migrants from the MNS-8 can be registered among Estonians and Slovenians, while Polish migrants show the lowest tendency to cluster.

Comparing the regional concentration across cohorts, an increase can be observed for recent migrants from the NMS-8. At the same time, the correlation of local concentrations across cohorts is rather low and even insignificant for some CEE countries. The results thus suggest that some of the recent migration movements from the NMS-8 to the EU-15 are different from the regional migration trends observed before. The opposite holds true for migrants from Bulgaria and Romania, the candidate or other countries: regions which had a high local concentration of earlier migrants from one of these countries, also tended to have a high local concentration of more recent migrants with the same ethnic background.

However, these low or insignificant correlations for NMS-8 countries must not be interpreted as disproving network or herd migration in Europe. They rather show that institutional changes in the course of EU accession have led to a severe redistribution of migrant flows from the NMS-8. Institutional settings more favourable for migration decreased the costs of relocating into these regions, and by that also the opportunity costs of not moving to where networks are. Initial movements "against the current" into new regions without (or with only small) networks could, after some time, have created new (or led to the accumulation of larger) networks, attracting further in-migration and drawing migrants away from "traditional" network hubs. This is supported by the observation that there is still a significant correspondence in target regions across cohorts for nationals of those countries for which the institutional setting has not changed, like Turkey, Croatia, Macedonia or other countries.[23] This is confirmed by a conditional logit regression, which shows that networks do have a significantly positive effect on locational choice even after controlling for economic and geographic characteristics of the regions. This effect is, however, decreasing, which suggests an "optimal" network size for migrants.

The results found in this chapter thus point on the one hand to significant changes in the structure of migration from the NMS-8 to the EU-15 during the last years which can be attributed to changes in the institutional environment, especially EU accession. It can thus be expected that another shift in regional concentration of migrants from these countries will be observed after the end of the transitional period, because the standardisation of freedom of movement regulations in the EU-15 after the end of the transitional period contributes to a more even distribution of migrants from the NMS-8 to the EU-15. On the other hand, the results point to significant network and herd effects in

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[23] This applies, in principle, also to Bulgaria and Romania. Although the institutional situation has changed for these countries with EU accession in 2007, they had only had one post-accession year at the time of the interview. It can thus be expected that this had only a minor impact on regional concentrations of all Bulgarian and Romanian migrants who moved during the last 10 years.

migration. These could increase the size of those networks which accumulated during the last 10 years, which would pertain especially to Spanish regions and lead to a permanent change in regional preferences of migrants. We thus observe two opposing effects, one leading to a more even distribution of migrants across the EU-15, the other to increased concentration. How pronounced these effects will be and which effect will dominate is, however, ambiguous.

3 Cross-border Commuting in the EU27

3.1 Introduction

As stressed in the last chapter one channel through which cross-border labour mobility may asymmetrically affect regional labour supply is through the spatial concentration of migration. Another one, however, is cross-border commuting. While the migration channel has been much analysed in recent literature, cross-border commuting has been largely ignored. To the best of our knowledge there is no single study to date which analyses the extent, structure and motivations for cross-border commuting from a European perspective. By contrast the literature on commuting has either focused on commuting choices within a country (see e.g. White, 1986, Hazans, 2003, Rouwendahl, 1999, Van Ommeren, 1999) or on individual case studies of cross-border commuting or specific border regions (see for example: Buch et al, 2008, Gottholmseder and Theurl , 2006, 2007, van der Velde, Jansen and van Houtum, 2005, Greve and Rydbjerg, 2003a, 2003b, Bernotat and Snickars, 2002).

This research suggests that commuting flows may differ from migration flows in a number of important ways. For instance much of this literature indicates that commuting flows are much more dependent on distance between sending and receiving regions than migration flows. Since this is also to be expected from cross-border commuting flows, this implies a regionally asymmetric impact of cross-border commuting, which, - in contrast to migration flows, which as shown in the last chapter are often concentrated in the urban centres of a country – on account of their high distance dependence may be expected to be concentrated in border regions.

There may, however, also be more subtle differences between migration and cross-border commuting flows. In this respect for instance White (1986) as well as Rouwendahl (1999) show that commuting within a country is strongly focused on males. This can be explained by the higher alternative costs of travelling time for women, which arise on account of their role in childcare and household production, as well as a higher share of part time workers among women, which leads to higher commuting costs per work hour. Furthermore commuters within a country may differ from non-commuters with respect to age and education. Rouwendahl (1999) find that the willingness for mobility decreases with age, and Van Ommeren (1999), Hazans (2003) as well as Rouwendahl (1999) all find that higher educated workers are more likely to be commuters within a country than less educated workers.

One could expect that some of these "stylized facts" carry over to cross-border commuters while others may differ. Indeed some of the recent case studies (see: Buch et al, 2008 and Gottholmseder and Theurl 2006, 2007) confirm that cross border commuters are mostly male but also suggest that cross-border commuters may differ from commuters within a country both with respect to education and age structure. Comparing cross-border commuters from Vorarlberg to Switzerland to internal commuters and non-commuters in the same region Gottholmseder and Theurl (2006)

find that on account of a low commuting share among the under 25 year olds there is no clear evidence that cross-border commuters are younger than non commuters, and according to the regression results in Gottholmseder and Theurl (2007) neither age nor education is a significant determinant of cross-border commuting. This thus suggests that with respect to age and education the process of selection of cross-border commuters differs from that of internal commuters.

In this chapter - before analysing the specific case of the so called CENTROPE region, - we are also interested in cross border commuting. In contrast to previous literature we however focus on the complete EU 27. Given the paucity of empirical results on the extent and structure of cross-border commuting for the EU 27, our aims are primarily descriptive: In particular we first of all want to know how many people can be assumed to commute across borders in the EU 27 currently and how their demographic structure differs from that of both commuters within a country and persons, who both live and work within the same region (i.e. non-commuters). Second of all we want to know in which regions and countries of the EU 27 cross-border commuting currently plays an important role and thirdly – with respect to labour mobility from the 12 new member states (NMS 12) to the 15 old member states (EU 15), - we want to know how both the structure and extent of current cross-border commuting from the NMS12 (which are still influenced by the transitional periods applied in a number of EU countries) differs from cross-border commuting flows in the unregulated regime of the EU 15.

3.2   Data and Extent of Cross-Border Commuting in the EU 27

3.2.1 Data Issues

The data we use to address these issues are taken from the annual results of the European Labour Force Survey for the years 2005 and 2006, which is a regular questionnaire presented to a representative sample of households in all countries of the EU 27 (see: http://circa.europa.eu/irc/dsis/employment/info/data/eu_lfs/index.htm for a presentation of the questionnaire and its methodology). In this questionnaire persons that were employed in paid employment for at least one hour in the week preceding the interview are asked both for their place of residence as well as on their place of work. Furthermore, respondents are also interviewed on a number of demographic and workplace characteristics (such as occupation and branch of employment, age, gender, highest completed education and others). Thus from this questionnaire it is possible to calculate estimates of both the extent and structure of commuting within the EU 27. Furthermore this data can be analysed from the perspective of the sending regions (by analysing outgoing commuter flows from a particular region), the receiving region (by analysing incoming commuters to a particular region) or from a place to place perspective (by analysing commuting between a particular pair of regions).

While this data is thus well suited for our purposes, its analysis is subject to a number of caveats. The first of these arises with respect to the number of countries analysed. Not all of the national questionnaires in the EU 27 pose the question concerning the place of

work. This applies to Greece, Portugal and Cyprus. Thus we have to exclude these countries from our analysis. Furthermore, the disaggregated data in the questionnaire for Slovenia grossly disaccords with the data provided in official data sources from Eurostat, so that in order to avoid data uncertainties we also exclude Slovenia from our sample of countries.

Another caveat applies to missing data and non response problems. In our data in 2005 0.5% of the employed in the European did not respond to the question on place of work, in 2006 non response was at 0.1%. While these figures seem small, the rate of non-response in 2005 is of about the same magnitude as the extent of cross border commuting (see below). Given that respondents are more likely to be able to answer the question concerning the place of work when working in the same region as the region of residence; this may imply that commuting and in particular cross-border commuting may be underestimated. In order to allow the reader an evaluation of this potential underreporting we thus also report the share of non respondents. Furthermore for Italian Data the share of non respondents exceeds 5% in each of the years considered and in the Netherlands for 2005 it exceeds 9%. Thus we also exclude Italian data from our analysis and use only data from 2006 when considering the structure of commuting flows, since this seems to be the most reliable.

In addition the regional grid on which this data can be analysed from a receiving region or place to place perspective differs from that on which an analysis from the sending region perspective can be conducted. Depending on the year analysed, between 40% and 50% of the cross-border commuters provide information only on the country to which they commute but not on the NUTS 2-region. Thus analysis from a receiving region and place to place perspective cannot be conducted on the same regional level as the sending region perspective (which is NUTS 2-level), but only on a national level.

Furthermore in a number of cases the size of cross border commuting flows (in particular when disaggregating by region, age, industry or occupation) is well below the confidence bounds provided by Eurostat. Thus to avoid misinterpretation of the data, we follow the rules of reporting suggested by Eurostat (see http://circa.europa.eu/irc/dsis/employment/info/data/eu_lfs/index.htm) by listing all figures where high standard errors of the estimates may be expected in italics and suppressing all numbers where commuting levels are below the lower confidence bounds suggested by EUROSTAT.

Finally, the possibility of comparison of data across geographical entities (both national and regional level) is rather limited. Our data is available on the NUTS 2-level; this implies that commuting can only be measured if the workplace of a commuter is located in another NUTS 2-region than the place of residence. Thus any commuting within the same NUTS 2-region is not registered. Since as shown in the last chapter NUTS 2 regions differ vastly in terms of size and commuting is highly distance dependent, this implies

that the extent of commuting measured in this study cannot easily be compared between countries and/or regions of a different size.[24]

3.2.2 Some stylized facts on the extent of commuting in the EU 27 from the sending region perspective

Given these caveats we define as cross-border commuters all persons, who work in another country than they live in. We compare these cross – border commuters to those persons, who live in the same NUTS 2-region as they work in (which are referred to as non-commuters), as well as to the group of persons, who work in a different NUTS 2-region than they live in within the same country (internal commuters).[25] Given these definitions, the sum of the employed in these three groups is defined as the number of employed at place of residence while the sum of the non-commuters plus incoming commuters (both from cross-border as well as internal commuting) gives the employed at the workplace. We use this number of employed at place of residence to normalize commuting flows in table 3.1. This table in conjunction with table 3.2 and Figure 3.1 shows a number of stylised facts concerning the extent of cross-border commuting in the EU.

First according to LFS Data cross border commuting is a rather rare event in the European Union. In the two years considered only around 0.6% of the employed commuted across borders. This seems small relative to the approximately 7.4% of the population that commuted across NUTS 2-regions within their respective countries. This also seems to apply on a regional (NUTS 2) level. Among the 218 NUTS 2-regions included in our sample the share of outward cross-border commuting in total employment at the place of residence is higher than 5% only in 9 regions, which are the three Slovak regions, the French region of Alsace and Lorraine, the Provinces of Luxemburg and Limburg in Belgium and Freiburg in Germany as well as Vorarlberg in Austria. In a further 31 regions this share is between 1% and 5% of the employed at the place of residence. For the vast majority of NUTS 2-regions (152), however, less than 0.5% of the resident employed commutes across borders (see Figure 3.1)

In addition, the extent commuting seems to have been relatively stable over the time period considered. Although the absolute number of both cross-border and internal commuters is slightly higher in 2006 than in 2005 the increase is of approximately the same magnitude as the decrease in the number of non-respondents to this question in the 2006 Labour Force Survey.

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[24] This could be avoided if data on travelling time to the workplace were collected for all persons interviewed. Unfortunately this is not the case in the European Labour Force Survey.

[25] It should be noted that this definition does not impose any restrictions on the frequency of the commute. Thus we cannot separately identify daily, weekly and monthly commuters. This has the implication that for a small number of flows we find relatively distant commuting even to non-European destinations. Since the extent of these flows is rather small, we include them in our analysis.

Table 3.1: The Extent of Outbound Cross-border commuting by year and Country Group

	2005	2006	2005	2006
	Absolute (1,000)		In % of employed at place of residence	
	Cross border Commuters			
EU Total	1,036.1	1,170.2	0.6	0.6
- of this EU 15*	723.1	792.8	0.5	0.6
- of this NMS 10**	268.6	330.1	1.0	1.1
- of this Bulgaria, Romania	44.4	47.3	0.4	0.4
	Internal Commuters			
EU Total	13,031.8	13,634.7	7.4	7.6
- of this EU 15*	12,287.2	12,845.0	9.0	9.3
- of this NMS 10**	655.6	692.6	2.3	2.4
- of this Bulgaria, Romania	89.0	97.1	0.7	0.8
	Non Respondents			
EU Total	862.1	124.5	0.5	0.1
- of this EU 15*	860.9	121.8	0.6	0.1
- of this NMS 10**	0.8	1.9	0.0	0.0
- of this Bulgaria, Romania	0.4	0.8	0.0	0.0

Notes: * excluding Greece, Portugal and Italy, **excluding Cyprus and Slovenia

Source: Eurostat-LFS, WIFO-calculations

Furthermore, both internal and cross-border commuting is highly dependent on countries' geography. High rates of outbound cross-border commuting occur primarily in border regions or in regions close to the border, while high rates of outbound internal commuting are found primarily in the vicinity of large urban agglomerations of London, Berlin, Vienna, Prague and Stockholm, as well as in the smaller NUTS 2-regions of the Benelux countries[26] (see Figure 3.1). Thus small countries (such as Belgium, Austria and the Baltic Countries), where most regions are located close to the border in general have higher shares of outbound cross-border commuting than large countries (such as Spain). The major "hot spots" of cross-border commuting in the European Union seem to be located at the German-French and French-Belgian borders, on the Austro-German border, at the Czech-Slovak border, in the Baltic countries and in Western Hungary as well as the German-Polish border and potentially southern Sweden. This suggests that cross border commuting in the EU occurs primarily between countries which either share a common language (e.g. France Belgium and Switzerland or Austria, Germany and Switzerland) or have been a single country until very recently (such as in the case of the Czech Republic and Slovakia) or where special institutional arrangements influence the possibility of

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[26] As already noted the smallness of these regions complicates a direct comparison of commuting shares with larger regions. Since NUTS 2-regions differ vastly in terms of size and commuting is highly distance dependent, this implies that the extent of commuting measured is automatically higher in small regions.

cross-border commuting (as in the Austro-Hungarian case).[27] By contrast most other border regions are characterised by rather low cross-border commuting rates. In the regions outside of these "hot spots" the share of out commuting cross-border commuters is lower than 0.5% of the resident workforce even when considering only border regions (see: Figure 3.1).

Aside from size and geography, however, also other factors seem to be important for the extent of cross border commuting, since there is a large variation in outbound commuting among countries of similar size. In particular in general outbound commuting tends to be higher in regions with lower GDP per capita levels and lower unemployment rates (see section 3.4 for further details) and there seems to be a core-periphery pattern in both cross-border and internal commuting. Regions which may be considered to be located more in the centre of the EU such as for example the regions of Austria, Belgium, Germany, Netherlands and others in general tend to have higher internal and cross-border commuting rates, while regions which are located more in the periphery (e.g. Spain, Bulgaria, Romania) tend to have low commuting rates.[28]

Finally, we also find that, the share of cross-border commuters is somewhat higher in the NMS 10 than in the EU 15. We would have expected that the opposite is the case on account of both the shorter time span the NMS 10 have integrated in the EU and because for important receiving countries there are still institutional barriers for cross-border commuters. These high cross-border commuting rates in the NMS 10 may, however, be distorted by both the high share of cross-border commuters from Slovakia, which results from a high share of commuters from Slovakia to the Czech Republic with which it formed a single country until 2002, and a large number of small countries among the NMS 10, which distorts cross border commuting flows upwards (see Figure 3.1). By contrast, - accordance with expectations - cross-border commuting shares in Bulgaria and Romania are lower than in the EU 15.

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[27] Cross-border commuting at the Austro-Hungarian border was already substantially liberalised in the 1990s, by providing a special commuting quota to Hungarian commuters.

[28] These comparisons are, however, also influenced by relative region size, which is larger for the more peripheral regions and leads to a downward bias for commuting flows in these regions.

Figure 3.1: The Extent of Outbound Cross-border commuting in EU 27 NUTS 2-regions (2006)
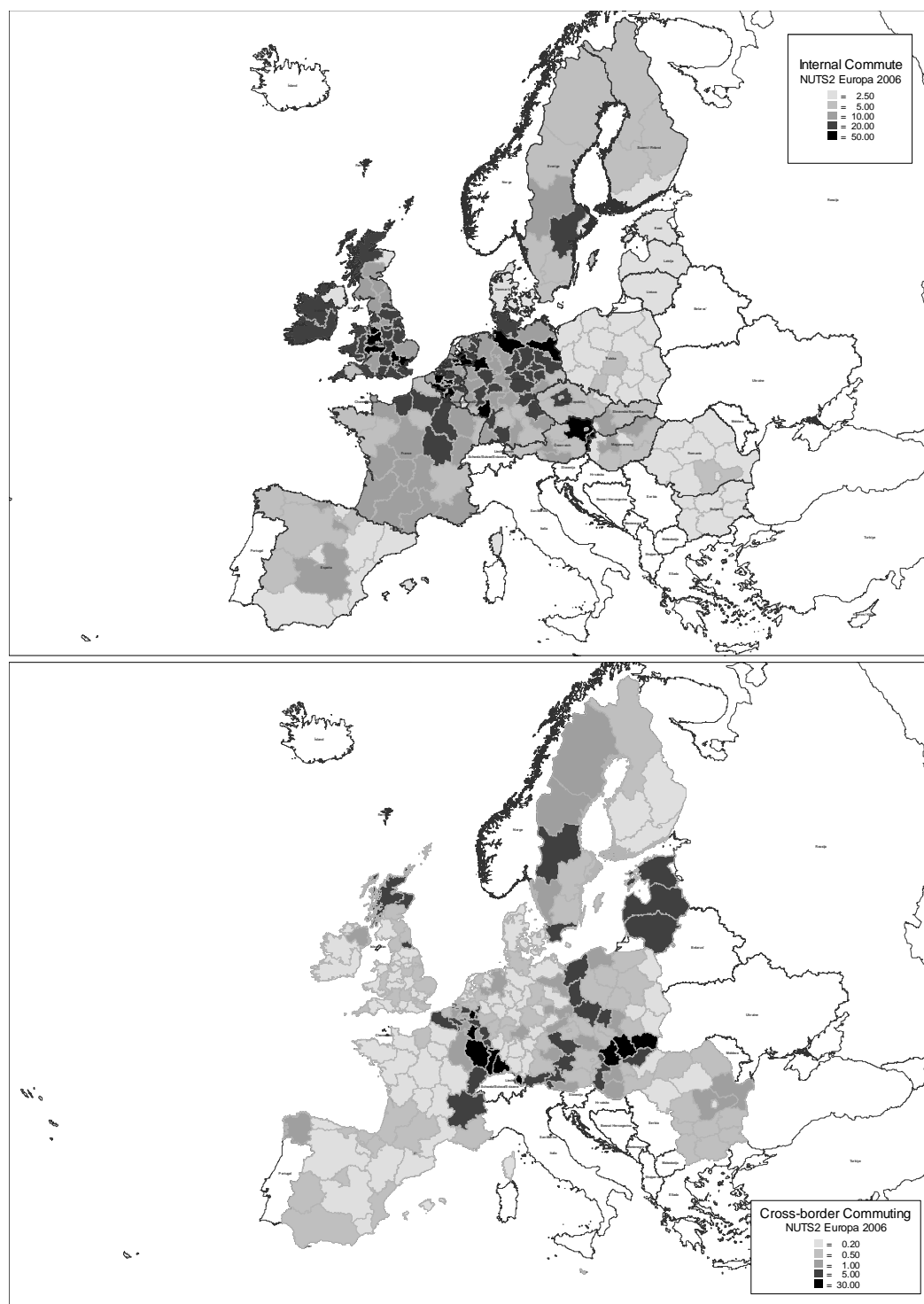
Notes: Figure shows commuting rates in % of the employed at the place of residence. Top panel = internal commuters, bottom panel =external commuters

Source: Eurostat LFS.

Table 3.2: The Extent of Outbound Cross-border commuting by EU Countries (2006)

	Absolute (thousands)			Share in percent		
	Internal Commuters	Cross-Border Commuters	Non Respondents	Internal Commuters	Cross-Border Commuters	Non Respondents
	Absolute (thousands)			Percent		
Austria	397.9	39.7	0.9	10.1	1.0	0.0
Belgium	828.3	95.0	0.2	19.4	2.2	0.0
Germany	3,846.5	173.2	56.1	10.3	0.5	0.2
Denmark	0.0	5.5	27.0	0.0	0.2	1.0
Spain	382.7	55.6	0.0	1.9	0.3	0.0
Finnland	66.9	3.0	0.0	2.7	-	0.0
France	1,468.9	279.0	19.9	5.9	1.1	0.1
Ireland	264.8	0.0	8.8	13.1	0.0	0.4
Luxemburg	0.0	1.7	0.0	0.0	0.9	0.0
Netherlands	1,056.2	32.4	4.4	12.9	0.4	0.1
Sweden	195.7	38.3	3.1	4.4	0.9	0.1
U.K.	4,337.0	69.4	1.5	15.4	0.2	0.0
Czech Republic	230.7	25.1	0.1	4.8	0.5	0.0
Estonia	0.0	10.7	0.0	0.0	1.7	0.0
Hungary	147.5	24.9	0.0	3.8	0.6	0.0
Lituania	0.0	26.2	0.0	0.0	1.7	0.0
Latvia	0.0	14.3	0.1	0.0	1.3	0.0
Malta	0.0	-	0.1	0.0	-	0.0
Poland	216.3	71.6	0.2	1.5	0.5	0.0
Slovakia	98.1	156.8	1.4	4.3	6.8	0.1
Bulgaria	39.2	10.3	0.8	1.3	0.3	0.0
Romania	57.9	36.9	0.0	0.6	0.4	0.0

Notes: Figures in bold italics=unreliable data due to few observations, - = no data reported on account of the low number of observations

Source: EUROSTAT-LFS, own calculations

Table 3.3: The Extent of Inward Cross-border Commuting from the EU 27 by Country groups and year

	Absolute (thousands)		Share in percent		In percent of employment at workplace	
	2005	2006	2005	2006	2005	2006
EU 15	652.2	722.7	62.9	61.8	0.5	0.6
NMS 12	99.4	115.7	9.6	9.9	0.3	0.3
Other countries	284.5	331.7	27.5	28.4	n.a.	n.a.

Source: EUROSTAT-LFS, own calculations, n.a.=not available

3.2.3 Stylized facts from the receiving region and place to place perspective

When considering commuting flows from the receiving region perspective (see Table 3.3 and Figure 3.1) the total share of incoming cross-border commuters from the EU 27 in the total number of employed at the workplace is at about 0,5% or lower and may thus also be considered small. Among the individual EU 15 receiving countries apart from the obvious outlier of Luxemburg (where over a third of the employed in that region are commuters from other countries) only Belgium, Ireland, Austria and the Netherlands receive a share of cross-border commuters from other EU 27 countries in excess of 1% of the employed at the workplace. For the NMS 10 and NMS 2 inward cross-border commuting flows are of an even lower relevance. Among these countries the share of inward cross-border commuters in total employment exceeds the 1% mark only in the Czech Republic (on account of the large number of commuters from Slovakia), and the 0.5% mark in Hungary. For all other NMS 12 countries the size of inward commuting flows from other EU 27 countries may be considered negligible.

Figure 3.2: The Extent of Inward Cross-border Commuting from the EU 27 by EU 27 Country (in % of employment at the workplace)
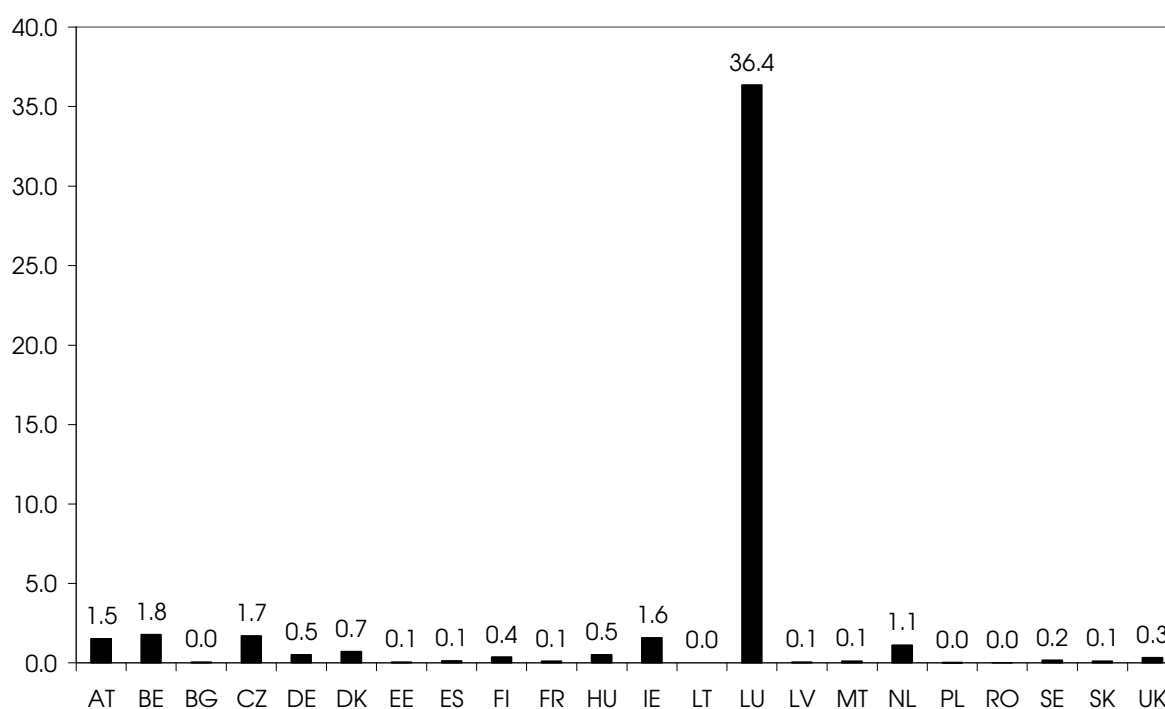
Source: Eurostat LFS, own calculations

Furthermore when considering place to place cross border commuting flows (see table 3.3) a clear differentiation between the EU 15 and the NMS 12 emerges. Most of the outbound cross-border commuting from the EU 15 countries is either with other EU 15 countries (these flows account for more than 90% of outbound cross-border commuting in Belgium, Luxemburg and the Netherlands) or with other non EU 27 countries (these flows are particularly important for Denmark, and the UK where more than 50% of the outgoing commuting flows go to non-EU countries). By contrast commuting patterns from

the NMS 12 (with the exception of Slovakia where more than 60% of commuting flows are with other EU 12 countries and Malta, where commuting flows are to low to represent reliable estimates) are much more strongly focused on the EU 15. In all of the NMS 12 countries (with the two mentioned exceptions) more than 70% of all cross border commuting flows go to EU 15 countries.

Table 3.4: Place to Place Cross-border Commuting by Country Groups and Year

Receiving Region	Sending Region			
	EU 15	NMS 12	Other countries	Total
Year 2006				
Absolute (thousands)				
EU 15	456.3	7.0	259.8	723.1
NMS 12	195.9	92.5	24.7	313.0
Share in percent				
EU 15	63.1	1.0	35.9	100.0
NMS 12	62.6	29.5	7.9	100.0
Year 2005				
Absolute (thousands)				
EU 15	479.7	10.6	302.5	792.8
NMS 12	234.9	104.2	28.0	367.1
Share in percent				
EU 15	60.5	1.3	38.2	100.0
NMS 12	64.0	28.4	7.6	100.0

Source: EUROSTAT-LFS, own calculations

Thus while there seem to be few differences between commuting flows from the NMS 12 and the EU 15 when considering the sending regions only, there are some significant differences from a receiving country perspective as well as from the place to place perspective. In particular when considering inbound cross-border commuting we find that as a percentage of the employed in the country of work, NMS 12 countries receive much fewer cross border commuters than EU 15 countries. In addition when considering outbound cross-border commuting we find that cross border commuting from the NMS 12 is strongly oriented towards the EU 15 countries rather than non-EU or other EU12 countries. This can be explained by the fact that most non-EU countries close enough to the NMS 12 to be destinations for cross-border commuting have substantially lower income levels than the NMS 12. By contrast outbound cross-border commuting in the EU 15 is more strongly oriented to non-EU countries. Again this can be explained by differences in income levels.

3.3 The Structure of Commuting Flows

3.3.1 Comparing cross-border commuters, non commuters and internal commuters

The descriptive evidence provided so far thus suggests that the extent of cross-border commuting in the EU in general is limited to individual border regions and has a relatively limited magnitude when considering the overall European labour market. In the two years observed cross-border commuters accounted for only 0.5% of total employment in the EU. In particular cross-border commuting is of relevance only in a limited number of border regions, which are mostly characterised by strong linguistic, historic or institutional ties, only.

Aside from the extent of commuting, we are, however, also interested in the demographic, and occupational structure of cross-border commuters. Thus table 3.5 presents some descriptive evidence on the demographic structure of cross-border commuters in comparison both to non-commuters and internal commuters. As can be seen from this table cross-border commuters differ most significantly from non-commuters by the high share of male cross-border commuters, a disproportionately high share of persons in the age group between 20 and 29 and a stronger focus on intermediate (secondary level) educated workers. Furthermore, cross border commuters often work in less skilled occupations such as elementary occupations, plant and machine operators or as crafts and related trade workers as well as in the construction and manufacturing sector. Thus in contrast to non-commuters, cross border commuters are disproportionately often medium skilled male manufacturing and construction workers, which also work in medium to less qualified manufacturing jobs.

This qualification profile also carries over to the comparison with internal commuters. Relative to cross-border commuters, internal commuters are clearly more highly qualified. 36% of the internal commuters but only 26% of the cross-border commuters in the EU have completed a tertiary education. In addition internal commuters are much more strongly concentrated in service sector employment (internal commuters 70%, cross-border commuter 53%) and typically work as legislators, professionals or technicians (internal commuters 50%, cross-border commuters 42%). This suggests that while internal -commuters are a clearly positively selected group among the employed, cross-border commuters, by contrast, seem to be primarily selected from medium skill and manufacturing workers. Furthermore, selectivity by age and gender also seems to be stronger when considering cross-border commuters than internal commuters. The share of males among cross-border commuters is substantially higher than among internal commuters and cross-border commuters are also much more strongly focused on the age group of the 20 to 29 year olds.

These results are in accordance with some of the findings of previous studies. For instance Buch et al (2008) finds that cross border workers in the German – Danish border regions are disproportionately drawn from among manufacturing workers and mostly stem form the age group of the over 25 year olds and Gottholmseder and Theurl (2005

and 2006), focusing on cross-border commuters from Vorarlberg to Switzerland, find that the (relative) majority of them are male, 25-to 35 years old, medium skilled manufacturing workers, that are neither positively nor negatively selected on educational grounds.

Table 3.4: Commuting flows in the EU27 by Demographic and Job Characteristics (in % of total flows, 2006)

	Non-commuters	Internal commuters	Cross-border commuters	No response	Employment at place of residence
Female	46.1	36.5	28.3	-	45.2
Male	53.9	63.5	71.7	67.0	54.8
Aged 20 to 29	19.4	21.6	27.50	23.60	19.6
Aged 30 to 39	26.0	27.8	26.80	32.00	26.1
Aged 40 to 49	26.8	26.5	26.50	22.40	26.8
Aged 50 to 59	19.9	18.1	15.30	11.40	19.7
Aged 60 or more	5.0	3.4	2.40	6.50	4.9
Not Available	0.2	0.3	-	-	0.2
Primary	4.5	2.4	2.50	3.70	4.4
Secondary	68.7	61.3	71.30	62.30	68.1
Tertiary	26.6	36.0	25.90	33.80	27.3
Legislators senior officials and managers	7.9	13.1	6.6	9.2	8.3
Professionals	13.8	18.1	12.9	20.5	14.2
Technicians and associate professionals	15.6	18.5	13.8	14.5	15.8
Clerks	10.7	11.5	6.8	-	10.7
Service workers and shop and market sale	14.0	9.8	11.4	11.3	13.6
Skilled agricultural and fishery workers	4.9	1.1	1.4	-	4.6
Craft and related trades workers	13.6	11.8	23.8	17.5	13.6
Plant and machine operators and assemble	8.7	7.6	12.9	-	8.7
Elementary occupations	9.9	6.2	9.3	7.8	9.7
Armed forces	0.5	1.3	0.9	-	0.5
No answer	0.4	1.1	0.2	-	0.4
Aggriculture	6.2	1.4	3.5	-	5.8
Construction	7.6	8.3	17.3	14.4	7.7
Manufacturing	19.3	19.7	25.6	18.4	19.4
Market Services	36.2	41.3	35.7	36.8	36.6
Non-Market Services	30.5	28.7	17.0	23.2	30.3
Non-Response	0.2	0.7	0.9	-	0.3

· Notes: - = no data reported on account of the low number of observations , column sums for individual characteristics are 100%

Source: EUROSTAT-LFS, own calculations

3.3.2 Differences between NMS 12 and EU 15 Flows

These distinct differences in the demographic, educational and occupational characteristics of cross-border commuters both relative to internal-commuters and stayers, can be expected to arise from a number of factors that may be considered to be specific either to the receiving region such as the industrial structure and thus the structure of labour demand in border regions (which may be more strongly focused on

manufacturing activities than that of urban centres, which are the basin for attraction for internal commuting flows), or to the particular sending and receiving region pair considered (such as differences in the returns to education in sending and receiving regions). While a detailed analysis of the structure of cross-border commuters relative to internal commuters on a place to place basis is beyond the scope of this study, due to the mentioned data problems, we were interested to what degree the structure of cross-border commuting flows differs between different EU 15 countries and between EU 15 and NMS 12 countries, since this is a particularly interesting case, on account of the fact that cross-border commuting with the most relevant receiving countries is still regulated for flows between the NMS 12 and the EU 15, while it is unregulated within the EU 15 countries.

Table 3.5: Commuting flows in the EU27 by Demographic and Job Characteristics and Receiving Region and Place to Place criteria (in % of total flows, 2006)

	Recieving Region			Place to Place Flows		
	EU 15	EU 12	Other	From EU 15 to EU 15	From EU 12 to EU 15	Other
	in %					
Female	29.7	24.2	26.7	32.2	31.7	28.6
Male	70.3	75.8	73.3	67.8	68.3	71.4
Aged 15 to 19	1.7	-	-	-	-	-
Aged 20 to 29	29.3	37.6	20.0	20.8	42.3	24.1
Aged 30 to 39	26.0	25.1	29.0	31.5	27.1	27.9
Aged 40 to 49	26.8	21.8	27.4	28.4	19.6	27.3
Aged 50 to 59	14.4	12.5	18.3	15.6	8.1	16.6
Aged 60 or more	1.7	-	-	2.4	0.8	2.6
Not Available	2.3	-	3.2	-	-	-
Primary	71.7	85.2	65.7	62.5	87.0	69.6
Secondary	25.6	12.9	31.0	30.9	11.9	27.9
Tertiary	7.2	-	-	8.8	-	7.7
Legislators senior officials and managers	11.6	7.2	17.9	17.1	-	13.7
Professionals	12.2	12.5	17.7	15.2	6.2	16.7
Technicians and associate professionals	7.2	2.2	7.7	10.0	-	5.9
Clerks	12.5	4.8	11.2	9.8	18.0	8.5
Service workers and shop and market sale	1.7	-	-	-	5.7	-
Skilled agricultural and fishery workers	22.5	35.6	22.5	15.8	28.8	23.4
Craft and related trades workers	12.7	21.8	10.2	15.8	9.6	12.9
Plant and machine operators and assemble	11.6	11.2	-	5.4	23.6	8.5
Elementary occupations	-	-	-	-	-	-
Armed forces						
No answer	4.4	-	2.4	-	11.4	2.4
Construction	16.2	32.6	14.6	9.3	28.1	17.7
Manufacturing	23.0	42.9	25.1	30.0	14.3	31.2
Market Services	38.8	18.2	35.0	38.1	28.7	30.2
Non-Market Services	17.0	-	21.0	19.9	17.3	17.5

Notes: - = no data reported on account of the low number of observations

Source: EUROSTAT-LFS, own calculations

To perform this analysis in a first step we separated migration flows by receiving country into migration flows received by the EU 15 countries, those received by NMS 12 countries

and those received by other countries outside the EU[29] (see left hand side panel of table 2.6). Here we hypothesized that (given the persisting differences in industrial structure between the EU 15 and the NMS 12,[30] and the fact that most of the cross-border commuting flows to the NMS 12 mostly come from other NMS 12 countries and not from the EU 15) cross-border commuting should be particularly relevant for the group of young, male manufacturing workers with intermediate education levels in the NMS 12.

As can be seen from the results (reported in the left hand side panel of table 3.6) this hypothesis is confirmed. The share of cross-border commuters with completed secondary education, working in manufacturing or in elementary occupations or employed as plant and machine operators or crafts, is particularly high among those workers that commute (from one of the EU 27 countries) to one of the NMS 12 countries. At the same time, however, the cross-border commuters that commute to the EU 15 are also more strongly concentrated in these education, occupation and industry groups, than either non-commuters or internal commuters. A clearly better than average occupational, educational and industrial structure can be found among those who commute from an EU 27 country to a non-EU country.

In a second step we also divided commuting flows by place to place categories. Here we focused on all cross-border commuting flows from an EU 15 country to another EU 15 country, cross-border flows from an NMS 12 to an EU 15 country and all other commuting flows (see right hand side panel of table 3.6).[31] We find somewhat more pronounced differences between flows between different EU 15 countries and flows from the NMS 12 to EU 15 countries. In particular cross-border commuters within the EU 15 tend to be substantially better educated than commuters from the NMS 12 to the EU 15. A larger share of them also works in market services and in occupations such as legislators, professionals and technicians. Indeed when comparing the structure of cross-border commuters within the EU 15 (in table 3.6) to that of noncommuters (in table 3.6) we find that aside from the focus on males and younger workers, cross-border commuters within the EU 15 do not differ very strongly from non-commuters. By contrast commuters from the NMS 12 to the EU 15 are much more strongly focused on the secondarily educated on construction.

3.4   The Determinants of Out-Commuting Flows

These results suggest that cross-border commuting flows are small in the EU, but that there is also some variance among regions. Furthermore results on the structure of commuting flows suggest that cross-border commuters - in contrast to internal

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[29] Unfortunately due to the low number of cross-border commuters to the candidate countries from the EU. This group cannot be separately analysed in this case.

[30] As shown by a number of studies (e.g. Huber 2008) the employment structure of the NMS 12 is still much more strongly focused on manufacturing and medium skill level workers than that of the EU 15

[31] This choice was primarily motivated by our aim to obtain magnitudes of flows that can still be considered to be representative.

commuters - in the EU 27 are in general not better qualified than non-commuters and are drawn more than proportionally from manufacturing workers, males and the age group of the 20 to 29 year olds. These characteristics apply even more strongly to the cross-border commuters from and to the NMS 12 than to commuters from and to the EU 15. While these results are largely consistent with the findings from earlier case studies in the literature, they also suggest that cross border commuters – in contrast to migrants – are not as strongly positively selected on education but stem primarily from the intermediate qualification level of the educational spectrum.

In particular, the heterogeneity of cross-border commuting flows found across different sending regions, raises the question of the causes for these differences. This section thus addresses this question by means of a regression analysis.[32] We focus on explaining the extent of outgoing cross-border commuting on a place to place basis. Furthermore this analysis will be used to discuss to what degree cross-border commuting flows from the NMS 12 to the EU 15 (as well as in the opposite direction) are lower than cross-border commuting flows within the EU 15 on account of existing institutional barriers to mobility.

The dependent variable in this regression is the share of commuters (in total employment at the place of residence) moving from one of the 218 NUTS 2-regions of the EU 27 countries[33] considered in this paper to one of 31 European receiving countries in 2006[34]. This variable is regressed on a number of characteristics of the receiving and sending region. In particular, we use (the logged) differences in the unemployment rate and per capita GDP at exchange rates[35] between the sending region and the receiving country since we expect that commuters will predominantly move from low income, high unemployment regions to high income and low unemployment regions. Furthermore we also use the distance between the sending regions' and the receiving country's capital as well as dummies for commuting flows that occur across neighbouring countries and between countries that share the same language as proxies for commuting costs across regions. Given our descriptive results we expect that distance should have a negative impact on commuting flows, while neighbouring countries and regions sharing the same language should experience higher place to place moves. Furthermore, since our descriptive evidence also suggests that moves from the Czech Republic to Slovakia are

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[32] An econometric problem that arises in the estimation of the regression model is that we do not observe any commuting for 87% of all possible sending region – receiving country observations in our data. Thus our data has a very large number of zero flows, which leads to biased results if standard least squares techniques are used. One of the possible alternatives suggested by Nowotny (2007) is to estimate the model by means of a censored regression model, such as the tobit model. This model endogenously handles the fact that observations in the data cannot become smaller than 0 and thus provides a consistent estimate of the sample parameters. We apply this method here.

[33] In principle we would prefer to estimate the model on the basis of region to region flows rather than on region to country flows. This is, however, precluded on account of data quality issues discussed in the first section of this chapter.

[34] Apart from the EU27 countries we also consider Switzerland, Norway, Turkey and Croatia as potential receiving countries, on account of the relatively high share of commuters going to these regions and their vicinity to the EU27.

[35] We prefer using the GDP at exchange rates rather than the GDP at purchasing power parity which is often used in the migration literature, because in contrast to migrants, commuters tend to consume at the place of residence and can thus change the income generated at the place of work at official exchange rates.

exceptionally high for historic reasons, we also include a dummy for commuters between the Czech and the Slovak Republics, which we expect to have a positive impact on commuting flows.

In addition we include a number of sending region characteristics. These aside from a family of sending country dummies (which are intended to capture potential differences in institutions across sending countries) include the (log of the) share of manufacturing, service and construction employment in the sending region and the share of internal commuters commuting from the region. These are included in the regression because the descriptive analysis suggests that cross-border commuters are strongly concentrated in construction and manufacturing and because the presence of a strong centre of attraction for commuters within a country in the vicinity of a region (as would be indicated by high internal commuting shares) may reduce the share of cross-border commuters. We thus expect that the coefficient of the internal commuting variable should be negative.

Finally, we also include a series of dummy variables for whether the cross-border migration flow is from an EU 15 to a NMS 12 country, from the NMS 12 to the EU 15, from EU 15 to non-EU countries and NMS 12 to non EU countries. These variables are the variables of interest when asking whether current NMS 12 to EU 15 cross-border commuter flows are lower than flows within the EU 15 on account of institutional regulations. Since for these variables flows from EU 15 countries to other EU 15 countries are the base category, a statistically negative coefficient on the NMS 12 to EU 15 dummy variable implies that these migration flows are significantly lower than flows across border, while an insignificant coefficient would imply that the hypothesis that these two flows have already assumed similar magnitudes can be rejected.

The results of these estimates (in Table 3.6) suggest that cross-border commuting is indeed significantly associated with differences in GDP per capita between the sending and the receiving region. The coefficient implies that for a region where some commuting is observed a 1% increase in the difference in the GDP per capita between the sending and receiving country increases bilateral cross border commuting flows by 0.25 percentage points. By contrast the differences in the unemployment rates between the sending and receiving has an insignificant impact on bilateral commuting flows, while distance – as expected has a significant negative impact.

Aside from this we also find that - as expected - two regions located in neighbouring countries (given a positive commuting flow) may expect an by 0.9 percentage point higher commuting share than regions located in non-neighbouring countries and that cross-border commuting flows between two regions in different countries that share the same language or are located in the Czech and Slovak Republic are all else equal by 0,5 percentage point and 1.5 points, respectively, higher than cross-border commuting flows between other regions, which reconfirms much of our descriptive analysis. Similarly a higher share in both manufacturing and service sector employment leads to higher cross-border out commuting shares.

Table 3.6: Regression results for place to place out migration shares

	EU 27		EU 15		EU 12	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
Ln gdp difference	-0.00252 **	0.00123	0.00254 *	0.00149	0.00119 ***	0.00037
Ln unemployment rate difference	0.00056	0.00063	0.00075	0.00101	0.00010	0.00036
Ln distance	-0.00085 ***	0.00036	-0.00180 ***	0.00067	-0.00035 ****	0.00010
Share of internal commuters	-0.00672	0.00541	-0.00633	0.00648	-0.01071	0.00737
Manufacturing employment share	0.00021 ***	0.00007	0.00014	0.00032	0.00006 **	0.00003
Construction employment share	0.00033	0.00024	0.00003	0.00042	0.00057 **	0.00023
Service employment share	0.00020 **	0.00008	0.00017	0.00026	0.00005 **	0.00002
Neighboring region	0.00913 ***	0.00310	0.01166 ***	0.00427	0.00398 ***	0.00079
Same language	0.00531 ***	0.00130	0.00665 ***	0.00175		
Czech/Slovak Republic	0.01464 ***	0.00564			0.01143 **	0.00543
EU 15 to EU 12	-0.00468 ***	0.00158	-0.00682	0.00236		
EU 12 to EU 15	-0.00205	0.00264			0.00303 ***	0.00076
EU 15 to non-EU	-0.00176	0.00115	-0.00250	0.00149		
EU 12 to EU 12	-0.00932 **	0.00377				
EU 12 to non EU	-0.00614 **	0.00300			0.00114 *	0.00064
Log Likelyhood	1,690.20		744.04		1,184.66	
Observations	6,600		5,010		1,590	

Notes: Dependent Variable: Share of Region to Country flows in employed at region of residence. Table reports coefficients of a tobit regression analysis of bilateral commuting flows, *** (**) (*) signifies significance at the 1% (5%((10%) level respectively. Coefficient= coefficient estimates S.E: = standard Error

Source: LAMO household surveys 2004/05 and 2006/07, WIFO-calculations

Finally, and probably most interestingly in terms of this study, we find that while – after controlling for other factors influencing cross-border commuting - flows from both EU 15 and NMS 12 countries to non EU countries are significantly lower than cross-border commuting flows within the EU 15, there is no significant difference between EU 15 to EU 15 and NMS 12 to EU 15 flows any more. This implies that our regression results cannot reject the hypothesis that the current number of cross-border commuters from the NMS 12 to the EU 15 (after controlling for other factors impacting on cross-border commuting) are of the same magnitude as could be expected in an unregulated regime as applies to the EU 15 today. This thus questions forecasts that argue strongly for a dramatic increase in cross border commuting after the end of derogation periods on the freedom of movement of labour. Our results, however, also suggest that even after controlling for GDP per capita differences and other factors important for cross border commuting the flows from the EU 15 to the NMS 12 are substantially lower than what may be expected from within EU 15 cross-border commuting flows. Here the estimated coefficient suggests that cross-border commuting flows in this direction are by about 0.5 percentage points too low relative to within EU 15 levels.

While thus relative to the benchmark of within EU 15 flows the NMS 12 to EU 15 cross-border commuting flows do not seem to be significantly lower, Columns 2 and 3 of table 3.6 take this analysis of the differences in the determinants of cross-border commuting a little bit further, by estimating the regression separately for EU 15 and NMS 12 commuting flows. Here we find that these differences are relatively mild. They apply only

to the role of income differentials (which are more strongly associated with cross border commuting flows but with a smaller marginal effect in the NMS 12) and to the role of sectoral specialisation. Higher shares of manufacturing, construction and services in the sending region increase cross-border commuting only in the NMS 12.

3.5   Conclusions

This chapter describes extent and structure of cross border commuting in the EU 27 in order to address a number of questions:

First of all, we were interested in the extent of cross-border commuting in the EU 27. We find that this in general is limited to individual border regions and has a relatively low magnitude when considering the overall European labour market. In the two years observed cross-border commuters accounted for only 0.5% of total employment in the EU. In particular cross-border commuting is of relevance in a small number of border regions, located at the external border of the EU, the German-French and French Belgian borders, on the Austro-German border, at the Czech-Slovak border, in the Baltic countries and in Western Hungary as well as the German Polish border and potentially southern Sweden, which are mostly characterised by strong linguistic, historic or institutional ties, only. In these regions usually more than 1% of the employed commute across borders and may surpass the 5% mark in exceptional cases. For most other border regions outside these "hot spots" out-commuting is below 0.5% of the employed. In sum thus results on the extent of commuting suggest that cross-border commuting flows are small in the EU, but that there is also some variance among regions.

There are also some differences in the importance of cross-border commuting between the EU 15 and NMS 12. In particular, when considering inbound cross-border commuting we find that, as a percentage of the employed in the country of work, NMS 12 countries receive much fewer cross-border commuters than EU 15 countries. In addition when considering outbound cross-border commuting we find that cross-border commuting from the NMS 12 is strongly oriented towards the EU 15 countries rather than non-EU countries. This can be explained by the fact that most non-EU countries that are close enough to the NMS 12 to be destinations for cross-border commuting have substantially lower income levels than the NMS 12. By contrast, outbound cross-border commuting in the EU 15 is more strongly oriented to non-EU countries rather than to the NMS 12. Again, this can be explained by the differences in income levels to nearby non-EU countries.

Second of all we were interested in the structure of commuting flows in the EU with respect to gender, age, occupations and education of cross-border commuters. Our results suggest that cross-border commuters - in contrast to internal commuters in the EU 27 - are not in general better qualified than non-commuter and are drawn more than proportionately from manufacturing workers, males and the age group of the 20 to 29 year olds. Furthermore, these characteristics apply even more strongly to cross-border commuters from the NMS 12 than to commuters from the EU 15. While these results are

largely consistent with the findings of earlier case studies in the literature, they also suggest that cross border commuters – in contrast to migrants – are not as strongly positively selected on educational criteria, but stem primarily from the intermediate qualification level.

Finally, we were interested to what degree cross border commuting flows from the NMS 12 to the EU 15 may be considered as too low relative to cross-border commuting among EU 15 countries. While our results in this respect are subject to a rather unsatisfactory data situation, our finding suggest that - after controlling for other influences on cross-border commuting - flows from the NMS 12 to the EU 15 are not significantly smaller than those among the EU 15 countries, while flows from the EU 15 to the NMS 12 are significantly lower than those among the EU 15. The primary difference in the factors determining cross-border migration in the NMS 12 and the EU 15 seems to be a closer association of cross-border commuting with the industrial specialisation in the NMS 12 than the EU 15.

4 The CENTROPE Region: Economic Background

The findings of this study so far thus indicate that the regional impact of cross-border labour mobility may be particularly strongly felt in urban agglomerations (due to the concentration of migrants in these regions) and border regions (on account of cross border commuting). For the remainder of the study we thus focus on the Austrian-Hungarian-Czech-Slovak border region, which has been considered a primary example of a border regions that may be strongly affected by cross-border labour mobility after enlargement.

In terms of NUTS 3 regions this so called "CENTROPE" region covers the Austrian provinces of Burgenland, Lower Austria, and Vienna, the Czech region of South Moravia, Trnava and Bratislava in Slovakia as well as the Hungarian counties of Gyõr-Moson-Sopron and Vas. Its territory measures over 44,000 square kilometres and it has a population of around 6.5 million inhabitants. In some cases, however, EUROSTAT sources do not provide NUTS3 level data. Thus in this chapter we sometimes also will use NUTS 2 level data. Here, CENTROPE covers the Austrian provinces of Burgenland, Lower Austria and Vienna; the Czech South East planning region; Bratislava and Western Slovakia in Slovakia as well as Western Transdanubia in Hungary (see Figure 4.1). When operating on this NUTS 2 level data CENTROPE thus covers a territory of 66,000 square kilometres and has 8.5 million inhabitants.

Figure 4.1:   The CENTROPE Region

NUTS 2 level definition   Nuts 3 level definition
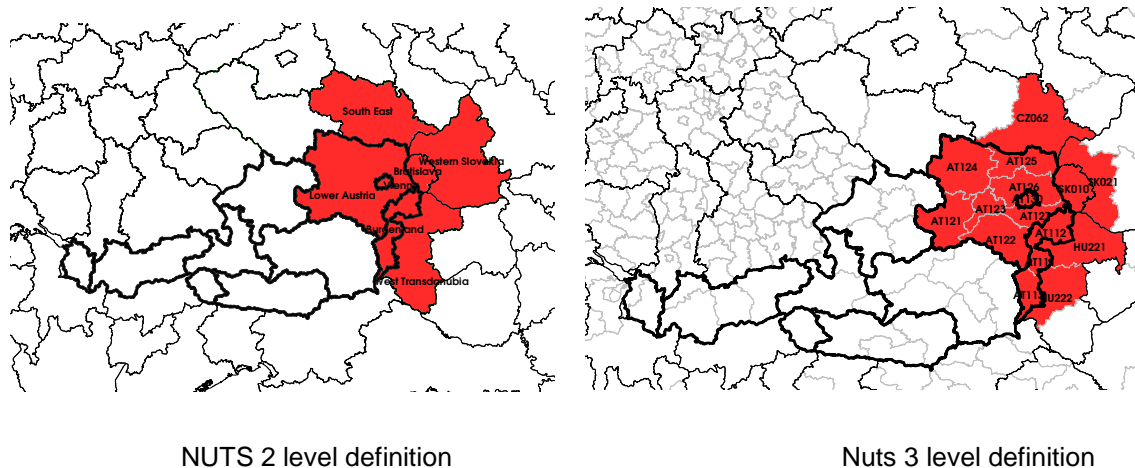
Source: Regiograph, WIFO

Irrespective of the data used, this border region is considered one of the most important transnational economic areas at the former Eastern borders of the European Union. Located at the intersection of four countries, comprising two capital cities (Vienna and Bratislava) as well as several further major cities (Brno and Gyõr) and covering some of the most dynamic regions in the Central and East European countries as well as some of the most prosperous regions within the EU (Vienna), CENTROPE is considered a region of considerable economic potential and a region that could potentially experience

substantial cross-border labour mobility after accession, on account of its vicinity to the border and high urbanisation.

Figure 4.2: Market Potential in the European NUTS 2 Regions
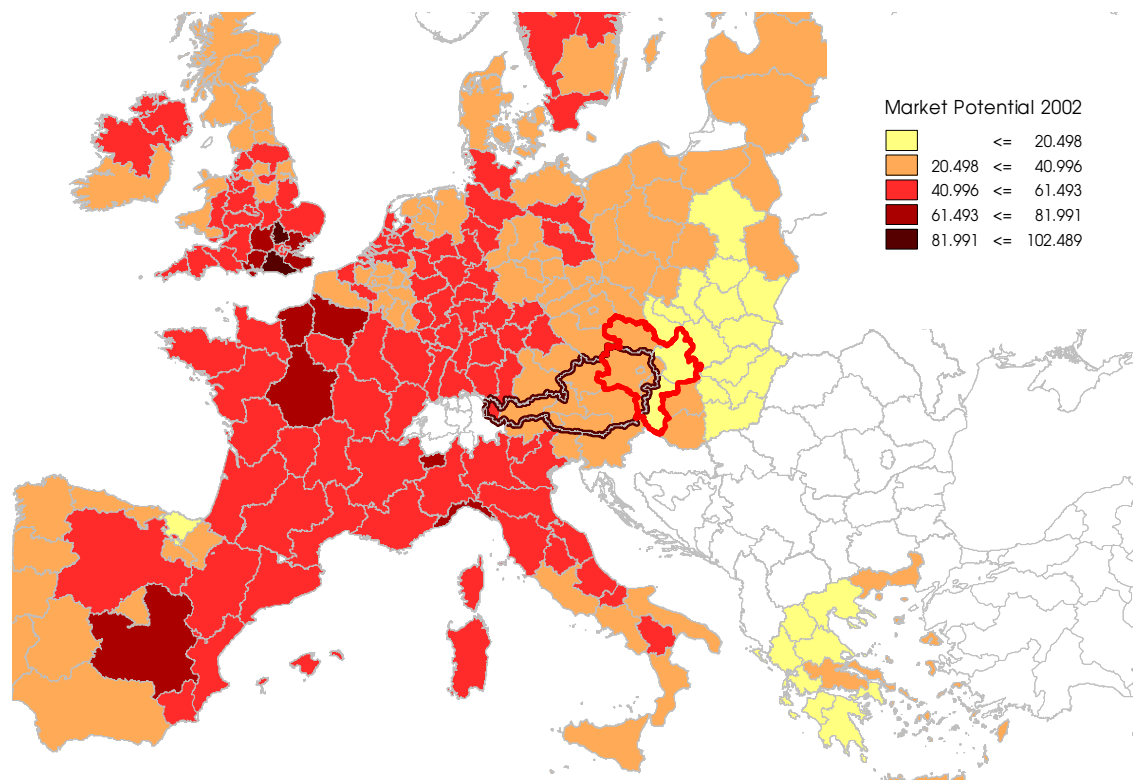
Note: Figure displays the distance weighted demand potential of European NUTS 2 regions.
Source: Eurostat, Feldkircher and Palme (2004)

From a historical perspective, the region was characterised by strong functional ties within a single state up to the early 20th century. It was only the political events of the 20th century which made it a border region. While the reminders of this shared history can still be found in a number of cultural similarities and the existence of minorities in some locations, the current economic and social situation has been more strongly influenced by the experience of the iron curtain and systemic reforms in the formerly communist countries. The experience of almost complete separation of the region along the iron curtain has prevented functional specialisation (for instance along the axis Vienna – Bratislava). It also led to the orientation of infrastructure away from the region (and to the depopulation of many of the more peripheral regions in the area), which in further consequence has led to a number of still existing (and often criticised) bottlenecks in particular in transport infrastructure and in some instances caused a duplication of infrastructure that would not have emerged if the region had developed jointly.

Furthermore, despite favourable conditions, CENTROPE is located in neither the economic nor the geographic centre of Europe. It is also not a central region in terms of

urbanisation. While CENTROPE is in many respects closely linked to the economies of the "twin – capitals" of Vienna and Bratislava, it is not a typical central region in the European context. Its settlement structure on average is not governed by large cities. Much rather – as in much of Central Europe - medium sized towns dominate.

Figure 4.3: Growth of Market Potential in the European NUTS 2 Regions

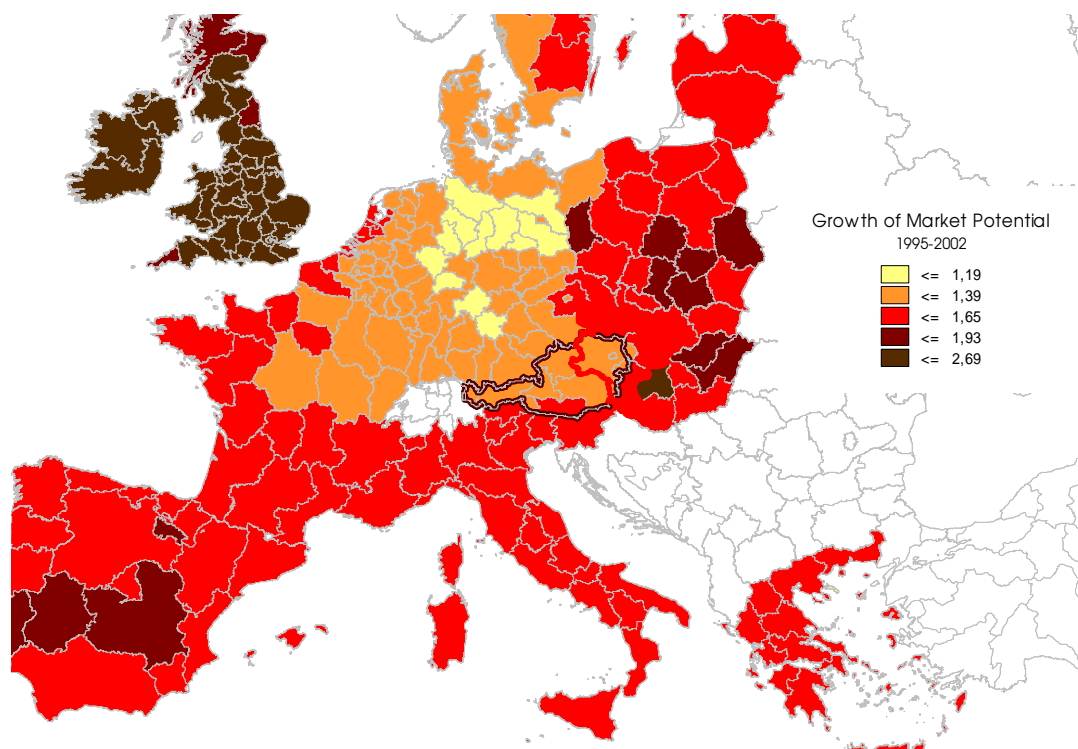

Note: Figure displays the growth of distance weighted demand potential of European NUTS 2 regions.
Source: Eurostat, Feldkircher and Palme (2004)

In terms of accessible demand potential (i.e. the distance weighted GDP of all neighbouring regions) CENTROPE is dominated by more western locations in Europe. This can be seen in Figure 4.2 where the distribution of the accessible demand potential in the EU member states is shown. As Figure 4.2 shows, the regions with the highest accessible demand potential (and thus the central regions of Europe from an economic point of view) are located at the border of France and Germany and in the southern UK. The CENTROPE region by contrast belongs to a large group of regions in the EU that are characterised by an intermediate market potential.

On the other hand CENTROPE is also not a peripheral region.[36] The regions which are characterised by an extremely low accessible market potential in the European Union are

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[36] Only some parts of CENTROPE such as for instance Southern Burgenland, the Waldviertel and parts of Southern Moravia may be considered rural peripheries in terms of national developments.

located further to the East. These regions have also grown more rapidly than the EU average in the last decade. Thus CENTROPE is also located very close to those regions in the EU that have experienced the fastest growth of market potential in the last decades (see Figure 4.3).

The best characterisation of CENTROPE is thus that of a region comprised by strong centres located at the intersection and border of two economically very different territories of the EU. It is a "transitory" region, in which good accessibility from the economic centres of Western Europe and from the rapidly growing Eastern European countries shape comparative advantages. These – as is documented by a number of recent spectacular foreign direct investments – in general lie in a strong industrial base (in particular in ancillary industries such as automotive components), a strong orientation on medium skill and niche products and rapid technological catching up and low wage costs (in particular in the Eastern part of CENTROPE).

Figure 4.4: GDP per capita 2005 at PPS
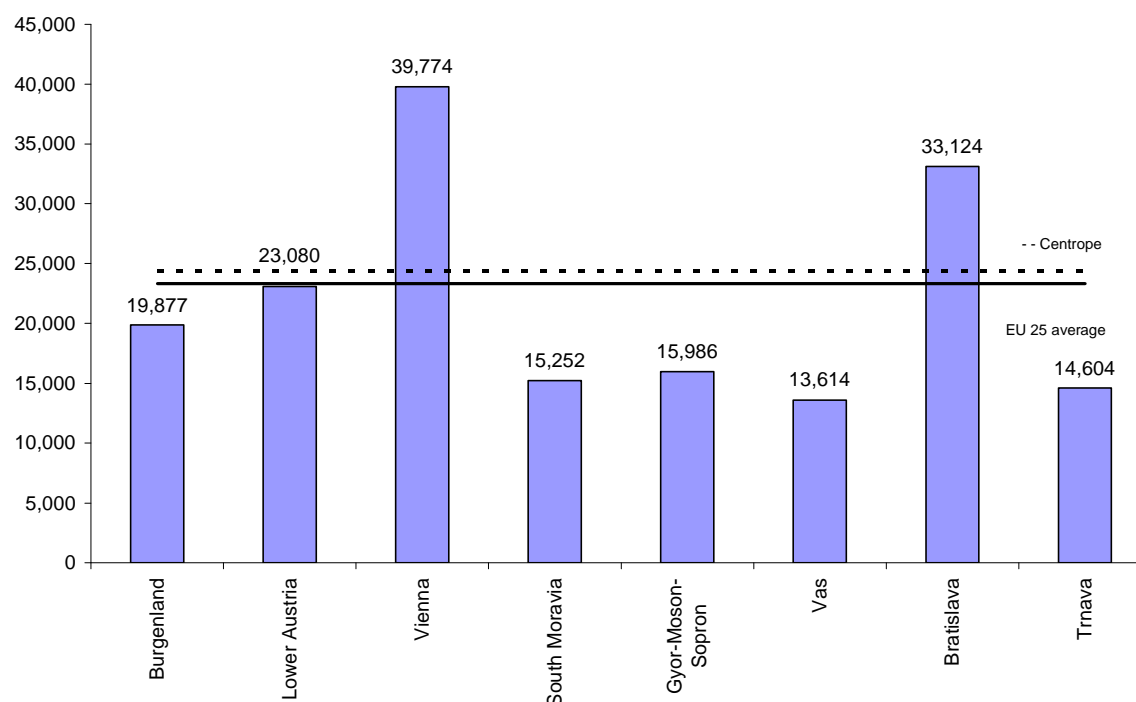
Source: Eurostat.

4.1 Economic development of CENTROPE

4.1.1 GDP and GDP per capita

This implies that the region is characterised by sharp internal disparities. Due to the legacies of the communist regimes the main dividing line within the region was - and still is - the division between the new member states and Austria. While in the Austrian parts per capita GDP approaches or exceeds the EU average, all of the CENTROPE regions in

the new member states - except for Bratislava - currently qualify for Objective 1 status; their GDP per capita is much below the EU 25 average. In the richest region of CENTROPE (Vienna) GDP per capita was at 163% of the average (in 2005), in the poorest region (Vas) it was at 56% of the average (see Figure 4.4).

However, not all differences in CENTROPE follow purely national lines. For instance the capital city of Bratislava can claim a per-capita-GDP that is comparable to the Austrian regions and is above the EU average; Burgenland, on the other hand, has been an Objective 1 region until recently; its GDP per capita is not only below the EU-average but also below the CENTROPE average.

Thus, while there are important national differences within CENTROPE, there is a second important division line between the large urban centres and more rural regions. CENTROPE's favourable economic position, with a GDP per capita slightly above the EU-average, mainly goes back to the "twin cities" of Vienna and Bratislava, while some more rural regions in both the Eastern as well as the Western parts of CENTROPE are clearly lagging behind in this respect.

Figure 4.5: GDP growth 1995/2004

Average annual change in %
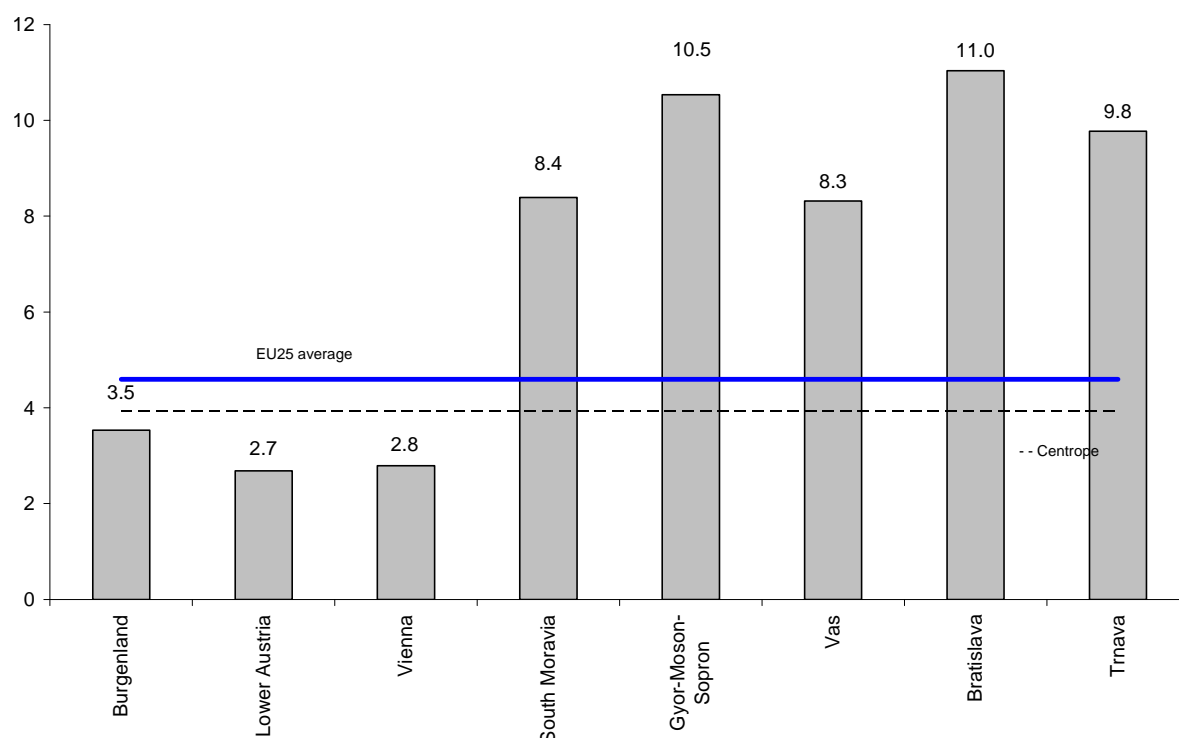
Source: Eurostat, WIFO-calculations

While the new member states regions may be considered poorer than the Austrian regions, they are more dynamic. GDP growth rates in the Czech, Hungarian and Slovak regions of CENTROPE ranged between 8.3% and almost 11.0% and clearly outperformed the Austrian regions (with growth rates between 2.7% and 3.5%). The rapid catching-up process of the Central and Eastern European countries thus makes the eastern part of

CENTROPE more dynamic than the European average. Most recent data from Eurostat (see Figure 4.5) sources suggests that the regions which have shown above-EU average GDP growth within CENTROPE in the last decade are all located outside Austria. The below-EU average growth performance of the CENTROPE region is thus due primarily to the below average performance (and high weight) of the Austrian CENTROPE regions, while the Eastern part of CENTROPE has been characterised by an extremely rapid catching up process, with most of the CENTROPE regions also growing substantially faster than their respective national average.

4.1.2 Specialisation and sectoral structure

These dividing lines within CENTROPE illustrated above are also reflected by the economic structure of the region. Focusing on the sectoral employment and gross value added (GVA) shares in agriculture, industry and services in the NUTS 3 regions of CENTROPE (see Table 4.1) indicates that in total the structure of CENTROPE does not differ significantly from the EU average sectoral structure. The share of agriculture and industry in GVA are both by 0.1 percentage points lower in CENTROPE than in the EU average and the share of services is by 0.2 percentage points higher. These small differences, however, mask the substantial structural heterogeneity within CENTROPE, which once again reflects the dividing lines between the new member states and Austria on the one hand, and the urban regions and other regions on the other hand.

Table 4.1: Sectoral Structure of GVA and Employment in CENTROPE *
(NUTS 3 level 2004)

	Share of Agriculture		Share of Manufacturing		Share of Services		Structural Change[1] (2000-2004)	
	GVA	Empl	GVA	Empl	GVA	Empl	GVA	Empl
Percent								
EU 27	2.2	-	26.2	-	71.6	-	2.0	-
South Moravia	4.0	4.7	35.6	37.5	60.3	57.8	2.1	1.5
Czech CENTROPE	4.0	4.7	35.6	37.5	60.3	57.8	2.1	1.5
Győr-Moson-Sopron	4.4	5.5	45.5	40.3	50.1	54.2	7.5	1.9
Vas	4.8	5.2	44.1	45.1	51.2	49.7	6.8	1.7
Hungarian CENTROPE	4.5	5.4	45.0	42.2	50.5	52.5	7.2	1.3
Burgenland	5.8	6.8	30.4	35.0	63.8	58.3	0.3	1.0
Lower Austria	3.8	4.3	35.7	36.7	60.6	59.1	1.1	1.7
Vienna	0.2	0.6	16.3	14.6	83.5	84.7	2.2	2.6
Austrian CENTROPE	1.7	2.6	23.7	25.3	74.6	72.1	1.8	0.8
Bratislava	0.9	1.6	23.5	22.7	75.6	75.7	3.5	2.7
Trnava	5.7	6.1	49.0	39.5	45.3	54.4	0.4	2.6
Slovak CENTROPE	2.3	3.2	30.9	28.7	66.7	68.1	2.7	1.3
CENTROPE	2.1	3.3	26.1	29.6	71.8	67.1	1.6	1.1

Notes: *excluding extra-territorial organizations and bodies, [1] measured by the index of structural change, which is defined as half the sum of the changes in sectoral shares in the time period 2000 to 2004 with 0 implying no structural change and the maximum value being 100.

Source: EUROSTAT, WIFO-calculations

In general, with the exception of Bratislava, the share of manufacturing in GVA and employment is higher in the CENTROPE regions of the new member states than in the Austrian part of CENTROPE. Only in Lower Austria, which is considered an industrial region in the Austrian context, the share of industry in employment and unemployment

attains a level comparable to that of the less heavily industrialised among the new member state regions of CENTROPE (such as Southern Moravia). In addition, in most of the more heavily industrialised regions within CENTROPE (such as Trnava and the Hungarian regions) the share of industry in GVA exceeds 40%. The exception to this rule is Bratislava, which (as its "twin city" Vienna) has a high share of services in both GVA and employment (and a low share in both agriculture and industry). Still, tertiarisation is much less advanced in Bratislava compared to Vienna, with a difference in the share of service employment of more than 10%.

In addition, most of the new member states regions of CENTROPE (in particular Trnava and - to a lesser extent - the Hungarian CENTROPE regions) have a slightly higher share of agriculture in GVA and employment (which ranges at over 5% for employment and over 4% for GVA shares) than the Austrian regions. However, rural Austrian CENTROPE regions such as Burgenland approach (or even exceed) these shares – thus manifesting the second line of division between the urban and more rural regions of CENTROPE.

In summary, CENTROPE is not only characterised by significant disparities in terms of economic development, but also in terms of sectoral specialisation. The eastern part of CENTROPE is characterised by a substantially higher share of manufacturing in both employment and GVA, while service sectors tend to be underrepresented. This is reconfirmed when moving to NUTS 2 level data (Table 4.2). That the lower service sector share in GVA in the new member state CENTROPE regions applies to almost all service sectors, but is most pronounced in real estate and business services, thus pointing to particular structural deficits in these activities the new member states' regions of CENTROPE.

Table 4.2: Sectoral Structure of GVA in CENTROPE (2004-NUTS II Level)

	Czech South East	West Transdanubia	Burgenland	Lower Austria	Vienna	Bratislava	Western Slovakia
				Percent			
Agriculture	5.6	4.8	5.8	3.8	0.2	0.9	6.0
Industry	31.8	37.9	20.5	26.8	11.2	19.2	39.8
Construction	7.2	5.0	9.9	8.9	5.1	4.3	6.2
Trade	11.5	7.7	9.7	12.9	16.6	15.8	12.4
Hotels and Restaurants	1.8	2.3	4.3	3.0	2.8	1.3	1.3
Transport	9.6	6.9	5.6	7.4	9.0	12.4	6.4
Financial Services	1.5	2.0	5.2	3.8	8.0	11.9	2.0
Real Estate	13.4	13.5	13.9	13.3	23.6	17.3	12.7
Public Administration	5.3	7.7	8.4	6.1	6.5	8.1	4.5
Education	5.1	5.0	6.5	5.4	4.7	2.8	3.5
Health Services	4.3	4.5	6.7	5.7	6.0	2.1	3.4
Other Public and Private Services	2.9	2.8	3.2	2.8	6.1	3.9	1.7
Private Households	0.0	0.0	0.3	0.3	0.2	0.0	0.0

Notes: *(excluding extra-territorial organizations and bodies)

Source: EUROSTAT, WIFO-calculations

4.1.3 Education, R&D and high technology resources

Similarly, the structure of the labour force and infrastructure endowments differ significantly across CENTROPE regions. Aside from national differences in education systems these differences are also closely associated with urbanisation: In general, CENTROPE is characterised by a highly qualified workforce that has its strongholds in the secondary and upper secondary education levels. In particular in the regions of the Czech Republic and Slovakia over 90% of the workforce have a completed secondary education. The share of population with a tertiary education is, however, below the European average in all regions but the capital cities of Vienna and Bratislava, where around a quarter of the workforce has completed tertiary education. High shares of the workforce with only a completed primary education can only be found in some of the Austrian provinces. Infrastructure endowments, accessibility and innovation indicators tend to follow these patterns. In particular, indicators of R&D activity (such as R&D expenditures, patents per 1000 inhabitants) and infrastructure quality are clearly above the EU averages for the large agglomerations (in particular Vienna and Bratislava), but not for the more peripheral regions.[37]

Figure 4.6: Structure of the Workforce in CENTROPE 2006
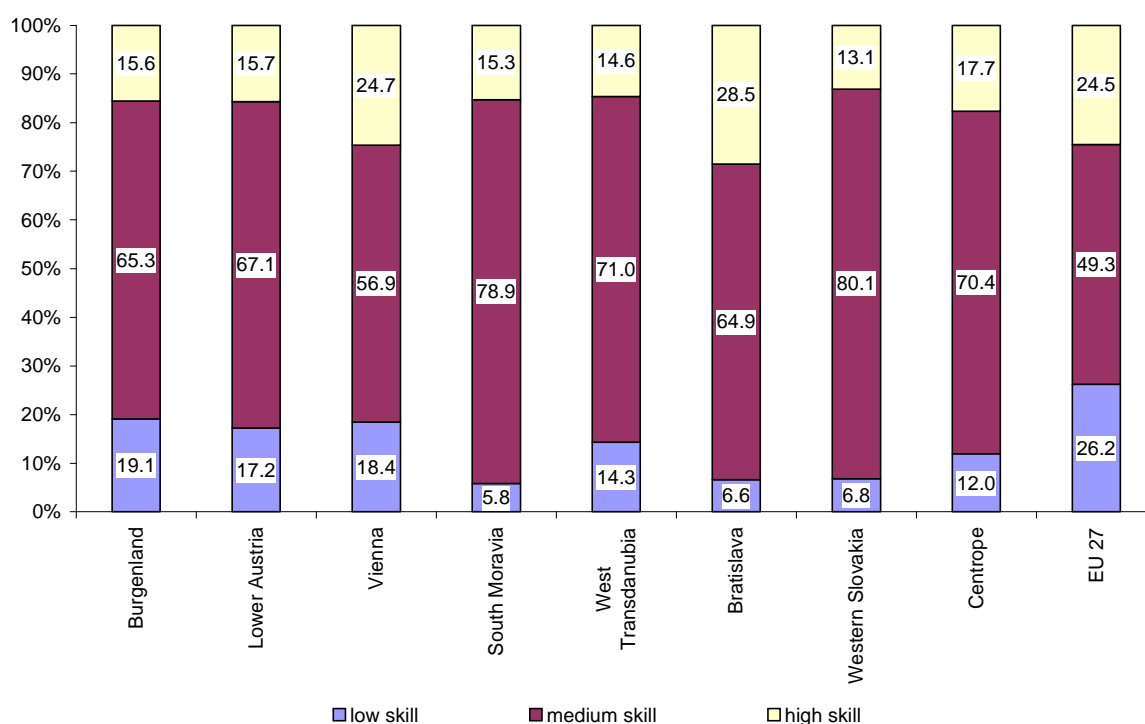
Note: High skill –ISCED groups 0-2, Medium Skill – ISCED Groups 3-4, High Skill – ISCED Groups – 5 or more
Souce: Eurostat

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[37] Among the CENTROPE regions, however, both the capital city of Bratislava and the other CENTROPE regions rank below Vienna in terms of R&D expenditure. This suggests that cross border co-operation in R&D could potentially create additional value added to the region.

4.2 Cross border flows

4.2.1 Cross–border enterprise co-operation

One area of substantial progress in recent years was economic integration: Trade between the CENTROPE countries has grown well above the EU average since the 1990's, and by now for each of the CENTROPE countries the other countries in the region belong to the list of the most important trade partners. In addition, Austria and particularly the city of Vienna have profited substantially from Austrian foreign direct investments going to the new member states of the European Union (e.g. in the banking sector). These investments have changed the long term capital account in Austria over the last 20 years. While at the end of the 1980's Austria was a net importer of capital, since 2004 Austria has a capital account surplus, with Austrian firms investing more abroad than foreign firms invest in Austria.

Table 4.3: Cross-border Enterprise Cooperation in the CENTROPE region

	Form of Enterprise Relationships							
	Bought/Founded enterprises			Delivery Networks		Others	At least one	
	Founded Enterprise	Bought Enterprise	Part of Enterprise	Buy Products	Buy Services	Other Cooperation	Of any kind	N
	In percent							*Absolute*
Vienna	6.7	3.0	4.2	16.6	10.4	16.6	25.0	404
Lower Austria	3.4	1.0	3.8	14.3	7.8	9.2	18.4	293
Burgenland	5.1	0.0	2.5	12.7	10.1	17.7	29.1	79
Czech CENTROPE	2.0	0.3	0.6	10.6	4.2	9.2	21.6	357
Slovakian CENTROPE	6.3	1.2	3.9	15.6	14.8	25.4	35.9	256
Hungarian CENTROPE	0.6	0.6	1.2	20.7	12.4	20.1	30.8	169
Total CENTROPE	4.2	1.3	2.8	14.9	9.4	15.4	25.6	1,558

Notes: N= Sample size

Source: LAMO, Huber et al, 2007

This increased cross-border co-operation in the enterprise sphere is also documented in recent questionnaire based evidence on cross border enterprise co-operation in CENTROPE (see: Huber et al, 2007, and Table 4.3). According to this evidence around one quarter of all enterprises in CENTROPE have at least one cross border relationship with another enterprise in the form of (partial) ownership, delivery or other forms of co-operation. Furthermore, a more detailed analysis of the cross border enterprise networks suggests that:

1. Cross-border delivery networks and other forms of co-operation are well established in CENTROPE by now. Around 15% of the interviewed enterprises stated that they have bought products from suppliers from across the border and 9% have bought services from such suppliers. This form of co-operation is particularly common in the Hungarian CENTROPE. Around 15% of the enterprises hold other forms of co-operation, which may range from loose forms of co-operation to R&D networks as well as contractual forms of co-operation like franchising.

2.   Relationships based on ownership seem to be somewhat less frequent by contrast. Less than 5% of all interviewed enterprises stated that they (partially) owned or founded an enterprise in another country of CENTROPE. Furthermore, these relationships are more concentrated in the capital city regions. Since most headquarters are located in capital city regions, this form of co-operation is particularly akin to these regions. Thus the highest share of such relationships is found in Vienna and in the Slovak part of CENTROPE.

4.2.2 Cross–border labour market mobility

While integration in the enterprise sphere is progressing rapidly, the CENTROPE region is still less integrated compared to regions within one country. In particular, cross-border exchange in the labour market (migration and commuting) still remains limited due to existing institutional impediments and bottlenecks in infrastructure. This can be exemplified using migration data from Austria (see Table 4.4). In total, less than 11% of the foreign workers (and less around 1.5% of employees) in Austria are from the CENTROPE countries. The only region where workers from the CENTROPE countries represent a sizeable group of the labour market is Burgenland. This is also due to a special institutional arrangements (the so called "Grenzgängerabkommen") between Austria and Hungary, which allows Hungarians to commute to Austrian border regions according to a quota.

Table 4.4: Employees from CENTROPE-countries employed in Austria in 2006

	Vienna	Lower Austria	Burgenland	Total Austrian CENTROPE
	Absolute			
Hungary	2,582	2,817	5,543	10,942
Czech Republic and Slovakia	4,212	5,177	561	9,950
Total Foreign employees	123,950	54,312	10,705	188,967
Total Employees	763,871	541,863	86,248	1,391,982
	Percent			
Total CENTROPE in % of foreigners	5.5	14.7	57.0	11.1
Total CENTROPE in % of Employees	0.9	1.5	7.1	1.5

Source: Austrian Social Security, WIFO-calculations

4.3 Labour Market Development of CENTROPE

4.3.1 The structure of employment and unemployment rates in the NUTS 2 regions of CENTROPE

Considering the labour market in a European context, CENTROPE can be considered a region with relatively low unemployment rates and intermediate or slightly higher labour

market participation. Vienna, Vas, Trnava and South Moravia had unemployment rates between 7% and 9%, with Vienna and Trnava showing an unemployment rate above the EU25 average in 2006 and South Moravia and Vas having an unemployment rate which was around 1 percentage point below the EU-average. All other CENTROPE regions had unemployment rates substantially below the EU average (of 8.3%), ranging between 4% and 5% (Figure 4.7).

Thus, relative unemployment rates follow the standard lines along which regional disparities develop in CENTROPE to a much lesser degree than indicators of regional development. In particular there is no clear indication that the CENTROPE regions of the new member states of the European Union have unambiguously higher or lower unemployment rates than the Austrian CENTROPE regions. Both the region with the lowest unemployment rate (Győr-Moson-Sopron, which, together with Lower Austria, had an unemployment rate of 4.3% in 2006) and the region with the highest unemployment rate in CENTROPE (Trnava, 8.8%) are located in the new member states of the EU.

Figure 4.7: Unemployment rate 2006

In %
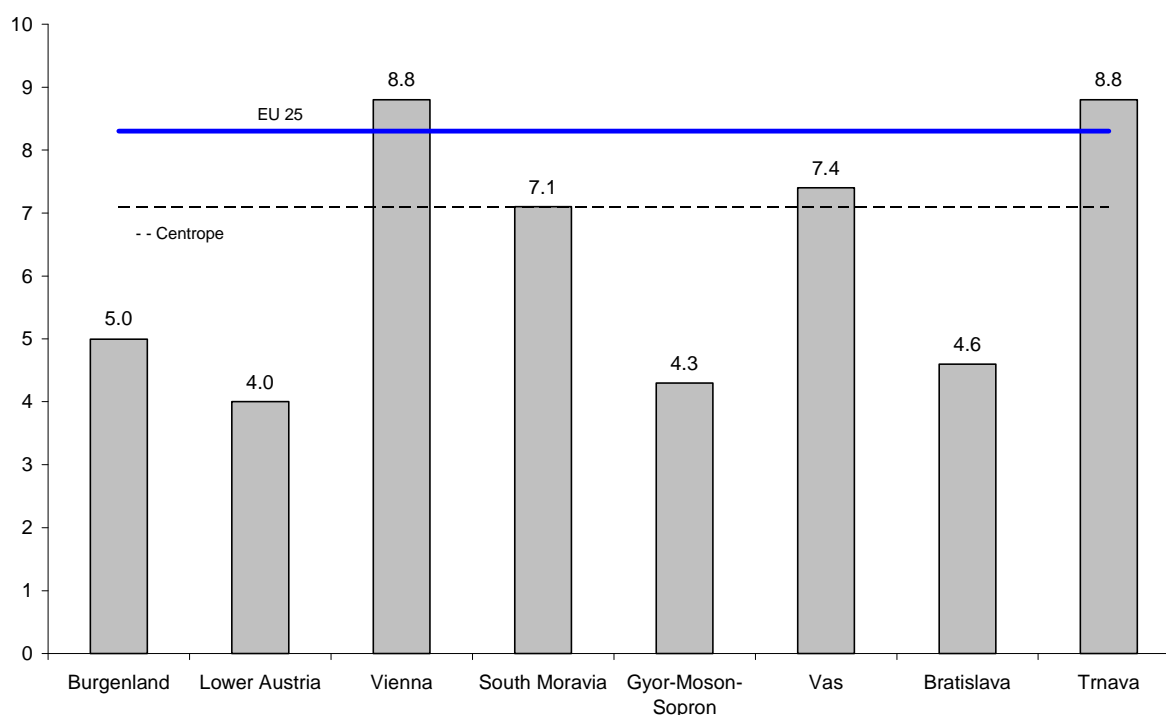
Source: Eurostat

In addition, there is no clear indication of a urban – rural unemployment rate differential in CENTROPE. Vienna is one of the regions with one of the highest unemployment rates in CENTROPE, while Bratislava is one of the regions with relatively low unemployment and the regional unemployment rate is largely independent of sectoral specialisation. The coefficient of correlation of the regional unemployment rate with the share of agriculture, industry and services in total employment in the region is very low (with -0.03, -0.08 and

0.08, respectively), which suggests that there is no close (linear) relationship between regional unemployment rates and sectoral specialisation.

Analysing labour market developments in more detail suggests that regional labour market disparities in CENTROPE are closely related to a number of more latent national and institutional differences between the countries. For example, regional employment rates suggest that in a number of regions of CENTROPE low unemployment rates are accompanied by low employment rates. This implies that low unemployment is due to low labour market participation. Especially in the Hungarian regions, despite below average unemployment rates, employment rates are below the EU 25 average (of 64.6%). In Western Slovakia employment rates are the lowest among the CENTROPE regions, despite high unemployment rates (see Figures 4.8 and 4.9).

In general, however, the average employment rate in CENTROPE is 65.9% and thus exceeds the European average of 64.6% in all regions but Western Transdanubia (62.1%) and Western Slovakia (62.3%;). The highest shares were to be observed in Lower Austria (71.5%), Bratislava (69.8%) and Burgenland (69.5%).

Another difference in the regional labour markets of CENTROPE, which may distort regional unemployment rates, relates to the share of part time employment. This may have an impact on unemployment rate statistics, since a larger share of part time employed -ceteris paribus- implies lower average working hours per employed. Thus for a given volume of working hours more people will be employed (and fewer unemployed) as the share of part time employment increases.

Table 4.5: Share of Part Time Employment in Total employment in the CENTROPE-regions (2006)

	Total	Male	Female
	Percent		
EU 27	17.9	7.6	30.8
Burgenland	19.8	4.3	39.4
Lower Austria	21.0	5.6	39.8
Vienna	21.5	10.6	33.8
Czech South-East	5.5	2.6	9.4
West Transdanubia	2.7	1.6	4.2
Bratislava	3.6	1.7	5.7
Western Slovakia	2.5	1.3	4.1

Source: EUROSTAT, European Labour Force Survey

Figure 4.8: Employment Rate 2005

In %
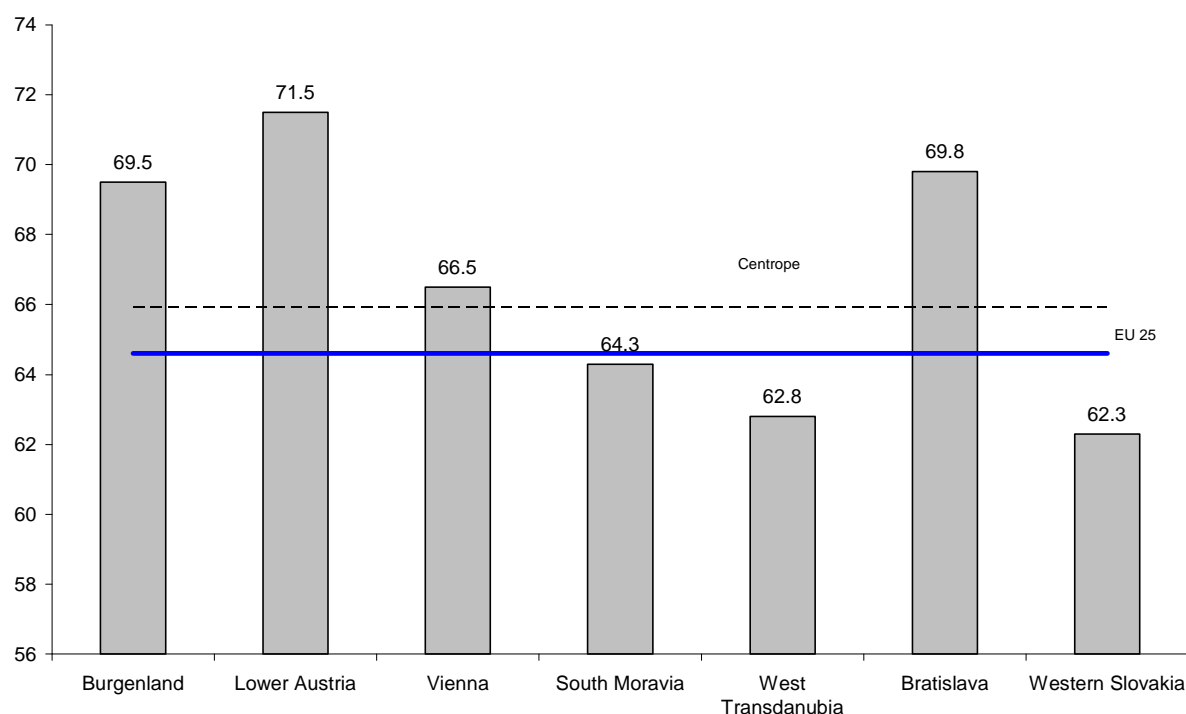
Source: Eurostat.

In this respect the labour markets of the new member states of the EU are characterised by a substantially lower share of part time employment than the EU 15. This difference also applies to the CENTROPE regions of these countries (see Table 4.5). While in the Austrian CENTROPE the share of part time employed in total employment ranges between 21.5% (Vienna) and 19.8% (Burgenland) and is thus above the EU average (this difference arises primarily due to the higher share of females in part time employment), the regional labour markets of the new member states have part time employment shares which are substantially lower than the EU average.

Aside from this, the structure of unemployment and employment rates in CENTROPE varies substantially across regions. Given the low overall unemployment rates, the share of long term unemployed is relatively high in most of the new member states' regions of CENTROPE and low in the Austrian CENTROPE. In the year 2006, despite a favourable macro-economic development of the regions in question, the share of long term unemployed increased in all of the new member states regions of CENTROPE except for Bratislava (where a spectacular seven percentage point reduction was achieved), while the share of long term unemployed in total employment reduced in all of the Austrian CENTROPE regions. Furthermore, none of the new member state regions had a share of long term unemployed in total unemployment which was below the EU27 average. The Austrian CENTROPE regions, by contrast, have a share of long term unemployed in total employment that is 10 percentage points below the EU-average. For the new member states, this indicates a severe mismatch problem of the qualifications of the unemployed

with the requirements of prospective employers, as would be expected in economies with the speed of restructuring of the new member state regions of CENTROPE.

Table 4.6: Share of Long Term Unemployment in Total Unemployment in the CENTROPE-regions

	2002	2003	2004	2005	2006
			Percent		
EU 27	45.3	46.1	45.3	46.1	45.8
Burgenland	19.2	29.0	34.3	29.0	27.6
Lower Austria	26.1	27.2	30.4	27.6	27.0
Vienna	36.2	39.3	38.0	29.7	34.0
Czech South-East	47.1	45.1	48.4	50.3	52.0
West Transdanubia	39.0	34.4	38.3	40.1	47.1
Bratislava	53.3	46.9	46.7	39.1	55.1
Western Slovakia	69.8	66.3	68.5	69.6	72.8

Source: EUROSTAT

Figure 4.9: Employment Share of the Elder 2006, Age 55 to 64, in %
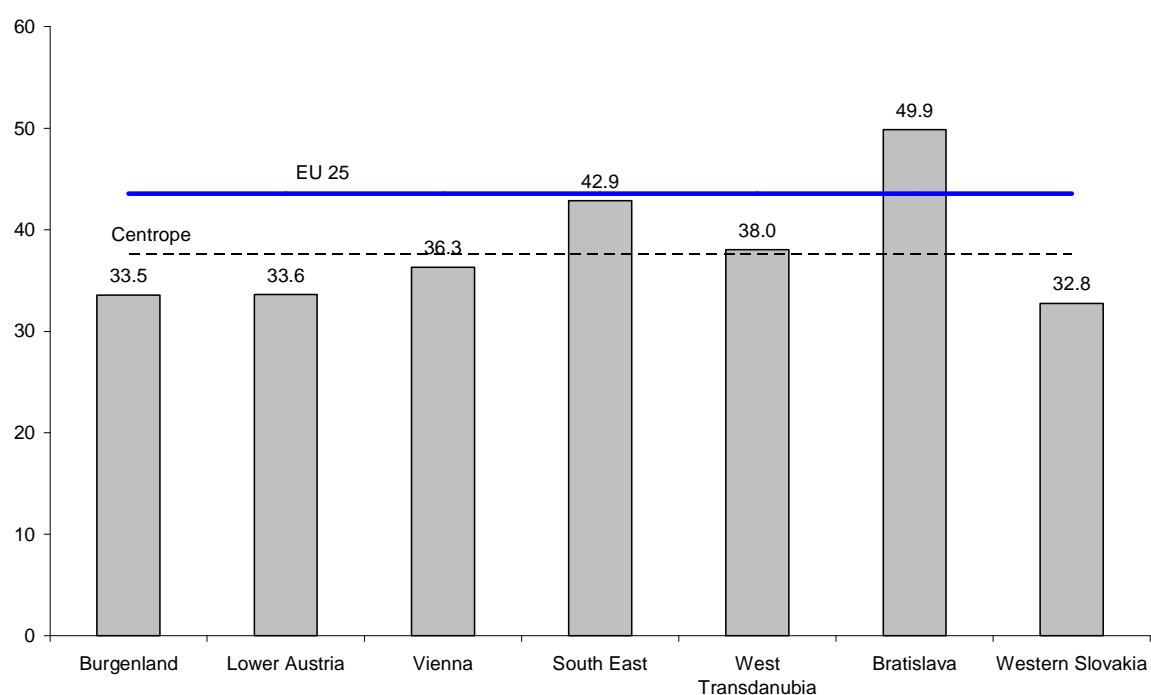
Source: Eurostat

Figure 4.10: Unemployment rate of the Younger 2006

Age 15 to 24, in %
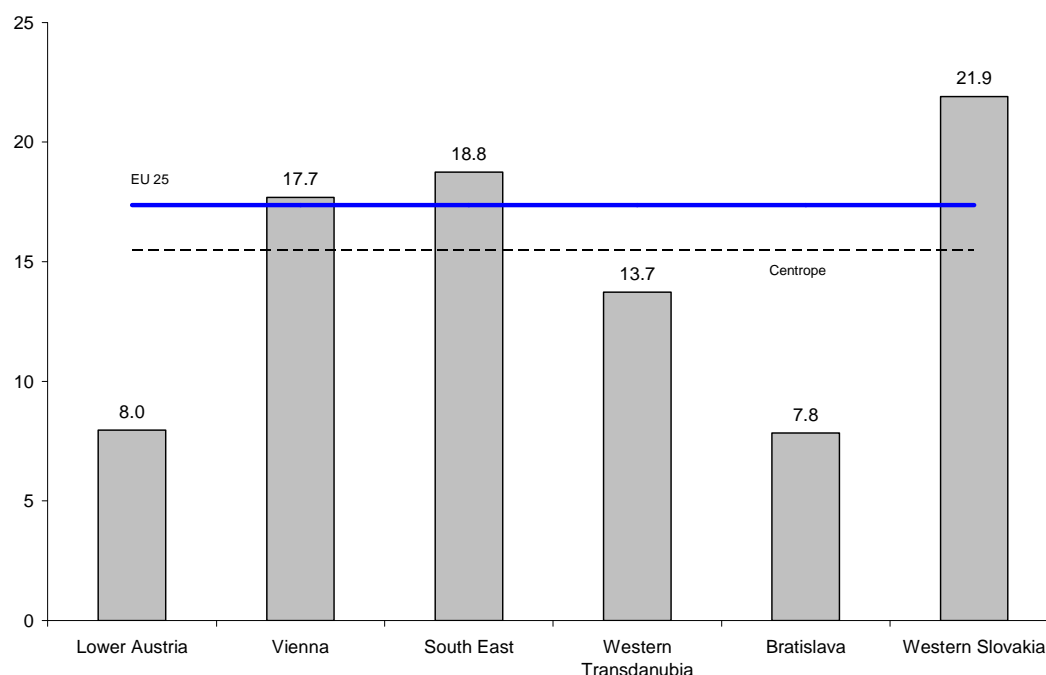
Note: Due to the small sample size for the Burgenland the Youth unemployment rate for this region is not reported in Labour Force Survey data

Source: Eurostat

Additional labour market problems specific to CENTROPE may be summarised as follows:

- Due to a history of early retirements and the downsizing of the labour force associated with industrial restructuring, employment rates of the elder (i.e. those aged 55 and older) are low relative to the EU level in four of the seven regions (see Figure 4.9). In Bratislava (49.9%) the rate is above the European average of 42.5%, in the Czech South East (42.9%) it does so only slightly. In all Austrian regions, where early retirement was particularly popular until recent changes in the pension system, employment rates of the elderly are around 35%; they are even lower in West Slovakia with 32.8%.

- Aside from low employment rates of the elderly, youth unemployment rates are above the EU-average in Vienna, the Czech South East and West Slovakia, but below this average for the CENTROPE as a whole. In Bratislava and West Transdanubia regional youth unemployment rates are substantially below the EU average and the total youth unemployment rate in CENTROPE is below the EU average

- Finally, in a number of the new member states' regions of CENTROPE traditionally low gender gaps in employment rates have rapidly increased in the last years. However, Trnava is still the only CENTROPE-region where the unemployment rate of females (as well as that of males) is above the European average; in Vienna the rate of male unemployed is higher than the European average; in Trnava the same

applies to the female unemployment rate. In all other CENTROPE regions, both male and female unemployment rates are below the average of the EU 25.

Figure 4.11: Unemployment Rate by Gender 2005

In %
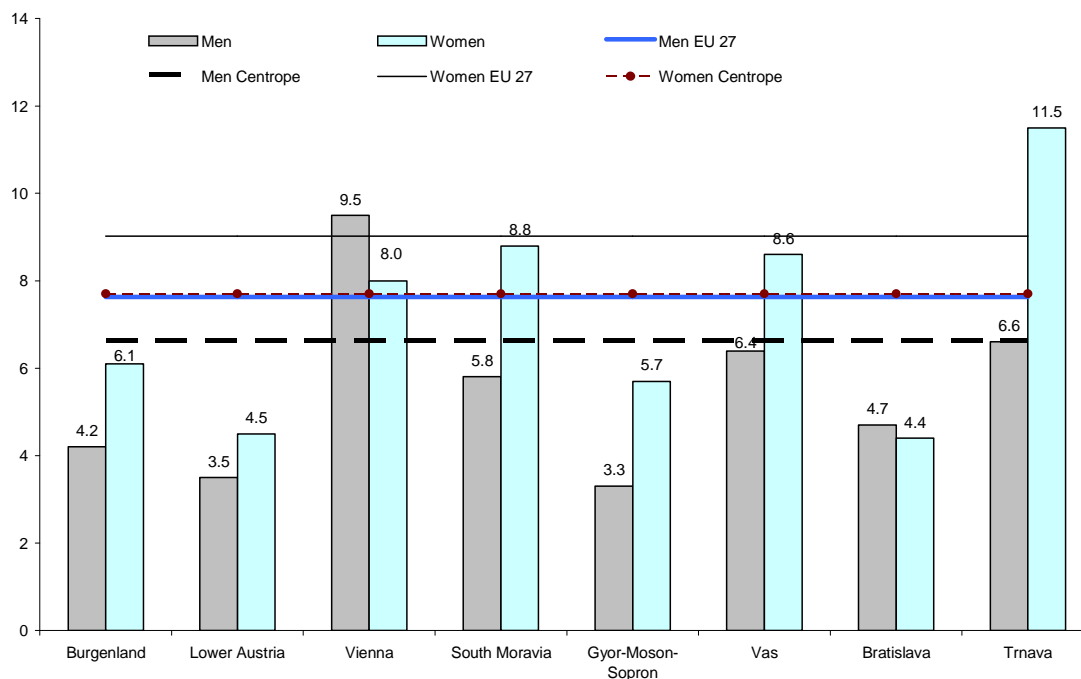
Source: Eurostat

4.3.2. Development of unemployment and employment rates

Aside from being relatively favourable, the labour markets of the CENTROPE region have also been very dynamic in recent years. These dynamics have to a large degree been characterised by country specific developments.

- Among the CENTROPE regions in particular the Slovakian regions experienced a substantial decline in regional unemployment rates in 2005: In Trnava the unemployment rate decreased by 2.7 percentage points and in Bratislava the reduction was – 0.7 percentage points. Especially in Trnava declining unemployment rates also seem to be of a long run nature. Since reaching an all time high of 18.1% in 2001 unemployment rates have continually declined by more than one percentage point each year. In the Slovak regions all other labour market indicators also improved most noticeably among the CENTROPE regions: youth unemployment decreased in both NUTS 2 regions of the Slovak CENTROPE and employment rates increased both for the aggregate as well as for males, females and the elder (although these developments were stringer in Western Slovakia than in Bratislava)

Figure 4.12: Unemployment rates and their development in CENTROPE

In %
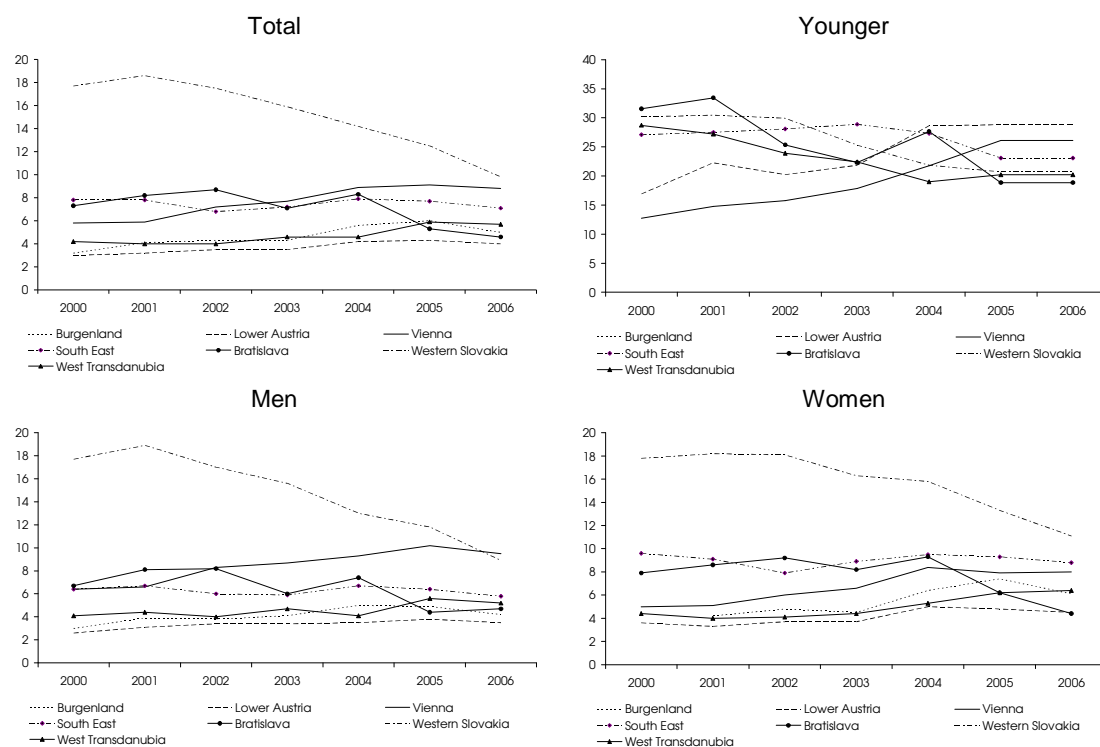
Source: Eurostat

Figure 4.13: Employment rates and their development in CENTROPE

In %
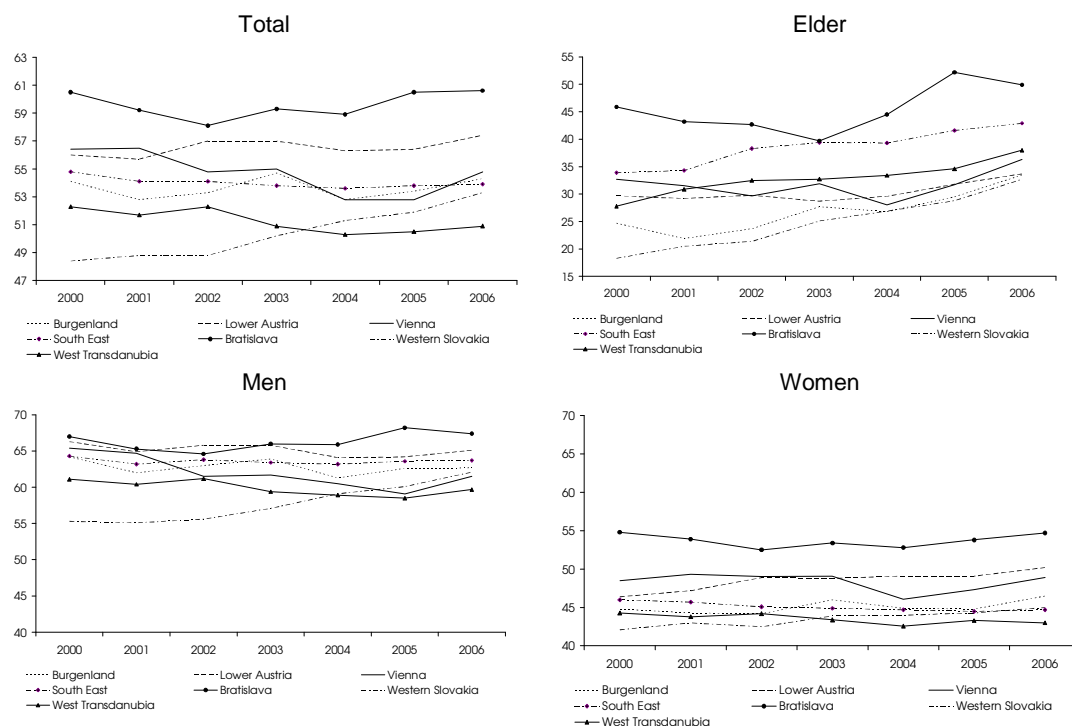
Source: Eurostat

- A moderate decline in unemployment rates was also registered in the Czech South East, where in 2006 reductions in unemployment – after being solely due to the decline in male unemployment in 2006 – were also achieved with respect to female unemployment.

- The Hungarian CENTROPE, by contrast, was characterised by a more modest decrease in unemployment rates in 2006 (by 0.2 percentage points) after having experienced a 1.3 percentage point increase in 2005.

- Finally, in Austria, too, regional unemployment rates decreased in all of the Austrian provinces, with the largest decrease in Burgenland (-1.0 percentage points) and a more moderate decline of (-0.3 percentage points each) in Vienna and Lower Austria.

5 Cross-Border Migration and Commuting Potentials in the CENTROPE Region

The CENTROPE region on account of its vicinity to the border, high regional disparities and high urbanisation may thus be considered as a primary example of a border region that could be strongly affected by cross border labour mobility after the end of transitional periods. This as a first question raises the issue of , how many people in the region may be willing to migrate or commute across border in the regions. The individual level data we use to address this question were collected within the scope of the Austrian "Labour Market Monitoring" (LAMO) project (see Hudler-Seitzberger Bittner, 2005, Huber – Mayerhofer – Nowotny – Palme, 2007). The aim of this project was to gain information on the willingness to commute and migrate in the Central European "CENTROPE" region, which encompasses the eastern provinces of Austria (Vienna, Lower Austria and Burgenland) as well as the southern parts of the Czech Republic (South Moravia, and Vysočina) and the western Slovakian (Bratislava and Trnava) and Hungarian regions (Győr-Moson-Sopron, Vas and Zala) bordering on Austria. The data were collected in two waves (with the first one taking place between November 2004 and February 2005, the second between November 2006 and February 2007) using personal face-to-face interviews in the Hungarian, Slovak and Czech regions of "CENTROPE" and (only in the first wave) in the Austrian provinces of Vienna, Burgenland and Lower Austria. In both waves, 15,791 individuals were interviewed, 11,693 of them living in the "CENTROPE" regions of the new member states (see table 4.1). According to the sampling plan, random quota sampling was applied to the working-age population of age 15 and older. Quotas were set by municipalities following a spatial analysis of the region. Municipalities were chosen based on characteristics such as municipality size, population growth and structure, employment growth and unemployment rates as well as accessibility. Within the municipalities, random sampling was applied. [38]

These data are especially suitable for our analysis for two reasons: first, they consist not only of information on the willingness to migrate and commute in view of the end of the transitional period which currently restricts the free movement of workers from the Central and Eastern European EU member states, but also include a large set of personal variables which allows us to model mobility decisions based on individual characteristics. In addition to socio-economic characteristics respondents were also asked questions concerning their previous migration and commuting experiences, their plans for future cross-border mobility, their expectations concerning a workplace abroad and their motive for staying at home or being mobile. This allows us to differentiate between migration and commuter potentials, but also to analyse the difference in structure between these two groups. Secondly, in the literature the "CENTROPE" region has been repeatedly mentioned as the region at the former external border of the EU that will be most

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[38] The underlying sampling plan was designed on the basis of an in-depth background analysis of the regional structure (*Krajasits et al.*, 2005). The survey is representative of the CENTROPE population over 15 years of age.

strongly affected by commuting. It can thus act as a model region for analyzing planned cross-border labour mobility after enlargement.

In the interviews, respondents were asked a number of questions concerning their future cross-border mobility plans. Interviewees were asked "Would it be conceivable for you to work abroad?" to which respondents could answer "yes" or "no". Furthermore, they were asked whether they would prefer (1) "daily commuting", (2) "weekly commuting", (3) "monthly commuting" or (4) "living and working abroad". In subsequent questions, respondents were also asked which country they would prefer to work in and if they had already taken concrete steps towards working abroad.[39]

Table 5.1: Sample size of the LAMO household survey by waves and subregions

	Year of observation		
	2004-2005	2006-2007	Total
	Absolute		
Austria	3,992		3,992
Vienna	1,955		1,955
Lower Austria	1,675		1,675
Burgenland	362		362
New EU member states	5,991	5,641	11,632
Czech Republic	2,996	2,901	5,897
Slovakia	1,550	1,484	3,034
Hungary	1,445	1,256	2,701
Total	9,983	5,641	15,624

Source: LAMO household surveys 2004-2005 and 2006-2007

Based on these questions and following Fassmann Hintermann (1997) as well as the literature on questionnaire-based mobility surveys, various concepts of migration and commuting potentials were defined and progressively narrowed: Aside from "general" and "expected" migration and commuting potentials, "real" migration and commuting potentials are also defined.

1.   Migration potentials:

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[39] During the interview, respondents were asked: "Have you already taken concrete steps to realize your goal of working abroad? " If they reported to have collected information on their preferred receiving country, taken a training course, sold their belongings, learned the receiving country's language, applied for a job, a work or residence permit abroad, found an accommodation or do already have a prospective job the respondents were registered as having taken concrete steps towards working abroad.

- o The "general" migration potential includes individuals who do not currently work abroad, but consider seeking a job there (or would consider doing so if there were no transitional periods), and would also move their residence abroad, returning home more often than once a month.
- o The "expected" migration potential consists of those in the general migration potential who have either already collected information about their respective target country, have taken training courses, learned the language, applied for a residence or work permit or for a job or who have a confirmed job offer or a place to live.
- o The "real" migration potential comprises only those in the expected potential who have already applied for a residence or work permit or a job or even have a confirmed job offer or a place to live abroad[40].

2. Commuting potentials

- o The "general commuting potential" includes all persons who currently do not work abroad, but consider seeking a job there (or would consider doing it if there were no transitional restrictions), but who intend to commute from their current residence to their workplace abroad on a daily or weekly basis.
- o Those in the general commuting potential who have either collected information about their respective target country, taken training or language courses, applied for a residence or work permit or for a job or who already have a confirmed job offer belong to the are counted among the "expected" commuting potential.
- o The "real" commuting potential has an even narrower definition. It refers only to those from the expected commuting potential who have either applied for a job or a work permit or already have a confirmed job offer.

3. Mobility potentials

Finally, there is also a "general mobility potential", which includes both the general migration and the general commuting potentials. Similar definitions of the "expected" and "real mobility potential" can be derived from the expected and real migration and commuting potentials[41].

5.1 Migration and commuting potentials

When applying these concepts to the LAMO data (table 4.2), the general mobility potential for 2006-2007 amounted to approximately 16.6%. As expected, the share of persons in the expected mobility potential is much smaller and amounts only to 5.2%, the real mobility potential to 2.1%. Between 2004-2005 (22.3%) and 2006-2007, the

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[40] The real migration potential in this sense has a slightly broader scope than its counterpart in the study by *Fassmann - Hintermann* (1997). The same applies to the real commuting potential.

[41] The concepts of "mobility potentials" are thus analogous to the "migration potential" concept of the study of *Fassmann - Hintermann* (1997). However, the "migration potential" in this study includes only those willing to migrate, not commuters.

general mobility potential decreased significantly[42] by more than 5 percentage points. The expected mobility potential also declined significantly by approximately 3 percentage points. The real mobility potential, by contrast, remained unchanged at 2.1%.

Analysing the migration and commuting potentials separately reveals that the general migration potential comprised around 10.9% of the population in the NMS-regions of CENTROPE age 15 or older in 2006-2007, while 5.6% generally considered commuting across the border. Here, too, the expected and real potentials are substantially lower: The expected migration potential amounted to 3.8%, the real potential only to 1.3%. The expected commuting potential represents 1.4% of the population, the real commuting potential only 0.8%.

The decrease in the general mobility potential registered between 2004-2005 and 2006-2007 is thus mainly attributable to a more than 4 percentage point decline in the general commuting potential. The general migration potential also decreased over time, but by only 1.5 percentage points. The expected migration and commuting potentials were also significantly lower in 2006-2007 than they were in 2004-2005. The minor changes in the real migration and commuting potentials, however, are not statistically significant.

Table 5.2: Migration, commuter and mobility potentials in selected CENTROPE-regions

	Total NMS-regions		Czech Republic		Slovakia		Hungary	
	2004-2005	2006-2007	2004-2005	2006-2007	2004-2005	2006-2007	2004-2005	2006-2007
	As a percentage of responds							
Migration potential								
General	12.4	10.9	10.7	9.9	20.0	12.0	7.5	12.0
Expected	4.9	3.8	3.6	3.3	9.4	5.5	2.8	2.7
Real	1.4	1.3	1.5	1.0	1.9	2.1	0.8	1.3
Commuting potential								
General	9.9	5.6	5.1	3.8	17.4	2.7	12.0	13.3
Expected	3.0	1.4	1.1	1.2	6.0	0.7	3.9	2.7
Real	0.7	0.8	0.3	0.7	1.7	0.3	0.6	1.4
Mobility potential								
General	22.3	16.6	15.9	13.8	37.4	14.7	19.5	25.3
Expected	8.0	5.2	4.7	4.5	15.4	6.2	6.8	5.4
Real	2.1	2.1	1.8	1.7	3.6	2.4	1.3	2.6
	Absolute							
No. of observations	5,991	5,641	2,996	2,901	1,550	1,484	1,445	1,256

Source: LAMO household surveys 2004-2005 and 2006-2007, WIFO-calcuations

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[42] Unless stated otherwise, the following discussion assumes a significance level (probability of error) of 5 percent. This means that a statistical test (such as a test for differences in proportions) will detect significance of a chance relationship in no more than 5 percent of all cases.

Table 5.3: Migration, commuting and mobility potentials in the Austrian parts of CENTROPE

	Austria	Vienna	Lower Austria	Burgenland
	As a percentage of respondents, 2004-2005			
Migration potential				
General	16.4	25.3	7.6	9.1
Expected	2.4	3.8	0.9	1.4
Real	0.9	1.4	0.3	0.3
Commuting potential				
General	2.2	1.9	2.3	2.8
Expected	0.3	0.3	0.2	0.0
Real	0.1	0.1	0.1	0.0
Mobility potential				
General	18.6	27.2	10.0	11.9
Expected	2.6	4.1	1.1	1.4
Real	0.9	1.5	0.4	0.3
	Absolute			
No. of observations	3,992	1,955	1,675	362

Source: LAMO household survey 2004-2005, WIFO-calculations

Despite this decrease, the LAMO household survey reveals a considerable general potential for mobility in the NMS. A comparison with the Austrian subregions of CENTROPE (table 3.3) - for which data was collected in the 2004 – 2005 wave only - puts these figures into perspective: In 2004-2005, the general mobility potential in Austria was higher than in the Czech Republic and only insignificantly smaller than in Hungary. The general migration potential was higher than the average of the NMS-regions (22.3%). This shows that the general mobility, migration and commuting potentials are very broad concepts which express vague wishes rather than real intentions and therefore must not be equated with actual or future migration: Only a small proportion of those who generally consider working abroad will actually do it.

Expected and real mobility potentials in Austria, however, are lower than in the new EU member states: A significantly lower number of persons has taken concrete steps to commute or migrate abroad. One striking feature is the comparably low international commuting potential in the Austrian CENTROPE subregions, which is mainly attributable to the fact that the neighbouring NMS labour markets are not attractive for most Austrians (above all due to the lower wage levels) and that for most of them other countries (like Germany) are beyond acceptable commuting distances. Thus, Austrians would rather migrate than commute abroad.

The general decline in migration and commuting potentials in the NMS-regions of CENTROPE was associated with relatively dissimilar developments in the individual countries:

- In 2004-2005 the general mobility potential in Slovakia was nearly twice as high as in Hungary and the Czech Republic. The same applied to the expected and real mobility potentials. However, Slovak data show large disparities between the two waves of the survey: The general mobility potential in Slovakia shrunk from 37.4 to 14.7%. The decrease was particularly pronounced in the general commuting potential (from 17.4% to 2.7%). Compared to 2004-2005, the general migration potential also decreased substantially by 8 percentage points to 12.0% in 2006-2007. Similarly, the expected mobility potential in Slovakia was less than half of its 2004-2005 value (15.4%) in the 2006-2007 survey. The real mobility potential decreased by approximately a third (first wave: 3.6%, second wave: 2.4%).

- In Hungary, the general mobility potential showed an opposite development: Due mainly to a higher general migration potential (2004-2005: 7.5%, 2006-2007: 12.0%), the general mobility potential increased significantly, from 19.5% to 25.3%. The expected mobility potential declined also in Hungary, but not significantly (6.8 to 5.4%). A significant rise was observed in the real mobility potential, which doubled between 2004-2005 and 2006-2007, from 1.3% in the first wave to 2.6% in the second. Thus, Hungary was the only country with more nationals having undertaken concrete steps to work abroad in 2006-2007 than two years earlier.

- The lowest general mobility potential can be found in the Czech regions. In the second wave it declined further, from 15.9 to 13.8%. The changes in the expected and real mobility potentials (0.2 percentage points to 4.5% and 0.1 percentage points to 1.7%, respectively) were, however, not statistically significant.[43]

In general, a (moderate) decline in mobility propensity over time as shown by the data for the Czech Republic and Slovakia was to be expected. With growing convergence of incomes and economic standards, coupled with the positive impact of the economic boom on the labour market, the expected benefit from mobility is lower. This contributes to reducing the willingness for cross-border mobility.

The importance of economic conditions is reflected by the fact that the development of mobility in the NMS corresponds to the dynamics of unemployment: As shown in chapter 2 between 2004 and 2006, the Slovak regions where interviews took place registered a

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[43] The lower mobility among Czech workers is consistent with findings from studies on internal mobility by *Fidrmuc – Huber* (2007), who have found a low propensity also for internal migration among the Czech population. In the cross-border context, regional differences could also contribute to the low migration potential in the Czech Republic: Western Hungary and Western Slovakia are advantaged regions compared with their respective national average, so migration within the country would hardly make sense. The Czech regions at the Austrian border, by contrast, are partly disadvantaged in relation to the national average. As a consequence, migration within a country might be considered an alternative to cross-border migration

sharp decline in unemployment, which was paralleled by a decrease in the mobility potential. The moderate growth dynamics in the Czech Republic were also coupled with a fall in unemployment, which partly explains the slight decrease in the Czech mobility potential. In the Hungarian regions, where the general mobility potential increased between the two survey waves, unemployment went up between 2004 and 2006.

The development of mobility also corresponds to real GDP growth dynamics in the NMS: while in the Slovak subregions the sharp drop in the willingness to move was accompanied by strong growth dynamics, the mobility potential in the Czech Republic declined only marginally against the background of a more moderate real GDP growth. In Hungary, on the other hand, a lower GDP growth in 2007 compared to 2004 was accompanied by an increased general mobility potential. Part of the development of cross-border mobility preferences can thus be explained by economic growth dynamics.

Even though the economic development in the NMS contributes a lot to explaining the dynamics of the willingness to be mobile, the extent of the decrease shown in the data for Slovakia is nevertheless striking. Additional factors could help explain these relatively pronounced changes:

- Data always reflect the regime in place at the time of a survey. Against the background of Slovakia's recent EU accession 6 months before the first survey, the willingness to work in another (EU) country might have exceeded the long-term average for a short period before decreasing to its normal level by the time of the second survey. However, this effect would apply to all NMS, not only Slovakia. The temporary rise may be due to a positive general mood about EU accession in Slovakia[44], which might have also shown itself as a more positive attitude towards cross-border mobility.

- Considering the Slovaks' high willingness to move during the first survey, parts of the population who were willing to move may already have done so. As a consequence, the remaining potential was correspondingly smaller by the time of the second survey. This is supported by the fact that in 2006-2007, 6.2% of the Slovaks stated they were already working abroad a significant 5 percentage points rise compared to 2004-2005. The corresponding shares in the Czech and the Hungarian samples also increased significantly, but less sharply (from 0.7 to 2.0% and from 0.8 to 2.1%, respectively).

- As the general potentials basically represent vague intentions, they might have been stated more generously in the first survey–when free movement of labour was not possible due to the transitional periods–than in the second survey, with the end of the transitional period drawing close. Therefore, the willingness to work in another country may be higher if it is not immediately possible. This

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[44] Approval of the EU accession was particularly high in Slovakia (92.5% in the referendum held in May 2003. Hungary: 83.8%, Czech Republic: 77.3%. See *European Commission,* 2003).

psychological effect (people are likely to agree to actions in the future than to immediately possible actions) could have contributed to the lower mobility propensity in the second survey (2006-2007) compared with 2004-2005. This would, however, again apply to all countries, not only Slovakia.

- Another reason for the decline in mobility propensity might be that, by the time of the second survey, more individuals had already made concrete experiences with the transitional arrangements, which had a negative impact on their future willingness to move even after the end of the transitional period. Bureaucratic barriers or other negative experiences made when searching a job abroad could change the general attitude towards cross-border mobility, even if at a later date these barriers will not exist anymore. This effect, too, should theoretically occur in all countries, not only in Slovakia.

- Finally, it cannot be excluded that disparities in data collection methods contributed to these differences: Although the questionnaires were the same in both waves, the second survey was performed by a different institute. Differences in the sample structures might be another reason for the disparities between the two waves. However, eliminating differences in sample structure by weighting [45] changes mobility potentials only marginally (±1 to 2% for the general mobility potential). Sample structure therefore plays only a minor role in explaining the discrepancy in the mobility potentials between the two waves.

5.2 Mobility, migration and commuting potentials towards Austria

Focusing on the mobility potentials directed to Austria as the preferred destination, it can be seen that Austria is by far the most popular target country: About 40% of the general mobility potential from the NMS-regions of CENTROPE is directed to Austria. There was, however, a slight decrease in Austria's share from 42.6% (1st wave) to 39.7% (2nd wave). Following Austria, Great Britain and Germany are other popular destinations[46]. Due to its geographical proximity, the majority (first wave: 71.2%, second wave: 64.7%) would rather commute than migrate to Austria. The opposite is true when looking at mobility to other countries: Here, the majority (first wave: 75.1%, second wave: 86.2%) would rather migrate. Austria is therefore above all interesting for potential commuters.

The preference for Austria, measured as a share of the general mobility potential, is highest in Hungary: Around two thirds (first wave: 66.3%, second wave: 62.6%) of the general mobility potential in Hungary is directed to Austria. This is nearly twice as much as in the Czech Republic (first wave: 36.8%, second wave: 26.3%) and in Slovakia (first wave: 35.8%, second wave: 30.7%). The reason for this might be found in existing labour market arrangements: An agreement on frontier workers which facilitates the

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[45] The data of the second wave were weighted by age structure, gender and educational level and thereby adapted to the structure of the first wave.

[46] For a detailed overview of country preferences, see section 5.2.

labour market access in the border regions of Burgenland for Hungarian workers has existed between Austria and Hungary since 1998[47].

Table 5.4: Migration, commuting and mobility potentials from the NMS-regions of CENTROPE to Austria

	NMS		Czech Republic		Slovakia		Hungary	
	2004-2005	2006-2007	2004-2005	2006-2007	2004-2005	2006-2007	2004-2005	2006-2007
	As a percentage of respondents							
Migration potential								
General	2.7	2.3	2.6	1.5	2.8	2.4	2.9	4.1
Expected	0.9	0.8	0.5	0.4	1.3	1.1	1.4	1.0
Real	0.2	0.2	0.1	0.1	0.2	0.3	0.5	0.3
Commuting potential								
General	6.8	4.3	3.2	2.1	10.6	2.2	10.0	11.7
Expected	2.2	1.0	0.8	0.7	3.6	0.6	3.5	2.4
Real	0.5	0.6	0.1	0.5	1.2	0.3	0.4	1.1
Mobility potential								
General	9.5	6.6	5.8	3.6	13.4	4.5	12.9	15.8
Expected	3.1	1.8	1.3	1.1	4.9	1.8	4.8	3.4
Real	0.7	0.8	0.2	0.7	1.4	0.6	0.9	1.4
	Absolute							
No. of observations	5,991	5,641	2,996	2,901	1,550	1,484	1,445	1,256

Notes: NMS: new EU member states.

Source: LAMO household surveys 2004-2005 and 2006-2007, WIFO-calculations.

Although the general preference for Austria as a receiving country remained largely unchanged between 2004-2005 and 2006-2007, the general mobility potential directed to Austria declined significantly over time (table 3.4): While in 2004-2005, 9.5% of the population in the NMS-regions of CENTROPE aged 15 or older were generally willing to work in Austria, the share was only 6.6% in 2006-2007. The main reason for this decline is that Slovakia's commuting potential decreased while the general migration potential remained practically unchanged[48]. The expected (along with the general) mobility potential to Austria also decreased significantly between the waves, from 3.1% to 1.8%, while the real mobility potential remained unchanged (2004-2005: 0.7%, 2006-2007: 0.8%).

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[47] The agreement regarding frontier workers gives workers in defined border regions labour market access as well as a residence permit for 6 months, which can subsequently be renewed for another 6 months.

[48] The decrease of 0.4 percentage points between 2004-2005 and 2006-2007 is not statistically significant.

6 Determinants and Structure of Potential Migration and Commuting in the CENTROPE region

6.1 Theoretical aspects

Apart from the magnitude of the migration potential within the CENTROPE region, its structure is also of relevance. The question of whether and how the population willing to migrate or commute differs from those unwilling to do so with respect to personal characteristics, and whether potential commuters and migrants have divergent demographic features will be the focus of this section. In this respect economic theory offers a variety of approaches on modelling cross-border mobility of labour. As a starting point the neoclassical model explains mobility between two regions by real wage gaps caused by differences in factor endowment or technological levels. It predicts that workers migrate to regions where they can earn more. As a result of this, real wages converge across regions, since they decrease in the receiving and increase in the sending region. This is due to the assumption of a decreasing marginal product which in this model corresponds to the real wage (additional workers are employed as long as their marginal product surpasses their wages). Once wage differentials have been eliminated in equilibrium, the incentive for mobility no longer exists.

Contrary to the simplifying assumptions of the neoclassical model, however, mobility also generates costs. Aside from monetary costs (e.g., those involved in moving residence and, for commuters, travel costs, costs of job and housing search) or investment in human capital (such as learning a foreign language or acquiring additional qualifications), there are also non-pecuniary elements to these costs. These include the loss of personal contacts, a greater distance to one's family and the loss of location-specific insider advantages[49] (Fischer et al., 2000, Straubhaar, 2000), which are not transferable to other places of work and residence. Furthermore, bonds with the welfare state, such as national insurance and transfer systems, can raise the attractiveness of immobility if they increase the opportunity cost of mobility[50].

In addition, various types of labour mobility differ both in terms of cost and benefits. Given that migration is the relocation of one's place of work and residence to a locality out of one's original area of residence (and work) either permanently or for a certain period of time and commuting is the relocation of solely the workplace to a locality out of

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[49] Location-specific insider advantages can be production or consumption oriented. Production-oriented insider advantages are, e.g., the knowledge of local standards, values and social manners, knowledge of local production technologies, ability to deal with local authorities and interest groups or company-specific knowledge that is only useful at the current workplace. Consumption-oriented insider advantages are, e.g., the knowledge of prices and the quality of the local opportunities of consumption, amenities or public services (such as the educational or health system), see *Straubhaar* (2000).

[50] *Straubhaar* (2000) illustrates this by the following example: Welfare state transfers (such as unemployment benefit, social welfare allowance) subsidize immobility, since they may prevent recipients of unemployment benefit or social welfare allowance from improving their situation e.g. by migrating to a region with higher labour demand.

one's area of residence[51], costs and returns of migration differ from those of commuting. The decision to commute saves search costs for housing and reduces certain non-pecuniary costs, like the loss of friends and consumption-oriented insider advantages or the greater distance to family members. Furthermore, mobility costs differ between commuters and migrants: Commuting causes higher transportation costs, as the distance between a person's residence and their workplace has to be travelled daily (or weekly) while migrants pay a one time travel cost only, but also incur non-pecuniary costs.

In addition, for risk averse individuals, commuting offers the opportunity to reduce the risk relating to the expected income in the receiving country without having to bear any migration costs and, the separation of workplace and place of residence enables commuters to enjoy the benefits of "two worlds", namely the higher wage levels and/or better job opportunities of the place where they work and the higher quality of living, healthier environment and lower real estate and housing prices of their place of residence.

These differences between migration and commuting can be analysed in terms of a relatively simple model of migration and commuting originally due to Renkow and Hoover (2000). To highlight the interdependence of migration and commuting this model considers two countries where the home country is composed of J regions and the foreign country f of only one. Since we focus on the willingness to migrate and commute across borders we consider an environment where labour is initially mobile only within but (due to institutional barriers) immobile across countries, but where cross-border mobility will become an option in the future. Furthermore, we assume that the location of workplaces is given exogenously and that individuals faced with an offer for a workplace act myopically and thus consider wages and land prices in all regions as given.[52]

Consider an individual k living in region i and working in region j of the home country $(i,j \in J)$ which is asked whether it would be willing to commute or to migrate. We assume that this individual receives utility from (expected lifetime) income in the region of work (Y_j) and (expected lifetime) amenities in the region of residence (A_i) which also include the (expected lifetime) disutility arising from the rental price of housing. Furthermore, if the place of work and the place of residence of the individual do not coincide $(i \neq j)$, the individual incurs (pecuniary and non-pecuniary lifetime) commuting costs of d_{ij}. The utility U^k_S of the individual living in region i and working in region j of the home country can then be written as:

$$U^{k,S} = Y_j - d_{ij} + A_i + \varepsilon^{k,S} \tag{1}$$

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[51] Migration and commuting flows of course also exist within a region, but are not considered in this study.

[52] While this would be a strong assumption in a general equilibrium analysis, it accords well with the empirical part of this study, since the data used are based on a questionnaire on prospective cross-border mobility. Issues of endogeneity are therefore of lesser importance in empirical applications based on actual mobility outcomes.

with $d_{ij}=0$ if $i=j$ and ε^k_s a random utility component for each individual associated with working and residing in the home country.

When considering moving across borders the individual working in region j and residing in region i expects a job offer associated with a lifetime income Y_f from an employer located in the foreign country f. In this case accepting this job offer and remaining resident in i (i.e. commuting) would result in a utility of:

$$U^{k,C}=Y_f-d_{if}+A_i+\varepsilon^{k,C} \tag{2}$$

(where d_{if} are the pecuniary and non-pecuniary costs of cross-border commuting and ε^k_C is a random utility component associated with commuting from i to f), while accepting the offer and migrating to the new workplace abroad would give an expected lifetime utility of:

$$U^{k,M}=Y_f-M_{if}+A_f+\varepsilon^{k,M} \tag{3}$$

where M_{if} are the (pecuniary and non-pecuniary) costs of migration from i to f, A_f is the expected lifetime utility value of amenities (net of the rental price of housing) when living abroad, and ε^k_M is a random utility component associated with migration. For the moment we impose no restrictions on the random utility components ε^k_C and ε^k_M, which can be either thought of as capturing random heterogeneity in tastes (as in Wall 2001), as reflecting uncertainty concerning living and working conditions in f (see, e. g., Burda 1995) or as random draws from a distribution of mobility costs (as in Burda – Funke 1993).

Equations (1), (2) and (3) can be used to compute the differentials for individual k between the utility of staying in the home country (U^k_S) and the utility of commuting (U^k_C) or migrating (U^k_M) to country f:

$$U^{k,C}-U^{k,S}=(Y_f-Y_j)-(d_{if}-d_{ij})+(\varepsilon^{k,C}-\varepsilon^{k,S}) \tag{4}$$

$$U^{k,M}-U^{k,S}=(Y_f-Y_j)-(M_{if}-d_{ij})+(A_f-A_i)+(\varepsilon^{k,M}-\varepsilon^{k,S}) \tag{5}$$

Equations (4) and (5) show that a higher income differential between the home and foreign countries ($Y_f - Y_j > 0$) increases the utility gain from working abroad. Higher cross-border than within-country costs of commuting ($d_{if} - d_{ij} > 0$) decrease the utility differential between commuting across the border and staying in the home country. The same holds true for the difference ($M_{if} - d_{ij}$) in the case of migration: if the costs of moving abroad are higher than the lifetime commuting costs at home, the utility gain from relocating residence to f is diminished. If the utility of amenities in f is higher than the utility arising from amenities in the home country (or the rental price of housing abroad lower than in i), the term A_f-A_i is positive, which increases the utility gain from migrating to f.

When deciding on the willingness to work abroad, the household also considers the utility difference between migration and commuting, which is given by:

$$U^{k,M} - U^{k,C} = (A_f - A_i) - (M_{if} - d_{if}) + (\varepsilon^{k,M} - \varepsilon^{k,C})$$

(6)

From equation (6) it follows that there is a positive utility differential between migration and commuting ($U^k_M - U^k_C > 0$) if the foreign country offers more amenities (or a lower rental price of housing), such that ($A_f - A_j > 0$) and if migration is associated with lower (pecuniary and non-pecuniary) costs ($M_{if} - d_{if} > 0$).

Apart from the direct utility gains arising from the income, mobility cost or amenity differentials discussed above, the differences in the random utility components in equations (4), (5) and (6) also determine the choice between willingness to stay, migrate or commute. Defining

$$\Omega_{CS} = (Y_f - Y_j) - (d_{if} - d_{ij})$$

$$\Omega_{MS} = (Y_f - Y_j) - (M_{if} - d_{ij}) + (A_f - A_i)$$

$$\Omega_{MC} = (A_f - A_i) - (M_{if} - d_{if})$$

as the "direct utility gains" from commuting vs. staying (Ω_{CS}), migration vs. staying (Ω_{MS}) and migration vs. commuting (Ω_{MC})[53], and the "random utility gains" between commuting and staying, and between migration and staying as

$$\xi^{k,C} = \varepsilon^{k,C} - \varepsilon^{k,S}$$

$$\xi^{k,M} = \varepsilon^{k,M} - \varepsilon^{k,S}$$

equations (4) to (6) can be rewritten as:

$$U^{k,C} - U^{k,S} = \Omega_{CS} + \xi^k_C \qquad\qquad (7)$$

$$U^{k,M} - U^{k,S} = \Omega_{MS} + \xi^k_M \qquad\qquad (8)$$

$$U^{k,M} - U^{k,C} = \Omega_{MC} + (\xi^k_M - \xi^k_C) \qquad\qquad (9)$$

According to equations (7) to (9), an individual's willingness to commute or migrate across borders depends on the realizations of the random utility variables ξ^k_M and ξ^k_C. This is also shown in Figure 6.1 where the optimum choices between the willingness to commute, migrate and stay are depicted for given "direct" utility gains Ω_{CS} and Ω_{MS} with ξ^k_M drawn on the horizontal axis and ξ^k_C on the vertical axis. An individual will not be

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[53]Note that Ω_{MC} can be computed as the difference between Ω_{MS} and Ω_{CS}

willing to work abroad if $\Omega_{CS} < -\xi^k_C$ and $\Omega_{MS} < -\xi^k_M$ (the lower left corner in figure 6.1). Individuals with realizations of ξ^k_C and ξ^k_M larger than $-\Omega_{CS}$ and $-\Omega_{MS}$, respectively, will choose either to migrate or to commute. Thus an individual will be willing to commute across borders if $-\Omega_{CS} > -\xi^k_C$ and $\Omega_{MS} < -(\xi^k_M + \xi^k_C)$, that is, if the direct utility gain from commuting to f compared to working in j exceeds any possible random utility losses from commuting vis-à-vis staying and if migration would be associated with a negative utility differential compared to commuting. By similar reasoning, an individual is willing to migrate to f if there is a net utility gain from migration, $\Omega_{MS} > -\xi^k_M$ and migration is superior to commuting, $\Omega_{MC} > -(\xi^k_M + \xi^k_C)$

Figure 6.1: Optimal Choices between Commuting, Migration and Staying in dependence of $\xi^{k,C}$ and $\xi^{k,M}$ for a given realization of Ω_{CS} and Ω_{MS}
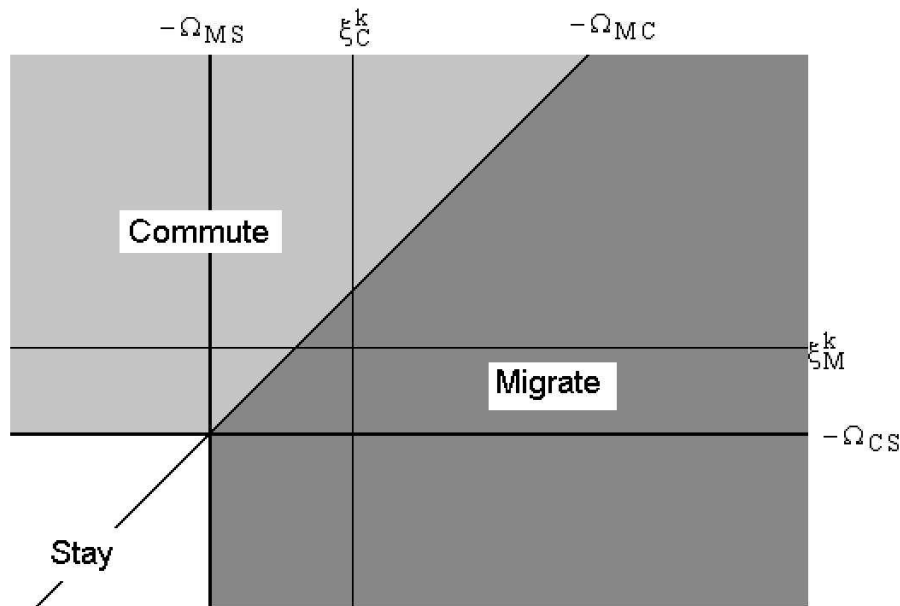
The figure also illustrates that – as compared to a model in which only cross border migration is possible – the availability of commuting as a travel mode increases the likelihood that a given person will be willing to become mobile, while at the same time it reduces the likelihood of a person being willing to migrate. To see this, notice that in the absence of the possibility to commute all persons with $\Omega_{MS} > -\xi^k_M$ will be willing to migrate, while all others will remain immobile. Thus the possibility of commuting will allow all persons with $\Omega_{MS} < -\xi^k_M$ but $\Omega_{CS} > -\xi^k_C$ to become mobile (and to commute while all persons for whom $\Omega_{MS} > -\xi^k_M$ and $\Omega_{MC} > -(\xi^k_M + \xi^k_C)$ will be willing to migrate rather than to commute across borders. Thus, for a relevant range of parameters individuals that would be unwilling to migrate may become mobile if the additional possibility of commuting is available, while – because for a further set of parameters cross-border commuting will be the superior mode of labour to mobility – some individuals will now commute even if they would migrate rather than stay if commuting were not available (see also *Renkow – Hoover* 2000)

Under the assumption that ξ^k_S, ξ^k_M and ξ^k_C follow a trivariate normal distribution with an arbitrary variance-covariance matrix Σ, equations (7) to (9) define a standard multinomial probit model (see *Maddala* 1983).[54] This implies that the probability of the individual being willing to commute from i to f (P_C), the probability of her being willing to migrate to f (P_M) and the probability of her being immobile and staying in i (P_S) are given by:

$$P_C \qquad \textbf{Fehler!} \qquad\qquad (10)$$

$$P_M \qquad \textbf{Fehler!} \qquad\qquad (11)$$

$$P_S \qquad \textbf{Fehler!} \qquad\qquad (12)$$

Table 6.1: Direction of partial derivatives of the probabilities to commute, migrate and stay with respect to model variables

	$Y_f{-}Y_j$	$A_f{-}A_i$	d_{ij}	d_{if}	M_{if}
P_C	+	−	+	−	+
P_M	+	+	+	+	−
P_S	−	−	−	+	+

Taking the derivatives of these equations we find that the comparative statics of our model follow those generally found by more complicated search theoretic models, which consider the possibility of commuting (e. g. *Rouwendal,* 1998, *van Ommeren – Rietveld – Nijkamp* 2000). As in these models higher wage differentials between receiving and the sending region will increase both the probability of being willing to commute and to migrate, while reducing the probability of being immobile. By contrast, higher differences in the benefits of residing in the sending and receiving region decrease the probabilities to be willing to commute and to remain immobile but increase the probability of being willing to migrate. Finally, individuals currently commuting in their home country (i. e. individuals with $d_{ij}>0$) will be more likely to consider working abroad (because the opportunity cost of staying in the home country are higher) while the impact of increased commuting and migration costs has negative effects on the likelihood to be willing to commute or migrate, respectively, and a positive impact on the choice to stay. Table 6.1 summarizes the signs of the partial derivatives of the probabilities (10)–(12) with respect to model variables.

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[54]In contrast to the multinomial logit model, where the assumption on the distribution of the error terms forces the covariance between choices to be zero (the so called Independence of Irrelevant Alternatives hypothesis, IIA), this formulation allows an arbitrary covariance structure across choices. As in the multinomial logit formulation, however, the parameters can only be identified relative to a base category, furthermore since utility levels are not identified the variance of one of the error terms must be set equal to unity.

6.2 Explanatory Variables

We use three sets of explanatory variables to empirically model the willingness to commute and migrate. First, we use a set of individual level variables which are intended to capture differences in income opportunities. Among these are the age of the interviewee, which can be expected to have a negative effect on both the willingness to migrate and to commute (as the potential gain in lifetime income is higher for younger individuals), gender as well as highest completed education. Furthermore, we include a dummy variable for individuals who have not yet finished their education ("student"). To control for language skills we also include dummy variables for the knowledge of German, English, another foreign language or no foreign language at all.

To control for potential effects of social deprivation (see, e. g., Stark – Taylor 1991) on the willingness to migrate and commute, we also include a variable measuring the (subjective) social status of the respondent relative to his/her reference group. We construct this measure by taking the difference between the individual's evaluation of her personal overall living conditions on an 11 point scale (with 1 representing the best conceivable social status and 11 the worst conceivable social status) and those of their friends and relatives. The measure is thus negative if the individual assesses her own social status as being higher than that of her peers, and positive if the individual feels deprived of her peers' social status (see Stark – Taylor 1991) .

Our second set of variables captures individual differences in the costs to commute or to migrate. We include a dummy if the respondent is currently commuting to the current place of residence ("commuter") as a proxy for the costs of commuting, since our model suggests that respondents who are currently commuting should be more willing to migrate and commute, and dummy variables for marital status ("single") and the presence of children in the household ("kids"), since a number of contributions suggest that persons living in larger households will face higher costs of migration (such as job search costs or schooling for other household members) than single households (see Mincer 1978). Furthermore, we include variables which measure whether the respondents have family members or friends residing abroad as proxies for potential network effects (see Straubhaar 2000), which can help to reduce mobility (as well as job search) costs significantly. We also control whether the individual herself has already worked abroad by including a dummy variable that takes on the value 1 if previous mobility exists.

As a measure of the direct costs associated with commuting or migrating abroad, we employ the road distance between the interviewees municipality of residence[55] to the nearest EU15 border crossing in kilometres[56] as a proxy for distance to the nearest potential workplace in the EU 15. Distance has proven to be uniformly the most important factor in explaining both migration as well as commuting patterns in many countries

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[55]Note that the distance variable is still identified in this specification despite the inclusion of regional dummies since it is defined on a regionally more disaggregated level.

[56]The distance was obtained using the route planner of the Austrian Motorists Association (ÖAMTC).

(see Fields 1979), and a negative effect on the willingness to migrate can therefore be expected.

Third, we include a family of regional dummy variables at the NUTS 3 level of disaggregation to control for characteristics (such as amenities) of the region of residence as well as a dummy for interviews conducted during the second wave in 2006/07. Interaction terms of these region and wave dummies are included to account for regional differences in changes in the macro-economic environment.

Table 6.2: Mobility potentials by age

		General		Expected		Real		Observations	
		2004/05	2006/07	2004/05	2006/07	2004/05	2006/07	2004/05	2006/07
		In percent of persons interviewed						*Absolute*	
Up to 25 years	1	54.5	41.7	22.1	12.2	4.1	3.0	1,052	1,000
	2	42.9	44.6	48.5	41.9	33.6	25.2		
26 – 35	1	30.2	21.4	10.9	7.2	3.9	3.6	1,186	1,225
	2	26.8	28.0	27.0	30.2	35.9	37.0		
36 – 45	1	19.4	12.6	4.9	4.4	1.8	2.3	1,122	1,039
	2	16.3	14.0	11.5	15.8	15.6	20.2		
46 – 55	1	12.3	7.6	3.9	1.9	1.1	1.2	1,141	1,061
	2	10.5	8.7	9.2	6.9	9.4	10.9		
56 – 65	1	4.5	4.3	1.8	1.3	0.7	0.7	965	843
	2	3.2	3.9	3.6	3.8	5.5	5.0		
Over 66 years	1	0.8	1.7	0.2	0.8	0.0	0.4	525	473
	2	0.3	0.9	0.2	1.4	0.0	1.7		
		Absolute							
Observations		1,336	935	478	291	128	119	5,991	5,641
		Percent							
Up to 25 years		31.4	20.1	27.6	13.9	23.3	10.0		
26 – 35		47.2	35.9	41.1	27.3	28.3	36.4		
36 – 45		60.6	57.3	60.0	50.0	55.0	58.3		
46 – 55		65.7	60.5	61.4	50.0	41.7	53.8		
56 – 65		51.2	36.1	29.4	36.4	42.9	50.0		
Over 66 years		25.0	37.5	0.0	0.0	0.0	0.0		
		Absolute							
Times mentioned		596	318	182	78	42	43		

Notes: 1 = relative row frequency, row sum = 100; 2= relative column frequency, column sum = 100.

6.2.1 Individual level variables to capture income differentials

The upper part of Table 6.2 shows mobility potentials of the NMS-regions of CENTROPE for both waves by age group. Each category is described of the different mobility potential concepts (general, expected and real mobility potential) by two figures: The first figure indicates the share of persons willing to be mobile (either through commuting or migration), the second figure beneath it, gives the share of persons in the respective

mobility potential.[57] Furthermore, also the number of observations for each of the waves is given. This table confirms the higher willingness to be mobile of younger workers. The general willingness to work abroad tends to be higher among young people than among older people: Less than 5% of the over-55-year-olds can imagine working abroad. By contrast, the percentage among persons up to 25 years is 54.5% (1st wave) and 41.7% (2nd wave). A similar picture also emerges in the expected and real mobility potentials. Even though the propensity to be mobile decreased in nearly all age cohorts between 2004/05 and 2006/07, around two-thirds of mobile persons in both waves are 35 years old or younger.

The lower part of Table 6.2 shows that the willingness to commute generally increases with age. Very young persons would rather be willing to migrate in both waves, while the majority of persons over 35 would rather commute across borders. The highest share of potential commuters can be found in the age group of 46 to 55-year-olds with 65.7% (1st wave) and 60.5% (2nd wave).

Table 6.3:   Mobility potentials by gender

		General		Expected		Real		Observations	
		2004/05	2006/07	2004/05	2006/07	2004/05	2006/07	2004/05	2006/07
		In percent of persons interviewed						*Absolute*	
Men	1	27.5	18.7	10.0	6.2	2.7	2.6	2,950	2,807
	2	60.8	56.1	61.7	59.5	62.5	62.2		
Women	1	17.2	14.5	6.0	4.2	1.6	1.6	3,041	2,834
	2	39.2	43.9	38.3	40.5	37.5	37.8		
		Absolute							
Observations		1,336	935	478	291	128	119	5,991	5,641
		Share of commuters in mobility potential in percent							
Men		45.0	35.8	40.0	29.5	32.5	39.2		
Women		44.1	31.7	35.0	22.9	33.3	31.1		
		Absolute							
Observations		596	318	182	78	42	43		

Notes: 1 = relative row frequency, row sum = 100; 2= relative column frequency, column sum = 100.

Source: LAMO household surveys 2004/05 and 2006/07, WIFO-calculations.

The survey results thus suggest that the willingness to migrate or commute correlates negatively with age, and older workers if mobile would rather commute than migrate. The only deviation is the slightly higher migration propensity of workers over 55 years of

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[57] Thus, the first line of the table indicates that 54.5% of the 1,052 persons aged up to 25 years interviewed in the first wave would consider working abroad. The second line indicates that 42.9% of the 1,336 persons in the category of general mobility potential of the first wave are 25 years old or younger. The sum of the second line is 100% in every column.

age. The willingness to commute within this group differs only in the general mobility potential of the second wave and in the expected mobility potential of the first wave.[58]

Looking at the mobility potentials by gender (see Table 6.3) shows that the general mobility propensity of women is significantly lower at both points in time than that of men. This difference is statistically significant also in the expected and real mobility potentials, and is consistent with the findings of earlier studies (Eliasson 2003). By contrast, there is no significant difference between men and women as regards the decision to commute or to migrate. The share of commuters in mobility potential decreased among both women and men between 2004/05 and 2006/07.

Table 6.4:   Mobility potentials by foreign language knowledge

		General		Expected		Real		Observations	
		2004/05	2006/07	2004/05	2006/07	2004/05	2006/07	2004/05	2006/07
		In percent of persons interviewed						*Absolute*	
No foreign language knowledge	1	7.3	6.4	2.2	0.7	0.3	0.6	1,197	967
	2	6.5	6.6	5.4	2.4	3.1	5.0		
Foreign language knowledge	1	26.1	18.7	9.4	6.1	2.6	2.4	4,794	4,674
	2	93.5	93.4	94.6	97.6	96.9	95.0		
				Absolute					
Observations		1,336	935	478	291	128	119	5,991	5,641
		Share of commuters in mobility potential in percent							
No foreign language knowledge		64.4	67.7	65.4	100.0	25.0	100.0		
Foreign language knowledge		43.2	31.6	36.5	25.0	33.1	32.7		
				Absolute					
Observations		596	318	182	78	42	43		

Notes: 1 = relative row frequency, row sum = 100; 2= relative column frequency, column sum = 100

Source: LAMO household surveys 2004/05 and 2006/07, WIFO-calculations

Persons without foreign language skills have also a much lower willingness to migrate or commute than persons with foreign language skills. In 2004/05 only 7.3% of all persons without foreign language skills were generally willing to work abroad, while the share among persons with foreign language skills was 26.1%. As regards the data of the 2nd wave and the expected and real mobility potentials, this difference is also statistically

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[58] Younger persons willing to migrate or commute show a lower degree of preference for Austria as a destination country: The share of persons in the general mobility potential that would prefer to work in Austria is more than 50% among those over 35 years, but only 31% among the group of the under-26-year-olds at the time of the first wave of interviews. This share decreased further to 25.9% by 2006/07. However, this does not mean that it is mostly older workers that would like to commute or migrate to Austria: More than half of the mobility potential directed towards Austria is 35 years or younger. In the remaining general mobility potential (directed at other countries), the share of below-35-year-olds is however around 80% (1st wave: 77.7%, 2nd wave: 83.2%).

significant. Only around 5% of persons willing to migrate or to commute do not speak any foreign languages.

The share of commuters among those in the general mobility potential without foreign language skills is significantly higher than among those with foreign language skills: As expected, persons that do not speak any foreign language would rather commute than migrate, because cross-border commuting requires lower foreign language skills than migration. This is also the case for the expected mobility potential in 2004/05, while in the remaining potentials, the share of commuters in the group of persons without foreign language skills must be interpreted cautiously, due to the low number of observations.

Finally, highest completed education is used as a measure of qualification (Table 6.5). It can be seen that the general mobility potential of NMS-region consists mainly of persons with secondary and tertiary education. However, there are differences in the composition of the mobility potential between 2004/05 and 2006/07: The share of persons with higher education in the general mobility potential decreased from 42.4% to 34.9%. Nonetheless, the mobility potentials consist up to two-thirds of persons with higher qualifications.

Table 6.5:   Mobility potentials by highest completed level of education

		General		Expected		Real		Observations	
		2004/05	2006/07	2004/05	2006/07	2004/05	2006/07	2004/05	2006/07
		In percent of persons interviewed						*Absolute*	
Elementary school	1	22.3	29.5	7.8	5.8	1.0	1.3	792	539
	2	13.2	17.0	13.0	10.7	6.3	5.9		
Apprentice/vocational school	1	15.8	10.9	4.5	3.1	1.3	1.6	1,983	2,226
	2	23.4	25.9	18.6	24.1	19.5	29.4		
Upper secondary school	1	25.9	17.3	9.8	6.0	2.7	2.1	2,187	1,880
	2	42.4	34.9	44.8	38.5	46.1	33.6		
College/university	1	27.1	20.9	11.0	7.8	3.5	3.7	1,029	996
	2	20.9	22.2	23.6	26.8	28.1	31.1		
		Absolute							
Observations	1	1,336	935	478	291	128	119	5,991	5,641
		Share of commuters in mobility potential							
Elementary school		30.5	34.6	25.8	38.7	37.5	71.4		
Apprentice/vocational school		53.0	47.5	52.8	42.9	36.0	57.1		
Upper secondary school		45.1	28.2	35.0	19.6	32.2	30.0		
College/university		43.0	26.9	38.9	17.9	30.6	16.2		
		Absolute							
Observations		596	318	182	78	42	43		

Notes: 1 = relative row frequency, row frequency = 100; 2= relative column frequency, column sum = 100

Source: LAMO household surveys 2004/05 and 2006/07, WIFO-calculations

This positive qualification structure reflects the distribution of education levels in the sending countries. Comparing the general willingness to migrate or commute across the educational levels shows that on the one hand, the willingness to migrate or commute is highest among those persons that completed only elementary school education (1st wave: 22.3%, 2nd wave: 29.5%) and lowest among persons who have completed an apprenticeship or a vocational school (1st wave: 15.8%, 2nd wave: 10.9%). On the other hand, the general willingness to work abroad increased slightly among those with higher

education levels. There are thus signs for both a negative as well as a positive selection in general mobility potential. The mobility potential is therefore not unambiguously positively or negatively selected, but rather shows signs of a bipolar selection.

There are, however, relatively large differences by country: The general willingness to migrate or commute is significantly higher among Czech citizens with lower educational levels (elementary schooling) and higher qualification (college, university) in both waves than among persons with completed apprenticeships, vocational schools or upper secondary education. By contrast, a generally higher willingness to migrate or commute can be found among Slovak citizens with a low level of qualification and a rather low degree of willingness to migrate or commute among persons with vocational training (apprenticeship/vocational school). Generally, one may speak of a negative selection in the Slovak group in both waves. No concrete result can be derived for Hungary: While in the first wave, the general willingness to migrate or commute among persons with elementary school education was significantly lower than average, it was significantly higher in 2006/07. The Willingness to migrate or commute within the remaining educational levels hardly changed between the two time periods.[59]

The willingness to commute is highest among those in the general mobility potential who have completed an apprenticeship or vocational training. The highest degree of willingness to migrate in the general mobility potential of the 1st wave is found among persons with elementary school only. By contrast, persons willing to be mobile with higher levels of education would rather migrate than commute.

6.2.2 Individual level variables affecting migrations costs

Furthermore, the distribution of mobility potentials by family status (Table 6.6) shows that single persons are more mobile: 35.4% could imagine working abroad in 2006/07 (vs. 13.2% of married persons or individuals living in a partnership), and singles accounted for 65.0% of the general mobility potential. The expected and real mobility potentials are also higher among single persons than among persons living in

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[59] Differentiating by preferred target countries there are considerable differences in the distribution of the educational levels between those who would prefer to work in Austria and those who do not state Austria as their first country of preference. The data of the first wave show that the share of persons who have completed apprenticeships or vocational schools in the mobility potential directed towards Austria is significantly higher (29.7%) than in the remaining mobility potential (18.8%), while the share of those with tertiary education was significantly lower (18.1% vs. 23.0%) than in the mobility potential not directed towards Austria. Data from the second wave also indicate a significantly higher share of persons with completed apprenticeships or vocational secondary schools in the mobility potential directed towards Austria (37.7% vs. 18.1%). This contrasts with a significantly lower share of persons with secondary (29.4% general mobility potential directed towards Austria vs. 38.5% mobility potential not directed towards Austria) and tertiary education (15.9% vs. 26.4%). What is remarkable is the significant decline in the number of persons with secondary education over time: While the share of persons with secondary school education in the mobility potential directed at Austria in 2004/05 was still 40.1%, it dropped to only 29.4% in 2006/07. The share of persons with tertiary education was also lower in 2006/07 than two years before. Austria thus seems to be losing appeal for workers with higher qualifications. This group rather shows an increasing preference for other countries. Thus, the relatively restrictive transition arrangements in Austria and other countries might have caused a shift in country preferences among higher qualified migrants and commuters towards countries that did not make use of the transitional arrangements, like Great Britain or Ireland.

partnerships. This supports the hypothesis that the reduced flexibility of multiperson households influences mobility decisions. Looking at the mobility potential by family status and type of mobility shows that – as could be expected – there is a higher willingness to migrate among single persons. Those who are married or living in a partnership would rather commute abroad.

Table 6.6:   Mobility potentials by family status and children

		General		Expected		Real		Observations	
		2004/05	2006/07	2004/05	2006/07	2004/05	2006/07	2004/05	2006/07
		In percent of persons interviewed						*Absolute*	
Not single	1	13.2	9.7	3.6	2.8	1.3	1.5	3,539	3,416
	2	35.0	35.3	27.0	32.3	35.9	42.0		
Single	1	35.4	27.2	14.2	8.9	3.3	3.1	2,452	2,225
	2	65.0	64.7	73.0	67.7	64.1	58.0		
		Absolute							
Observations		1,336	935	478	291	128	119	5,991	5,641
		In percent of persons interviewed							
No children	1	22.7	18.4	8.3	6.0	2.3	2.2	3,243	3,222
	2	60.3	63.4	62.2	66.0	62.2	60.5		
Children	1	23.2	14.1	7.9	4.1	2.2	1.9	2,086	2,417
	2	39.7	36.6	37.8	34.0	37.8	39.5		
		Absolute							
Observations		1,220	935	434	291	119	119	5,329	5,639
		Share of commuters in mobility potential in Percent							
Not single		63.7	50.3	58.9	41.5	43.5	58.0		
Single		34.3	25.1	30.4	19.8	26.8	20.3		
		Absolute							
Observations		596	318	182	78	42	43		
		Share of commuters in mobility potential in Percent							
No children		36.1	29.7	29.6	22.4	24.3	22.2		
Children		55.4	41.5	50.0	35.4	48.9	57.4		
		Absolute							
Observations		534	318	162	78	40	43		

 Notes: 1 = relative row frequency, row frequency = 100; 2= relative column frequency, column sum = 100

Source: LAMO household surveys 2004/05 and 2006/07, WIFO-calculations

The hypothesis that children are a barrier to mobility was not supported by the data of the first wave (Table 6.6): there is no statistically significant difference in the willingness to migrate and commute between persons without and those with children younger than 15 years of age living in the same household[60]. However, the data of the 2nd wave shows that childless persons have a significantly higher willingness to work abroad.

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[60] As the question of children in the household was not answered by all persons interviewed, only 5,329 (1st wave) and 5,639 observations (2nd wave) are available for evaluation. The question was: "How many children up to 15 years of age live in your household?" Therefore, the children are not necessarily the interviewed persons' own children.

However, children seem to affect the choice of mobility mode significantly. As expected, the general migration propensity among those without children is significantly higher than among persons with children: The latter would rather commute than migrate. This difference also applies to other mobility concepts. Thus, one can state that there are significant differences between childless persons and persons with children with regard to migration potentials: The former express a higher willingness to migrate than the latter.

Table 6.7:   Mobility potentials by networks

		General		Expected		Real		Observations	
		2004/05	2006/07	2004/05	2006/07	2004/05	2006/07	2004/05	2006/07
		In percent of persons interviewed						*Absolute*	
No networks	1	15.0	10.2	3.9	1.9	0.9	0.5	3,682	2,862
	2	41.9	31.5	30.0	18.5	26.6	12.8		
Networks	1	35.6	24.6	15.4	9.1	4.4	4.0	2,157	2,572
	2	58.1	68.5	70.0	81.5	73.4	87.2		
		Absolute							
Observations		1,320	923	474	287	128	117	5,839	5,434
		Share of commuters in mobility potential in percent							
No networks		46.3	34.7	40.1	24.5	26.5	26.7		
Networks		43.8	33.5	37.7	27.4	35.1	37.3		
		Absolute							
Observations		592	313	182	77	42	42		

Notes: 1 = relative row frequency, row frequency = 100; 2= relative column frequency, column sum = 100

Source: LAMO household surveys 2004/05 and 2006/07, WIFO calculations

Relatives and friends abroad can contribute to lowering the costs of mobility: Networks can, for example, help with housing, work or bureaucratic hurdles, etc. Therefore, persons with friends or relatives already working abroad should be more willing to migrate or commute due to these network effects than persons without networks. This is also confirmed in our data (Table 6.8). Among those with networks[61] the general mobility propensity is twice as high as among those that do not have network contacts. This difference becomes even clearer when looking at the expected and real mobility potentials, with the mobility propensity of persons with networks being four to eight times higher.

Networks are not only important for migrants, but also for commuters: In both waves there is a significant difference in the willingness to work abroad in the general, expected and real migration and commuting potentials between those with and without networks. However, the existence of networks does not seem to have any significant influence on the choice of mobility mode: The share of potential commuters among those without

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[61] Unfortunately, there is no information on whether these persons live in the preferred/intended destination country or in another country.

networks does not differ significantly from that of individuals with network contacts. Networks are therefore equally important for both commuters as well as migrants.

Table 6.8:   Mobility potentials by previous cross-border mobility

		General		Expected		Real		Observations	
		2004/05	2006/07	2004/05	2006/07	2004/05	2006/07	2004/05	2006/07
		In percent of persons						*Absolute*	
No previous mobility	1	20.1	15.0	6.5	3.7	1.2	1.1	5,439	4,963
	2	82.1	79.5	74.4	63.2	51.6	45.4		
Previous Mobility	1	48.8	38.2	25.0	21.3	12.7	12.9	488	502
	2	17.9	20.5	25.6	36.8	48.4	54.6		
		Absolute							
Observations		1,333	935	476	291	128	119	5,927	5,465
		Share of commuters in mobility potential in percent							
No previous mobility		46.4	34.6	41.0	24.5	33.3	40.7		
Previous Mobility		36.1	31.8	29.5	30.8	32.3	32.3		
		Absolute							
Observations		594	318	181	78	42	43		

Notes: 1 = relative row frequency, row frequency = 100; 2= relative column frequency, column sum = 100.

Source: LAMO household surveys 2004/05 and 2006/07, WIFO calculations

Persons who have worked abroad before are also more willing to migrate than those who never worked outside of their home country. This is particularly obvious when looking at the real mobility potential: Around 13% (1st wave: 12.7%, 2nd wave: 12.9%) of all persons who have worked abroad at some point have already taken preparatory steps to do so again in the future. Around half (1st wave: 48.4%, 2nd wave: 54.6%) of the real mobility potential consists of persons who have already worked abroad even though this group accounts for less than one tenth (1st wave: 8.2%, 2nd wave: 9.2%) of the sample.

Investigating the decision to commute or to migrate by previous mobility, there is a significant difference in the general and expected mobility potential of the 1st wave: Individuals who never worked abroad are more willing to commute than persons with previous mobility experience. This indicates that commuting is a method to reduce uncertainty regarding living and income conditions abroad. This uncertainty can be expected to be lower among persons who had already worked abroad before, because they have already reduced their uncertainty in a previous mobility step. Therefore, they now show a higher willingness to migrate. By contrast, those who never worked abroad are rather willing to commute in order to reduce this uncertainty.

6.3   Estimation results

Descriptive analysis thus suggests that in particular, the presence of kids or a spouse in the household is a more serious impediment for the willingness to migrate than for the willingness to commute. This suggests that kids and a partner in the household increase cross-border migration costs more strongly than cross-border commuting costs.

Furthermore, gender differences in the willingness to commute are larger than for the willingness to migrate (although women are both significantly less willing to commute and to migrate), and the willingness to migrate reduces much more strongly with age than does the willingness to commute. While migrants may thus be considered to be composed mainly of young singles, commuters are more likely to be older and have a family. Furthermore, commuters may be expected to be even more strongly selected by gender. Furthermore descriptive analysis also suggests that both those willing to commute as well as those willing to migrate are disproportionately often drawn from the two extremes of the educational distribution, and are thus often either highly or less educated.

Table 6.9 presents the regression results of a multinomial probit estimation of the determinants of the willingness to migrate and commute, in order to analyse to what degree these results are influenced by potential colinearities between different variables. These results suggest a number of differences between potential cross-border migrants and commuters. In particular, age has a stronger negative effect on the probability of being willing to migrate (the "propensity to migrate", measured relative to the probability of being unwilling to migrate or to commute, i. e. the probability to stay) than on the probability of being willing to commute (the "propensity to commute"). However, the difference in the coefficients is only significant at the 10% level. The presence of kids in the household is insignificant for potential commuters, but significantly negative for potential migrants and the dummy variable for single households is significantly higher for potential cross border migrants than for potential cross-border commuters. This thus suggests that the presence of children and a spouse in the household increases cross-border migration costs more strongly than commuting costs.

The results, however, also suggest that women are generally less mobile than men. Especially their probability of being willing to commute (relative to staying) is considerably lower. This thus lends support to the argument (see Madden 1981, White 1986, Clark, Huang and Withers 2003) that women are less likely to commute or, when commuting, travel shorter distances due to higher opportunity costs of time spent commuting. Furthermore, as expected, distance is a stronger deterrent to cross-border commuting than to cross-border migration, while English language knowledge increases the probability of being willing to migrate and at the same time reduces the probability of being willing to commute. Knowledge of other languages than German and English increases only the probability of being willing to migrate and has no significant influence on the propensity to commute across the border. Knowledge of the German language by contrast increases the probability of being willing to commute significantly more than the willingness to migrate. These stylized facts can be explained by the fact that German speaking countries are the only ones that can be reached by daily commuters from the region surveyed in our sample.

Table 6.9: Multinomial probit regression of willingness to be mobile

Variable	Migrant	Commuter	Mean (Std. dev.)
Age	-0.033***	-0.022***	39.615
	(0.004)	(0.005)	(13.090)
Age	0.043*	0.117***	0.370
	(0.023)	(0.027)	(1.557)
Distance	-0.000	-0.007***	50.834
	(0.002)	(0.002)	(28.797)
Student	0.004	0.031	0.103
	(0.112)	(0.157)	(0.304)
Single	0.585***	0.300***	0.383
	(0.099)	(0.115)	(0.486)
Female	-0.173***	-0.390***	0.511
	(0.075)	(0.092)	(0.500)
Kids	-0.241***	0.100	0.425
	(0.085)	(0.100)	(0.494)
Vocational educ.	0.012	0.050	0.366
	(0.160)	(0.184)	(0.482)
Secondary educ.	0.089	-0.004	0.373
	(0.143)	(0.175)	(0.484)
Tertiary educ.	0.273*	0.164	0.180
	(0.164)	(0.199)	(0.384)
English	0.461***	-0.237***	0.357
	(0.097)	(0.118)	(0.479)
German	0.177***	0.459***	0.452
	(0.080)	(0.101)	(0.498)
Other foreign lang.	0.206***	-0.119	0.646
	(0.095)	(0.112)	(0.478)
Network	0.739***	0.712***	0.435
	(0.082)	(0.099)	(0.496)
Previous mobility	0.988***	0.772***	0.097
	(0.091)	(0.111)	(0.296)
Commuter	-0.191***	0.126	0.243
	(0.095)	(0.102)	(0.429)
Second wave	-0.4	-0.762***	0.511
	(0.248)	(0.386)	(0.500)
Constant	-2.521***	-2.384***	—
	(0.306)	(0.361)	—
Log-likelihood	-2,146.622		
Observations	9,063	9,063	

Notes: ***significant at 1%, **significant at 5%, *significant at 10% level. Standard error in parentheses. Region dummies and region–wave interactions not reported

Source: LAMO household surveys 2004/05 and 2006/07, WIFO calculations

Furthermore, the presence of networks and previous mobility experience increase the willingness to commute less strongly than the willingness to migrate, while persons who feel deprived relative to their reference group (of friends and relatives) are more likely to

be willing to commute rather than being willing to migrate. This can be explained by the fact that people may choose to work abroad and then use the higher income to increase their social status relative to their reference group at home, rather than also moving their residence abroad, which may entail changing their reference group with a priori ambiguous effects on social status.

Table 6.10: Marginal effects and discrete change in probabilities of commuting, migration and staying by independent variables.

Continuous variables	Willingness to Migrate		Willingness to Commute		No Willingness to be mobile	
	Marginal effect	Standard Error	Marginal effect	Standard Error	Marginal effect	Standard Error
Age	-0.001***	(0.000)	-0.001***	(0.000)	0.001***	(0.000)
Deprivation	0.001	(0.001)	0.002***	(0.001)	-0.003***	(0.001)
Distance	0.000	(0.000)	-0.001***	(0.000)	0.001**	(0.000)
Dummy variables						
Student	0.000	(0.004)	0.001	(0.003)	-0.001	(0.005)
Single	0.021***	(0.004)	0.005**	(0.003)	-0.026***	(0.005)
Female	-0.005**	(0.002)	-0.007***	(0.002)	0.012***	(0.003)
Kids	-0.008***	(0.003)	0.002	(0.002)	0.005	(0.003)
Vocational educ.	0.000	(0.005)	0.001	(0.004)	-0.001	(0.006)
Secondary educ.	0.003	(0.005)	0.000	(0.003)	-0.003	(0.006)
Tertiary educ.	0.010	(0.007)	0.003	(0.004)	-0.013	(0.008)
English	0.017***	(0.004)	-0.005**	(0.002)	-0.012***	(0.005)
German	0.005*	(0.003)	0.009***	(0.002)	-0.014***	(0.003)
Other foreign lang.	0.006**	(0.003)	-0.003	(0.002)	-0.004	(0.004)
Network	0.025***	(0.003)	0.014***	(0.002)	-0.039***	(0.004)
Previous mobility	0.054***	(0.008)	0.020***	(0.005)	-0.074***	(0.010)
Commuter	-0.006**	(0.003)	0.003	(0.002)	0.003	(0.003)
Second wave	-0.012	(0.008)	-0.015**	(0.009)	0.027**	(0.012)

Notes: Marginal effects and discrete probability changes computed at mean of independent variables based on multinomial probit regression (see table 4.).*** significant at 1%, **significant at 5%, *significant at 10% level. Region dummies and region–wave interactions not reported

Source: LAMO household surveys 2004/05 and 2006/07, WIFO-calculations

In addition, the results point to a number of further interesting facts. First, the coefficients of the education dummy variables are insignificant throughout, which suggests that both potential commuters and potential migrants are neither positively nor negatively selected. Second, the dummy variable for interviews conducted in the second wave is significantly negative only for the willingness to commute. This suggests that in the time period from 2004/2005 to 2006/2007, only the willingness to commute across borders has fallen in the regions under investigation. Third, contrary to our theoretical expectations, we find that commuting in the home country reduces (rather than increases) the willingness to migrate. Furthermore, while it has the expected positive impact on the willingness to commute, it is insignificant in the commuting equation.

While these results point to strong differences between potential commuters, migrants and stayers which are rooted primarily in differences in the costs of commuting and migration, the coefficients reported in table 6.9 have the interpretation of increases in relative probabilities. These do not necessarily lend themselves to assessing the quantitative impact of the variables. Therefore we also computed (for continuous variables) marginal effects on as well as (for dummy variables) discrete changes in the probabilities of being willing to commute, willing to migrate, or stay which are reported in table 6.10.

The results in table 6.10 suggest that the willingness to commute increases with previous mobility experience and the presence of friends or family abroad a well as German language knowledge. According to the results an otherwise average person with previous experience of mobility has a 2 percentage point higher probability of being willing to commute than an average person without such an experience. Similarly, the presence of networks abroad increases the probability of being willing to commute abroad by 1.4 percentage points, while knowledge of the German language increase this probability by 0.9 percentage points.

Figure 6.2: Marginal effects of age on the probabilities of migration and commuting vs. staying
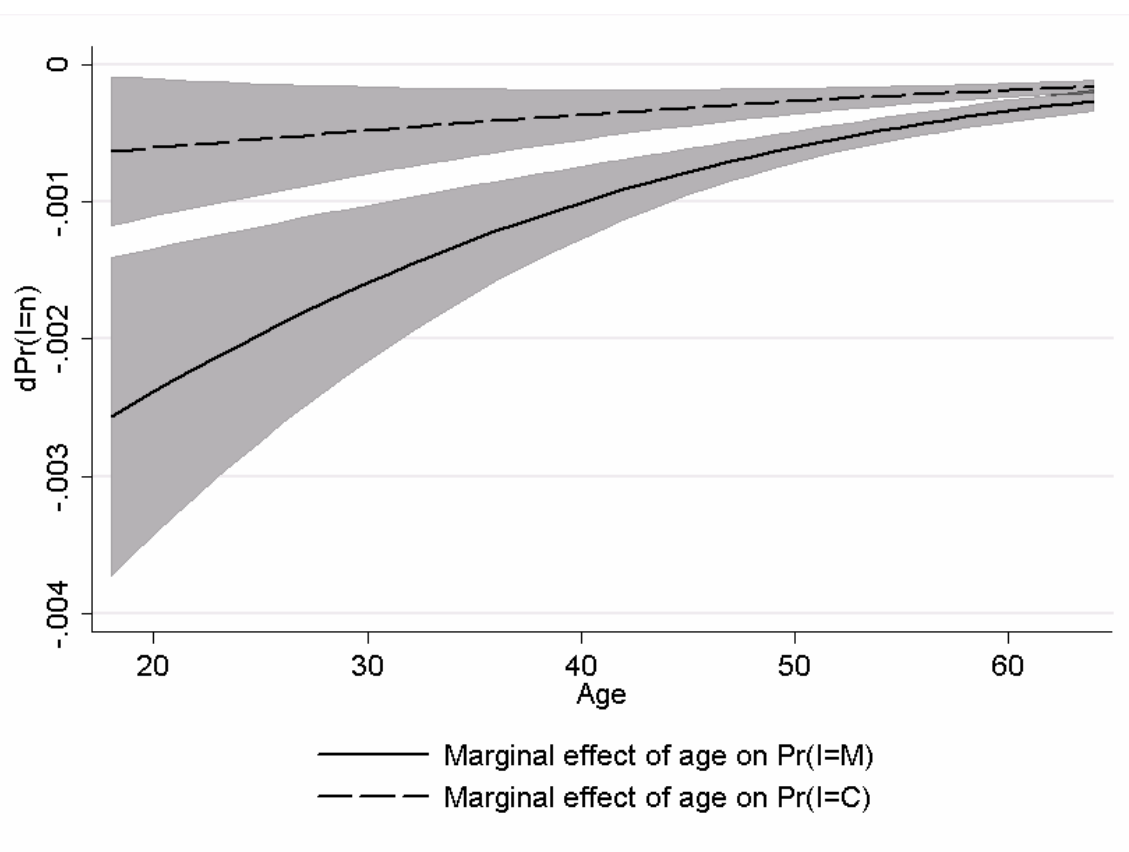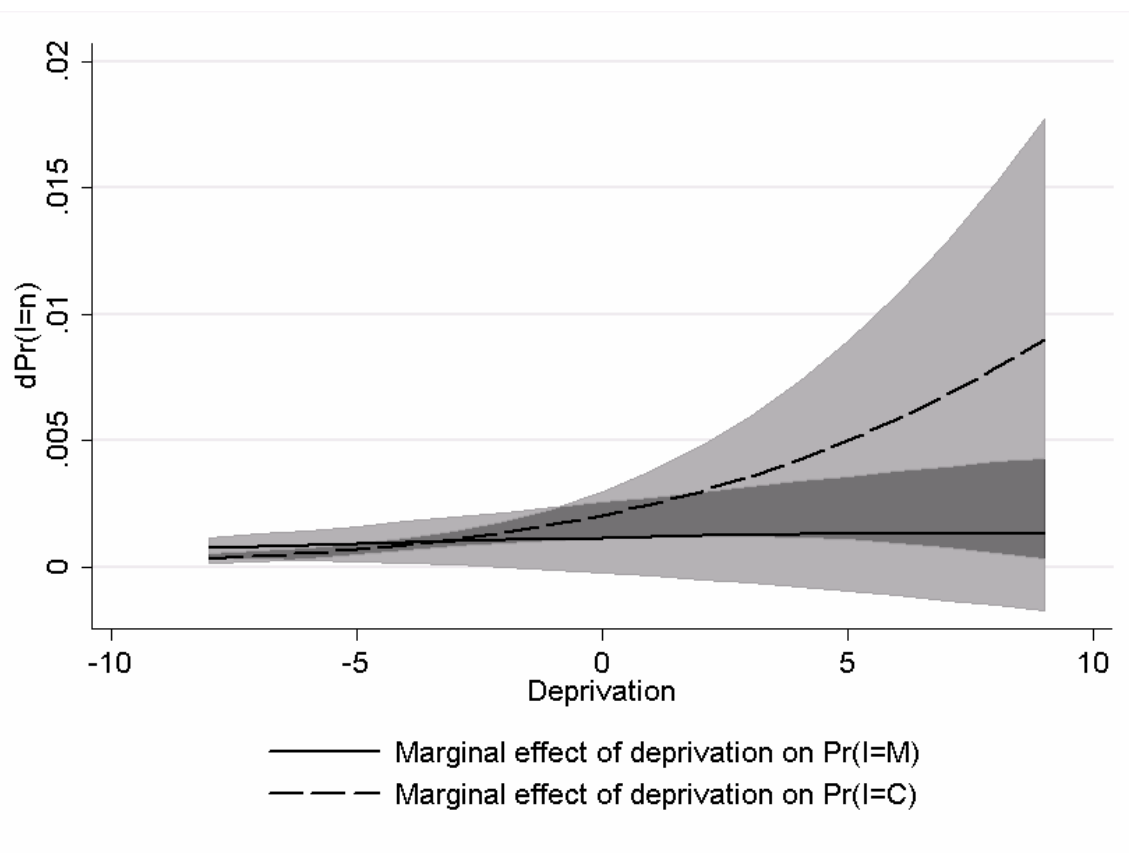

Note: Marginal effects calculation based on multinomial probit regression (see table 4.8). Shaded areas represent 95% confidence interval of marginal effect

For the willingness to migrate abroad by contrast, aside from previous experience with working abroad and the presence of network effects – which have substantially higher

marginal effects (of 5.4 and 2.5 percentage points) than for the willingness to commute – being single and knowledge of English also have an important impact. Otherwise average singles are by 2.1 percentage points more willing to migrate than individuals living in a partnership and knowledge of the English language increases the probability to commute by 1.7 percentage points.

Finally, for the probability of being unwilling to migrate or commute, the discrete changes in probability are highest for individuals with previous experience of working abroad (−7.4 percentage points), networks (−3.9 percentage points), singles (−2.6 percentage points) and for persons who know English (−1.2 percentage points) or German (−1.4 percentage points).

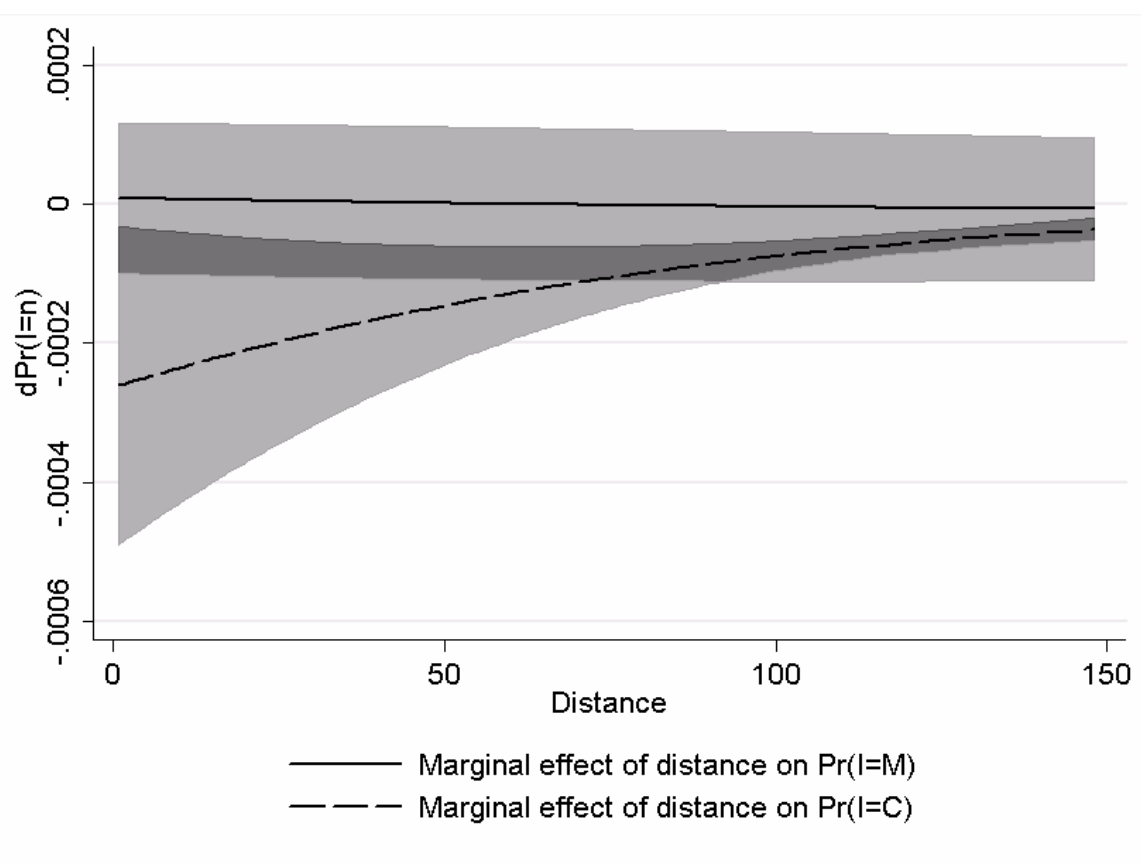**Figure 6.3: Marginal effects of deprivation on the probabilities of migration and commuting vs. staying**

Note: Marginal effects calculation based on multinomial probit regression (see table 4.8). Shaded areas represent 95% confidence interval of marginal effect

Table 6.10 also reports the marginal effects of the continuous variables age, deprivation and distance on the probability of being willing to migrate, commute and stay. These measure the percentage point increase in the probability of being willing to commute, willing to migrate or to stay arising from an incremental change for an otherwise average individual. Because of the nonlinear fashion of the estimator, marginal effects are not constant for all values of the continuous variables. Therefore, the marginal effects of age, deprivation and distance on the probabilities of being willing to migrate and being willing to commute were evaluated for all observed values of the continuous variables. The

results are depicted in figures 6.2 to 6.4. In addition, 95% confidence intervals were also included for the marginal effects as shaded areas, with darker sectors marking overlapping confidence intervals of the marginal effects on Pr(I=M) and Pr(I=C).

Figure 6.2 shows that the marginal effects of age on the probabilities of being willing to migrate and commute are significantly negative. The marginal effect is larger for the propensity to migrate than for the propensity to commute: the probability of being willing to migrate is highest for young individuals (about 0.055 for an average person age 18) but decreases sharply with age. The negative impact of an incremental year of age on the willingness to migrate is highest for young individuals, and declines with increasing age. The marginal effect on the willingness to commute on the other hand is also highest for young individuals, but varies much less with age.

Figure 6.4: Marginal effects of distance on the probabilities of migration and commuting vs. staying

Note: Marginal effects calculation based on multinomial probit regression (see table 4.8). Shaded areas represent 95% confidence interval of marginal effect

The marginal effect of the relative deprivation variable on the probability of being willing to commute (see figure 6.3) increases steeply with subjective deprivation: the effect is largest for highly deprived individuals. On the other hand, the marginal effect on the propensity to migrate is only significant at low deprivation values, and becomes insignificant for deprived individuals. Finally, as can be seen from figure 4.4, the marginal effect of distance on the propensity to commute is highest for individuals living close to the EU 15, but the impact of an incremental kilometre of distance to the EU 15 declines

the further away the individual lives from the border. The marginal effect of distance on the willingness to migrate on the other hand is insignificant and thus statistically not distinguishable from zero.

7 Motives, expectations and preferences of potential migrants and commuters in the CENTROPE Region

The LAMO data also offer insights into the motives, preferences and expectations of potential migrants and commuters. This is of interest because especially before eastern enlargement it was often argued that it is not only economic motives which drive cross-border mobility but also non-economic motives such as opportunities for education or training or networks abroad. The literature on migration typically distinguishes between pull factors, i.e., features of the recipient country (such as high wages or better conditions of living), and push factors, i.e., characteristics of the sending country (such as the political or economic situation), with the relative importance of these factors for migration flows being under dispute. Data such as those obtained by the LAMO project enable identification of the relative importance of these factors.

In addition, econometric studies, which attempted to quantify the migration flows after EU enlargement based on the historical distribution of migrants and commuters, always came to the conclusion that Austria and Germany would receive the largest share of migrants and that most of them would settle in the urban regions of the recipient countries. Instead, the imposed transitional periods have caused a diversion of migration flows from the new EU member states to the EU 15: in the first two years after enlargement, substantially more people moved to Ireland and the United Kingdom (due to these countries granting free access to their labour markets) than had been expected ex ante. In contrast, the number of people moving to Austria and Germany was substantially lower due to the transitional periods. The data used in this deliverable can give an idea on these shifts in mobility preferences.

Finally, another argument in the enlargement discussion was that the expectations of potential migrants regarding income and working conditions in the recipient countries were, at least in part, unrealistic and could give rise to "irrational" migration. On this issue the survey data can again provide an assessment of actual expectations by potential migrants.

7.1 Mobility motives

Looking at the motives given by those considering cross-border migration or commuting (Figure 7.1), economic pull factors such as better earnings, a higher standard of living or better working conditions abroad rank highest in both waves. Good employment prospects in the recipient region were also among the top five reasons stated. Of the classical push factors, only the lack of "improvement of the economic situation in the home country" was found among the five main reasons given by individuals considering migration in the first wave. This motive however lost significance in the second wave in relative and in absolute terms. This could be attributed to improving labour market and economic conditions in the home countries of the prospective migrants and commuters.

Many interviewees also seek new experiences abroad. The relative and absolute importance of this factor even increases over time: in 2006-2007 it was among the five

top-ranking motives. In contrast, "classical" motives like family reunion rank at the lower end of the scale in both waves.

Figure 7.1: Motives for moving abroad

2004-2005
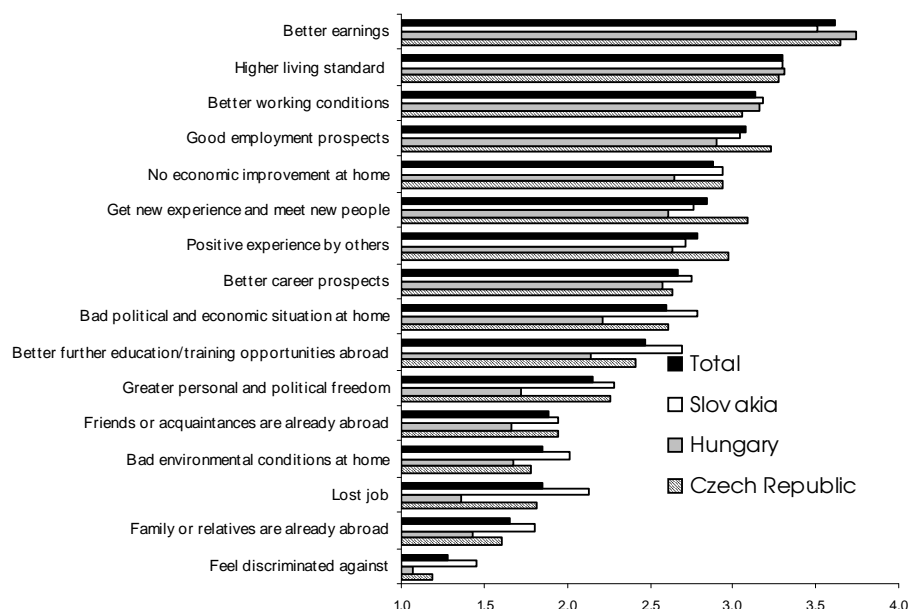
2006-2007
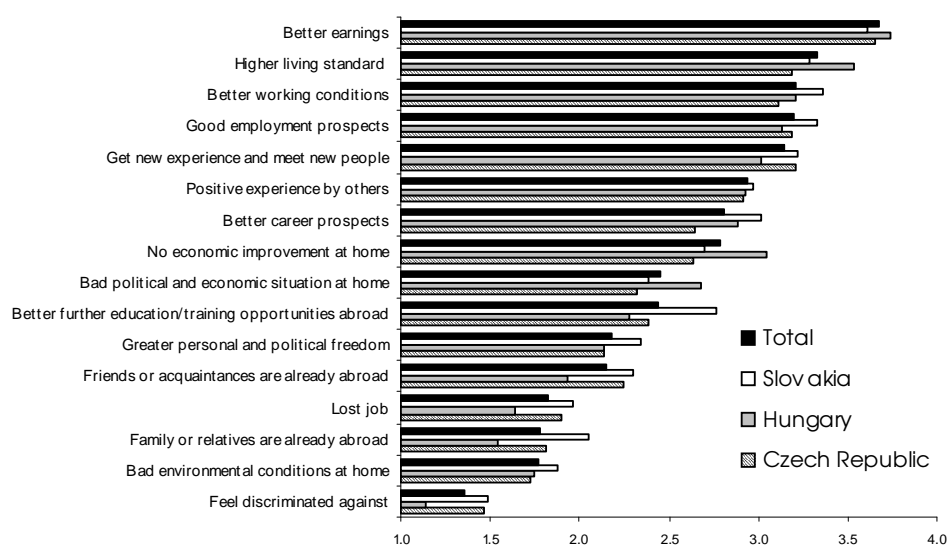
Source: LAMO household surveys in 2004-2005 and 2006-2007, WIFO calculations. - Base: general mobility potential. Categories: 1 "does not matter ", 2 "less important ", 3 "important", 4 "very important ".

Generally thus, traditional economic pull factors provide the main motives for mobility. This is further confirmed by the fact that some of the traditional push factors, such as job loss, discrimination or education/training, rank at the lower end of the scale. A deteriorating environmental situation or weak political and economic conditions in the home country are of average importance only.

Figure 7.2: Motives for staying in the home country

2004 -2005
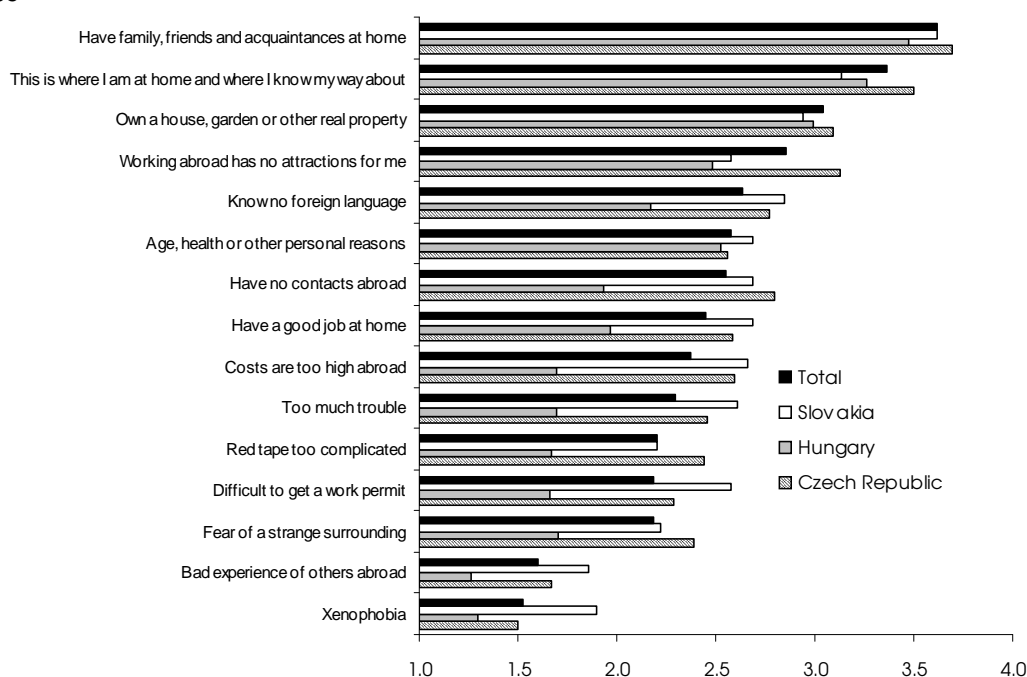
2006-2007
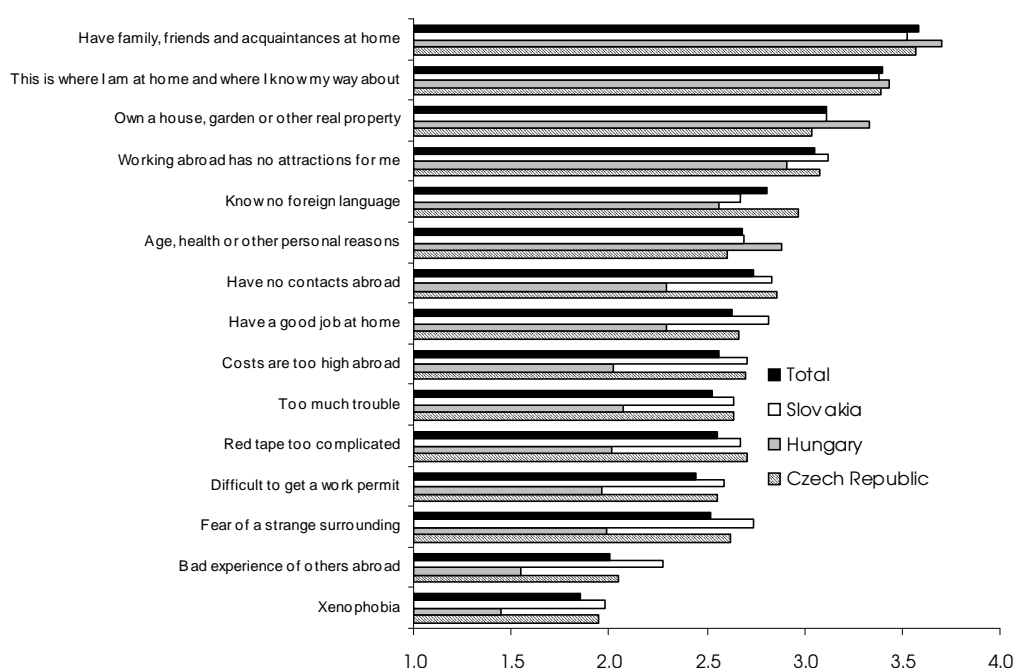
Source: LAMO household surveys in 2004-2005 and 2006-2007, WIFO calculations. - Base: persons outside the general mobility potential. Categories: 1 "does not matter ", 2 "less important ", 3 "important", 4 "very important".

Motives for cross-border mobility are ranked similarly by the potentially mobile in all countries of the CENTROPE region as well as by commuters and migrants[62]. Nevertheless, Hungarian respondents tended to accord push factors (such as a bad political and

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[62] In this, the potentially mobile from the new EU member states are distinct from those in developing countries, where similar surveys have found an overwhelming prevalence of push factors.

economic situation or the lack of economic improvements) more importance in 2006-2007 than in 2004-2005. In Slovakia on the other hand, pull factors (such as better education/training opportunities abroad, more personal and economic freedom, or networks) were of greater importance than in the average of the CENTROPE regions.

In sum, those willing to migrate or commute in the CENTROPE regions of the new EU member states constitute a group that is strongly drawn by the better economic conditions in the recipient region, while the political and economic situation back home and personal reasons (except for family reasons) parameters of considerable importance in other surveys appear to exert less of an impact on the decision to become mobile.

When considering those unwilling to move the motivational situation is entirely different. In both surveys (see Figure 7.2), key motives for non-mobility are personal factors and non-monetary costs, such as the fear of losing family and personal networks, the feeling of affinity to one's home country and knowledge of relevant local factors. This highlights the importance of location-specific insider advantages as an explanatory factor for non-mobility, as well as the relevance of uncertainty as a major barrier to mobility. Among the monetary factors identified were real estate assets (ownership of a house, home or garden, etc.) or the lack of investments in human capital, like foreign language skills. Personal factors are thus the greatest barrier to mobility in the CENTROPE regions of the NMS, while less importance is accorded to institutional barriers, such as the difficulty of getting a work permit.

7.2 Choice of country and region of work

7.2.1 Country preferences

While earlier econometric studies (e.g. Boeri Brücker, 2001) concluded that about two thirds of the NMS' migration potential plan to migrate to Germany or Austria, this is no longer the case according to the results of the LAMO survey. According to this data the proportion of those willing to migrate to Germany and Austria is about 40% (first wave: 40.7%; second wave: 39.5%). On the other hand, the share of potential migrants preferring the United Kingdom is substantially higher (by about a quarter) than in earlier surveys (first wave: 20.9%; second wave: 24.3%). This shift is less obvious when looking at the general mobility potential since this includes also a large share of potential commuters, where the share of those who prefer Austria as their preferred target country is about 65% in both waves and thus strikingly high[63].

These differences can be attributed to a number of factors:

- First, contrary to Austria and Germany, the UK did not make use of transition periods on the labour market.

Table 7.2: Targets of commuters and migrants, by regions and education levels

	Elementary school	Apprenticeship/ technical collage	Secondary school (university entrance level)[1]	University	Total
2004-2005			*Migration potential in percent*		
Capital	25.2	13.6	12.9	10.7	14.6
Other urban area	9.8	7.5	6.4	6.9	7.3
Near-border rural area	14.6	23.1	9.3	4.4	11.9
Don't know/don't care	50.4	55.8	71.4	78.0	66.2
			Commuting potential in percent		
Capital	16.7	7.2	14.5	15.8	12.9
Other urban area	5.6	8.4	3.5	10.8	6.5
Near-border rural area	31.5	50.0	34.4	25.0	36.6
Don't know/don't care	46.3	34.3	47.7	48.3	44.0
			Mobility potential in percent		
Capital	22.6	10.2	13.6	12.9	13.8
Other urban area	8.5	8.0	5.1	8.6	7.0
Near-border rural area	19.8	37.4	20.6	13.3	22.9
Don't know/don't care	49.2	44.4	60.7	65.2	56.3
2006-2007			*Migration potential in percent*		
Capital	30.8	18.9	34.6	44.7	33.2
Other urban area	7.7	7.1	12.4	10.5	10.0
Near-border rural area	11.5	25.2	14.1	11.8	15.4
Don't know/don't care	50.0	48.8	38.9	32.9	41.3
			Commuting potential in percent		
Capital	9.1	5.2	18.5	23.2	12.9
Other urban area	5.5	4.3	3.3	1.8	3.8
Near-border rural area	56.4	53.0	50.0	35.7	49.7
Don't know/don't care	29.1	37.4	28.3	39.3	33.6
			Mobility potential in percent		
Capital	23.3	12.4	30.1	38.9	26.3
Other urban area	6.9	5.8	9.8	8.2	7.9
Near-border rural area	27.0	38.4	24.2	18.3	27.1
Don't know/don't care	42.8	43.4	35.9	34.6	38.7

Notes: Base: general potentials.

Source: LAMO household surveys in 2004-2005 and 2006-2007, WIFO-calculations.

-       Second, foreign language education in the NMS changed substantially over the past years, with English taking over German as the primary foreign language taught in school. As a result, younger migrants (which make up a substantial part of the migration potential) are more fluent in English than in German.

-       Finally, public debate in Germany and Austria before EU accession may have caused some potential migrants to feel unwelcome in these countries, which again could have contributed to the change in country preferences.

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[63] Nevertheless this is not really surprising considering that these surveys were conducted in the border regions of CENTROPE.

Figure 7.3: Motives for country preference by recipient country: Austria, United Kingdom and overall

2004- 2005
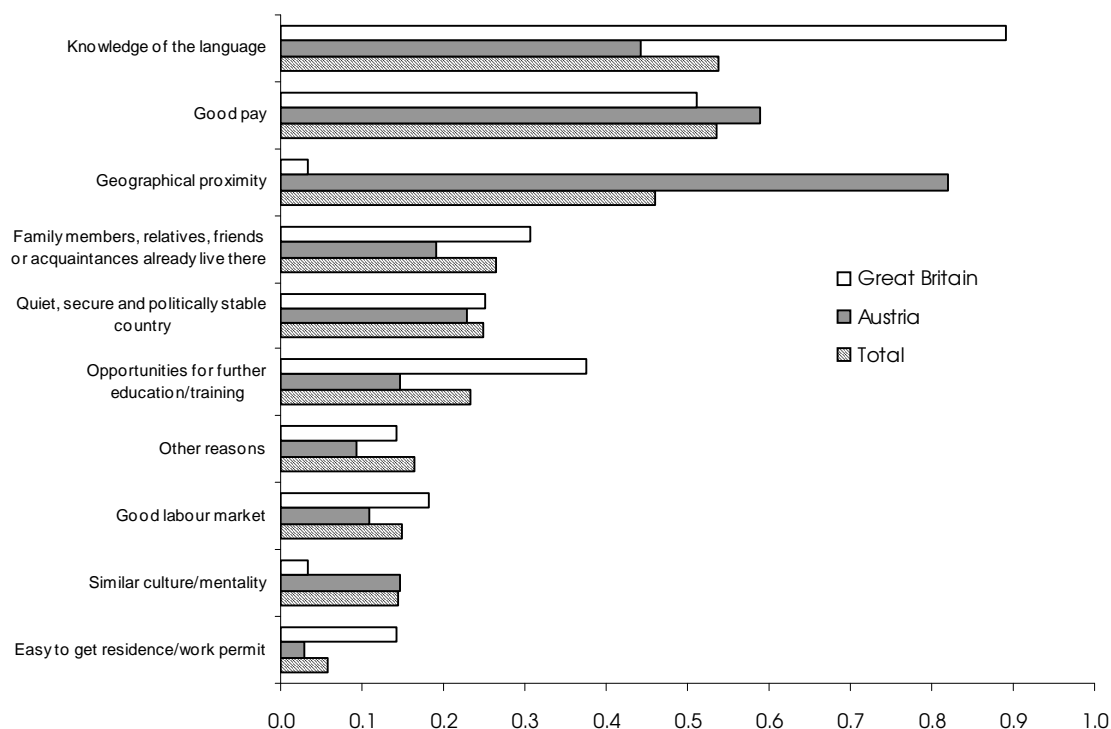
2006-2007
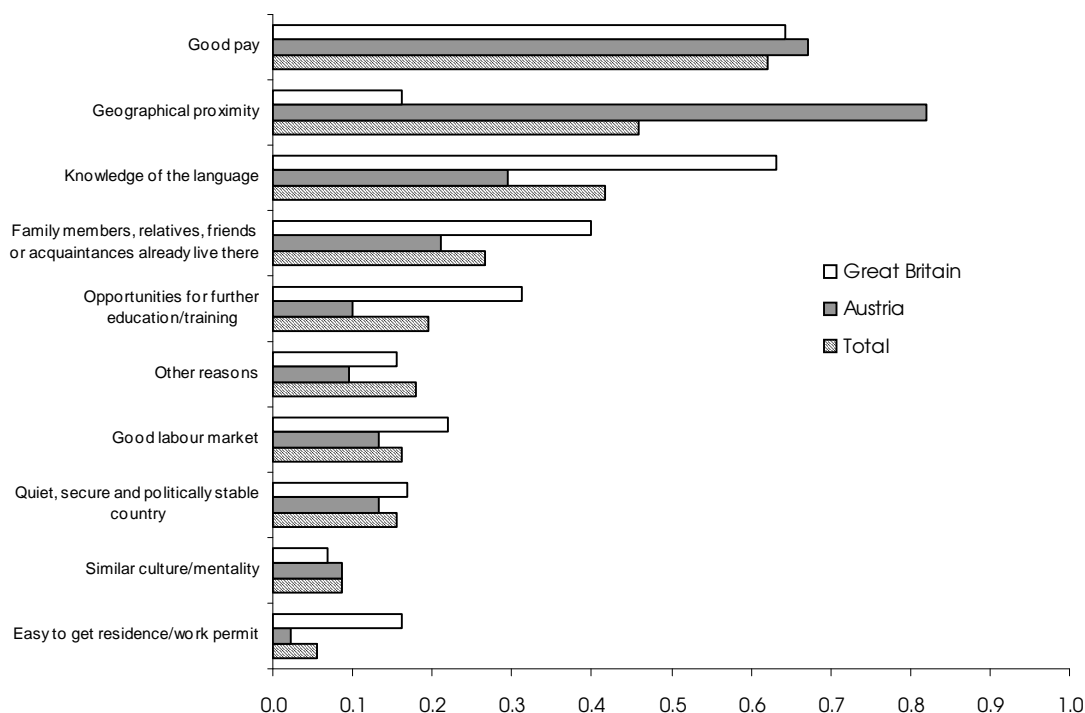
Source: LAMO household surveys in 2004-2005 and 2006-2007, WIFO calculations. – Base: general mobility potential. Multiple choices allowed

The motives for the choice of target countries confirm some of these hypotheses. Thus, a comparison of motives for choosing the United Kingdom and Austria respectively (see

Figure 7.3) shows that those who prefer Austria do so mainly because of its geographical proximity (which obviously more important for commuters than for potential migrants, see Figure 7.4) and its high wage level. All other motives, such as language skills, resident family members, relatives or friends, education or training opportunities as well as the relative easiness of obtaining a residence or work permit seem to speak for the United Kingdom.

The survey thus points at a shift in country preferences, especially among potential migrants, which can be attributed to the transition periods, but also to other factors. This trend has grown stronger over time, as evidenced by the recent growth in migration flows from the NMS to the UK.

7.2.2 Regional preferences

Apart from country preferences, the LAMO survey also provides information regarding regional preferences within the respective target countries (see Tables 7.2 and 7.3). Potential migrants tend to prefer urban regions (capital or other city/town), while potential commuters are more likely to also consider rural regions near the border. This is obvious from the data for 2006-2007, where the percentage of potential migrants who want to move into urban regions has more than doubled since 2004-2005, while the figure has remained approximately constant among potential commuters. However, this result is affected by differences in the proportion of respondents who did not specify concrete target regions between the waves. Especially Slovak respondents did not always specify regional preferences in the first wave (75.5%). Similarly, more than half of those surveyed in Hungary in 2004-2005 gave no information on their target region preference, compared to about one in three respondents in the Czech Republic. Differences between waves, as shown in Tables 7.2 and 7.3, must therefore be interpreted with caution.

Studying the target preferences by educational level one can conclude that individuals with a vocational training (apprenticeship) show a significant preference for rural areas, while higher-skilled workers (secondary and tertiary education) clearly prefer urban regions as a target for cross-border mobility, especially in 2006-2007.[64]

Significant differences in regional preferences can also be found between countries (Table 7.3): a considerable part of the Hungarian population (potential commuters and potential migrants of both waves) would consider working in rural areas near the border while the general migration and mobility potential from the Czech Republic clearly prefers urban regions. These results appear to be influenced also by the existence of an Austrian-Hungarian agreement on cross-border commuting, as a result of which a quota of Hungarian workers is allowed to work in the Austrian province of Burgenland.

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[64] However, the change that occurred in regional preferences between the two waves as shown in Table 7.2 needs to be interpreted with due caution (see above).

Table 7.2: Targets of commuters and migrants, by regions and education levels

	Elementary school	Apprenticeship/ technical collage	Secondary school (university entrance level)[1]	University	Total
2004-2005		*Migration potential in percent*			
Capital	25.2	13.6	12.9	10.7	14.6
Other urban area	9.8	7.5	6.4	6.9	7.3
Near-border rural area	14.6	23.1	9.3	4.4	11.9
Don't know/don't care	50.4	55.8	71.4	78.0	66.2
		Commuting potential in percent			
Capital	16.7	7.2	14.5	15.8	12.9
Other urban area	5.6	8.4	3.5	10.8	6.5
Near-border rural area	31.5	50.0	34.4	25.0	36.6
Don't know/don't care	46.3	34.3	47.7	48.3	44.0
		Mobility potential in percent			
Capital	22.6	10.2	13.6	12.9	13.8
Other urban area	8.5	8.0	5.1	8.6	7.0
Near-border rural area	19.8	37.4	20.6	13.3	22.9
Don't know/don't care	49.2	44.4	60.7	65.2	56.3
2006-2007		*Migration potential in percent*			
Capital	30.8	18.9	34.6	44.7	33.2
Other urban area	7.7	7.1	12.4	10.5	10.0
Near-border rural area	11.5	25.2	14.1	11.8	15.4
Don't know/don't care	50.0	48.8	38.9	32.9	41.3
		Commuting potential in percent			
Capital	9.1	5.2	18.5	23.2	12.9
Other urban area	5.5	4.3	3.3	1.8	3.8
Near-border rural area	56.4	53.0	50.0	35.7	49.7
Don't know/don't care	29.1	37.4	28.3	39.3	33.6
		Mobility potential in percent			
Capital	23.3	12.4	30.1	38.9	26.3
Other urban area	6.9	5.8	9.8	8.2	7.9
Near-border rural area	27.0	38.4	24.2	18.3	27.1
Don't know/don't care	42.8	43.4	35.9	34.6	38.7

Notes: Base: general potentials.

Source: LAMO household surveys in 2004-2005 and 2006-2007, WIFO-calculations.

In addition, the LAMO questionnaire offers an opportunity to assess the preferences of potential commuters regarding maximum commuting times. This is especially interesting when considering that previous estimates of the commuting potential (see, e.g., Huber, 2001, Birner and Huber, 1999, Alecke and Untiedt, 2001) assumed that most of the potential commuters would commute a maximum of 180 to 240 minutes per day. The data used here indicate that (see table 7.3) some 85% of potential daily commuters in the first wave would accept commutes of up to 150 minutes while only 15.7% would undertake a daily commute of more than 2.5 hours. At the time of the second survey in 2006-2007, this share was down to 9.0%, however, this decline is not statistically

significant). Among potential weekly commuters, about 80% would accept a maximum weekly commute of up to 6 hours in 2004-2005, while the proportion of those willing to accept commutes of more than 6 hours significantly declined from 20.2% in 2004-2005 to 12.7% in 2006-2007.

Table 7.3: Maximum commuting times, daily and weekly commuters

	Daily commuters		Weekly commuters	
	2004-2005	2006-2007	2004-2005	2006-2007
	Percent			
Up to 1 hr	27.5	44.1	26.6	29.5
1 to 2.5 hrs	56.8	46.9	53.2	57.8
More than 2.5 hrs	15.7	9.0	20.2	12.7

Notes: Base: general potentials.

Source: LAMO household surveys in 2004-2005 and 2006-2007, WIFO-calculations.

7.3   Length and timing of migration

In previous studies it was often not possible to assess the period within which the mobility potential might be realised. Table 7.4 depicts the periods within which potential migrants want to take up work abroad. Since it is reasonable to assume that individuals with more concrete mobility intentions also have more concrete ideas with regard to timing, we distinguish by mobility potentials. This allows more differentiated observations, but also leads to very low numbers of observations from the real mobility potential[65], so that any further subdivision (e.g. by sending or receiving countries) would not be useful.

The findings are in line with a priori expectations. Among those in the general mobility potential, mobility intentions are rather vague: 44.8% of respondents in 2004-2005, who were in the general mobility potential but had not yet taken any preparatory steps towards taking up work abroad (i.e. those in the general migration potential without those in the expected mobility potential), were unable to state when they intended to move abroad. Nevertheless, the data also show that the mobility intentions took more concrete forms between 2004-2005 and 2006-2007: the share of undecided in the general mobility potential fell significantly to 29.0%.

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[65] Altogether the real migration potential consists of just 128 observations in the first wave, and only 119 in the second wave.

Table 7.4: Preferences on when to start working abroad, by mobility potentials

	General[1]	Expected[2]	Real	General (total)
2004-2005	*Migration potential in percent*			
In the next six months	4.7	16.7	46.5	13.0
In 6 to 12 months	12.2	13.8	19.8	13.5
In 1 to 2 years	15.8	17.6	11.6	15.8
In 3 to 5 years	15.8	19.5	4.7	15.5
After 5 years	12.2	8.1	2.3	9.9
Don't know yet	39.4	24.3	15.1	32.3
	Commuting potential in percent			
In the next six months	7.2	20.0	40.5	12.6
In 6 to 12 months	8.2	11.4	16.7	9.6
In 1 to 2 years	14.0	20.7	9.5	15.3
In 3 to 5 years	13.8	13.6	9.5	13.4
After 5 years	6.3	6.4	4.8	6.2
Don't know yet	50.5	27.9	19.0	43.0
	Mobility potential in percent			
In the next six months	5.9	18.0	44.5	12.8
In 6 to 12 months	10.3	12.9	18.8	11.8
In 1 to 2 years	14.9	18.9	10.9	15.6
In 3 to 5 years	14.8	17.1	6.3	14.6
After 5 years	9.3	7.4	3.1	8.2
Don't know yet	44.8	25.7	16.4	37.1
2006-2007	*Migration potential in percent*			
In the next six months	3.5	8.8	36.8	8.8
In 6 to 12 months	7.9	27.7	31.6	15.2
In 1 to 2 years	23.8	25.5	18.4	23.5
In 3 to 5 years	25.0	16.1	7.9	20.9
After 5 years	14.6	3.6	0.0	10.4
Don't know yet	25.2	18.2	5.3	21.2
	Commuting potential in percent			
In the next six months	5.8	22.9	53.5	14.2
In 6 to 12 months	12.9	2.9	20.9	12.9
In 1 to 2 years	18.8	28.6	7.0	18.2
In 3 to 5 years	16.3	8.6	4.7	13.8
After 5 years	10.8	8.6	0.0	9.1
Don't know yet	35.4	28.6	14.0	31.8
	Mobility potential in percent			
In the next six months	4.3	11.6	42.9	10.6
In 6 to 12 months	9.8	22.7	27.7	14.4
In 1 to 2 years	21.9	26.2	14.3	21.7
In 3 to 5 years	21.7	14.5	6.7	18.5
After 5 years	13.2	4.7	0.0	9.9
Don't know yet	29.0	20.3	8.4	24.8

Notes: [1] Excluding expected potential. - [2] Excluding real potential

Source: LAMO household surveys in 2004-2005 and 2006-2007, WIFO-calculations.
 Base: general mobility potential.

Table 7.5: Preferences regarding period of stay after taking up work abroad, by mobility potentials

	General[1]	Expected[2]	Real	General (total)
2004-2005	*Migration potential in percent*			
In the next six months	4.7	16.7	46.5	13.0
In 6 to 12 months	12.2	13.8	19.8	13.5
In 1 to 2 years	15.8	17.6	11.6	15.8
In 3 to 5 years	15.8	19.5	4.7	15.5
After 5 years	12.2	8.1	2.3	9.9
Don't know yet	39.4	24.3	15.1	32.3
	Commuting potential in percent			
In the next six months	7.2	20.0	40.5	12.6
In 6 to 12 months	8.2	11.4	16.7	9.6
In 1 to 2 years	14.0	20.7	9.5	15.3
In 3 to 5 years	13.8	13.6	9.5	13.4
After 5 years	6.3	6.4	4.8	6.2
Don't know yet	50.5	27.9	19.0	43.0
	Mobility potential in percent			
In the next six months	5.9	18.0	44.5	12.8
In 6 to 12 months	10.3	12.9	18.8	11.8
In 1 to 2 years	14.9	18.9	10.9	15.6
In 3 to 5 years	14.8	17.1	6.3	14.6
After 5 years	9.3	7.4	3.1	8.2
Don't know yet	44.8	25.7	16.4	37.1
2006-2007	*Migration potential in percent*			
In the next six months	3.5	8.8	36.8	8.8
In 6 to 12 months	7.9	27.7	31.6	15.2
In 1 to 2 years	23.8	25.5	18.4	23.5
In 3 to 5 years	25.0	16.1	7.9	20.9
After 5 years	14.6	3.6	0.0	10.4
Don't know yet	25.2	18.2	5.3	21.2
	Commuting potential in percent			
In the next six months	5.8	22.9	53.5	14.2
In 6 to 12 months	12.9	2.9	20.9	12.9
In 1 to 2 years	18.8	28.6	7.0	18.2
In 3 to 5 years	16.3	8.6	4.7	13.8
After 5 years	10.8	8.6	0.0	9.1
Don't know yet	35.4	28.6	14.0	31.8
	Mobility potential in percent			
In the next six months	4.3	11.6	42.9	10.6
In 6 to 12 months	9.8	22.7	27.7	14.4
In 1 to 2 years	21.9	26.2	14.3	21.7
In 3 to 5 years	21.7	14.5	6.7	18.5
After 5 years	13.2	4.7	0.0	9.9
Don't know yet	29.0	20.3	8.4	24.8

Notes: [1] Excluding expected potential. - [2] Excluding real potential

Source: LAMO household surveys in 2004-2005 and 2006-2007, WIFO-calculations.
Base: general mobility potential.

In spite of becoming more concrete, individuals in the general mobility potential typically showed very vague ideas as to the time of migration. It can be expected that the most of them would migrate in the short term only if and when they receive an attractive offer from a prospective employer abroad.

The situation is different for the potentially mobile who have already taken preparatory steps towards working abroad and who are thus in the expected mobility potential. Although even in this group one out of four (first wave) and one out of five (second wave) respondents had no concrete plans regarding the preferred timing of migration, over 30% stated that they plan to start working abroad within the next year. Accordingly there is a substantial pool of individuals in the NMS, who may be mobilised at short notice, but generally speaking, a larger part has mobility preferences which are rather focused on the medium to long term.

Those who have already taken more concrete preparatory steps towards working abroad (those in the real migration potential), are characterised by highly concrete, short-term mobility plans: 44.5% (first wave) and 42.9% (second wave) indicated that they intended to migrate within the next six months; another 20 to 30% planned to leave within one year. A majority of this group may thus be included in the group of those that can be mobilised at short notice.

Concerning the length of the mobility period (Table 7.5), some 20 to 25% of respondents (regardless of the mobility concept) stated that they intend to stay up to two years, so that about one out of four or five potential migrants plans only a short-term stay. Yet about 30% of those in the general migration potential and about 35% of those assigned to the expected or real migration potential intend to stay abroad for as long as possible. Adding the 5 to 10% who intend to stay for up to ten years or until retirement there is a quite substantial long-term mobility potential in contrast to the findings of many previous surveys in the mid-1990s of 40 to 45% of the general mobility potential. The distribution of preferences hardly changed between the two waves.

Interestingly, preferences for short-term mobility are slightly less distinct among potential commuters than among potential migrants. To compensate, preferences for a long-term move are slightly higher among potential commuters. Even though this observation is based on a small sample, it is still surprising considering that migration (and subsequent remigration back home) comes at a higher cost while commuters can switch between jobs at home and abroad at relatively low cost. On the other hand, migrants may prefer short-term mobility in order to evade non-monetary costs (such as the loss of friends or location-specific insider advantages at home).

The claim that migrants from the NMS intent on working abroad solely to become eligible for social insurance benefits, which was frequently asserted in the public debate before EU enlargement, seems to be of rather minor importance here: Only 1 to 2% want to stay only until they become eligible for social welfare.

5.4   Expectations concerning type of work

The LAMO project also surveyed expectations regarding potential workplaces abroad. Some 30 to 50% of the potentially mobile expect to get a "better" job abroad than at home, and another 20 to 30% hope for a job of the "same quality" than the one they held at home. Furthermore, about 40% of the interviewees expect to be employed according to their skill level. A comparison between the two waves shows (table 7.6) that in 2006-2007 both the share of those in the general mobility potential who expect a better job abroad and of those who expect their job to be worse has significantly risen over 2004-2005.

Table 7.6: Expectations regarding the "quality" of the job abroad

	Migrants		Commuters		Total	
	2004-2005	2006-2007	2004-2005	2006-2007	2004-2005	2006-2007
Work quality			*Percent*			
Same as at home	19.7	22.0	20.8	28.0	20.2	24.1
Irrelevant	13.8	19.3	15.3	20.8	14.4	19.8
Better	36.8	48.1	33.1	50.3	35.1	48.9
Worse	5.4	8.3	4.9	5.3	5.2	7.3
Accords with the skill level	43.4	37.1	41.9	40.6	42.7	38.3
Does not accord with the skill level	10.4	13.8	13.1	12.3	11.6	13.3

Notes: Base: general mobility potential. Multiple choices permitted.

Source: LAMO household surveys in 2004-2005 and 2006-2007, WIFO-calculations

Table 7.7: Preferences regarding sector of employment abroad, by mode of mobility

	Migrants		Commuters		Total	
	2004-2005	2006-2007	2004-2005	2006-2007	2004-2005	2006-2007
			Percent			
Agriculture and farming	9.2	13.9	15.4	20.4	12.0	16.1
Fishing	1.2	1.3	2.7	1.9	1.9	1.5
Mining	0.4	0.3	0.8	0.9	0.6	0.5
Manufacturing	11.8	14.1	20.5	21.1	15.6	16.5
Electricity, gas and water supply	3.1	0.5	3.0	1.3	3.1	0.7
Construction	13.0	11.2	14.6	23.0	13.7	15.2
Trade	10.7	13.0	13.6	12.9	12.0	12.9
Hotels and restaurants	24.6	27.2	21.1	23.0	23.1	25.8
Transport and communications	8.0	8.3	9.7	5.0	8.8	7.2
Financial intermediation	13.2	3.4	6.7	0.9	10.3	2.6
Real estate and business services	9.2	6.2	5.9	4.1	7.7	5.5
Public administration	4.7	3.2	2.9	0.9	3.9	2.5
Education	6.2	8.9	5.9	3.5	6.1	7.1
Health, veterinary and social services	10.3	10.7	11.6	11.6	10.9	11.0
Other services	19.2	14.3	16.3	9.7	17.9	12.7
Private households	10.8	11.7	14.4	14.5	12.4	12.6
Extraterritorial organisations	10.5	5.7	7.0	1.6	9.0	4.3
Others/don't know/no reply	25.1	12.5	19.6	8.2	22.7	11.0

Notes: Base: general mobility potential. Multiple choices permitted.

Source: LAMO household surveys in 2004-2005 and 2006-2007, WIFO-calculations

Table 7.8: Wage expectations for work abroad

	Elementary school	Apprenticeship/ technical collage	Secondary school (university entrance level)	University	Total
2004-2005		*Migration potential in percent*			
Same	0.8	2.0	0.0	0.6	0.7
Higher by 50%	4.9	5.4	4.5	3.8	4.6
About double	22.0	31.3	18.6	18.9	21.8
2 to 3 times as high	15.4	22.4	23.5	36.5	24.7
4 to 5 times as high	8.1	20.4	16.7	18.9	16.5
More than 5 times as high	2.4	4.8	7.1	6.3	5.7
Don't know/no reply	46.3	13.6	29.6	15.1	26.1
		Commuting potential in percent			
Same	0.0	0.0	1.2	1.7	0.8
Higher by 50%	5.6	3.0	3.1	3.3	3.4
About double	20.4	25.9	21.1	30.8	24.3
2 to 3 times as high	31.5	47.0	35.9	40.8	39.6
4 to 5 times as high	13.0	12.7	20.7	11.7	15.9
More than 5 times as high	3.7	6.0	3.5	4.2	4.4
Don't know/no reply	25.9	5.4	14.5	7.5	11.6
		Mobility potential in percent			
Same	0.6	1.0	0.5	1.1	0.7
Higher by 50%	5.1	4.2	3.9	3.6	4.0
About double	21.5	28.4	19.8	24.0	22.9
2 to 3 times as high	20.3	35.5	29.1	38.4	31.4
4 to 5 times as high	9.6	16.3	18.5	15.8	16.2
More than 5 times as high	2.8	5.4	5.5	5.4	5.1
Don't know/no reply	40.1	9.3	22.8	11.8	19.6
2006-2007		*Migration potential in percent*			
Same	0.0	1.6	0.9	5.9	2.1
Higher by 50%	8.7	2.4	6.4	7.9	6.3
About double	16.3	16.5	24.8	25.7	21.9
2 to 3 times as high	36.5	45.7	31.2	28.9	34.5
4 to 5 times as high	5.8	19.7	17.5	13.8	15.1
More than 5 times as high	1.0	1.6	5.1	5.9	3.9
Don't know/no reply	31.7	12.6	14.1	11.8	16.2
		Commuting potential in percent			
Same	1.8	0.0	0.0	1.8	0.6
Higher by 50%	3.6	4.3	6.5	7.1	5.3
About double	21.8	28.7	28.3	39.3	29.2
2 to 3 times as high	47.3	33.9	40.2	30.4	37.4
4 to 5 times as high	18.2	22.6	17.4	17.9	19.5
More than 5 times as high	1.8	4.3	1.1	0.0	2.2
Don't know/no reply	5.5	6.1	6.5	3.6	5.7
		Mobility potential in percent			
Same	0.6	0.8	0.6	4.8	1.6
Higher by 50%	6.9	3.3	6.4	7.7	6.0
About double	18.2	22.3	25.8	29.3	24.4
2 to 3 times as high	40.3	40.1	33.7	29.3	35.5
4 to 5 times as high	10.1	21.1	17.5	14.9	16.6
More than 5 times as high	1.3	2.9	4.0	4.3	3.3
Don't know/no reply	22.6	9.5	12.0	9.6	12.6

Notes: Notes: base is the general mobility

Source: LAMO household surveys in 2004-2005 and 2006-2007, WIFO-calculations

Table 7.9: Expectations with regard to type of work abroad

	Elementary school	Apprenticeship/ technical collage	Secondary school (university entrance level)	University	Total
2004-2005		*Migration potential in percent*			
Part-time	21.1	10.2	18.6	13.2	16.2
Full-time	61.8	76.9	78.5	81.1	75.9
Quasi-freelance/contract for works and services	12.2	17.0	17.0	15.7	15.9
Self-employed/entrepreneur	20.3	5.4	15.8	14.5	14.2
		Commuting potential in percent			
Part-time	18.5	10.8	21.5	18.3	17.6
Full-time	70.4	80.7	71.9	73.3	74.5
Quasi-freelance/contract for works and services	14.8	10.2	22.7	24.2	18.8
Self-employed/entrepreneur	9.3	7.8	7.0	12.5	8.6
		Mobility potential in percent			
Part-time	20.3	10.5	19.9	15.4	16.8
Full-time	64.4	78.9	75.5	77.8	75.3
Quasi-freelance/contract for works and services	13.0	13.4	19.6	19.4	17.2
Self-employed/entrepreneur	16.9	6.7	11.8	13.6	11.7
2006-2007		*Migration potential in percent*			
Part-time	15.4	11.0	16.2	10.5	13.6
Full-time	73.1	74.0	74.4	71.1	73.3
Quasi-freelance/contract for works and services	26.0	25.2	27.4	31.6	27.7
Self-employed/entrepreneur	12.5	3.1	7.3	13.2	8.8
		Commuting potential in percent			
Part-time	14.5	14.8	15.2	16.1	15.1
Full-time	69.1	77.4	69.6	76.8	73.6
Quasi-freelance/contract for works and services	27.3	21.7	18.5	16.1	20.8
Self-employed/entrepreneur	1.8	6.1	6.5	8.9	6.0
		Mobility potential in percent			
Part-time	15.1	12.8	16.0	12.0	14.1
Full-time	71.7	75.6	73.0	72.6	73.4
Quasi-freelance/contract for works and services	26.4	23.6	24.8	27.4	25.3
Self-employed/entrepreneur	8.8	4.5	7.1	12.0	7.8

Notes: Base: general mobility potential. Multiple choices permitted

Source: LAMO household surveys in 2004-2005 and 2006-2007, WIFO-calculations

A majority of the potentially mobile in both waves (24.6%/27.2% of potential migrants and 21.1%/23.0% of potential commuters) wants to work in the hotel and restaurant business. Another 13.7% (first wave) and 15.2% (second wave) would seek employment in the construction industry. These are usually the most typical "guest worker" sectors, also in Austria. Still, there is also a large number of individuals who want to work in the manufacturing sector (15.6% in the first wave and 16.5% in the second wave) or in agriculture and forestry (12.0% and 16.1% respectively). Only a few can imagine working in the public sector (public administration and schools). The only non-market services sector to have some attraction is the health sector. The preferences are thus dominated by the "typical guest worker sectors", hotels and restaurants, construction, manufacturing and farming and forestry.

The LAMO survey also contains information on reservation wages required to make potential commuters and migrants take up a job abroad (Table 7.8) and preferences for different types of work (Table 7.9). A majority of the potentially mobile would work abroad only if paid a substantially higher wage than at home: two out of three expect their wage abroad to be multiple times higher than what they earn now, with a relative majority (31.4% in the first wave and 35.5% in the second wave) expecting wages abroad to be two to three times their current wage. There is hardly any difference

between the waves of observations and between commuters and migrants. Similarly, differences between educational levels are small, especially since a large share of respondents in the general mobility potential could not or would not respond to this question, which makes it difficult to draw a general conclusion.

Thus, although the preference for migration is coupled with the expectation of substantially higher wages, these expectations appear to be quite realistic given the wage differentials between the NMS and the EU15. Only about 3 to 5% of the potential commuters and migrants interviewed (5.1% in the first wave, 3.3% in the second wave) expect wages to increase more than fivefold, an expectation which should be difficult to meet.

Moreover, three out of four potential migrants and commuters would prefer a full-time job (see Table 7.9), while only 15% would also work part-time. The proportion of the potentially mobile who would accept only a full-time job is greatest in Hungary. There was a significant rise in the share of those who would work abroad on the basis of a quasi-freelance employment contract from 2004-2005 to 2006-2007: The proportion increased to more than a quarter of all in the general mobility potential. The willingness to work as a freelancer increased particularly in the Czech Republic and Hungary, while it declined in Slovakia.

8 Conclusions

This deliverable analysed the regional distribution of migration and cross-border commuting in the EU27 using European Labour Force data. Furthermore a case study of migration and commuting potentials in one of the border regions, which can be deemed to be most affected from these flows (the border region of the new member states to Austria) was conducted by using the first two waves of the LAMO household survey conducted in the CENTROPE region in 2004-2005 and 2006-2007.

With respect to the regional structure of migration in the EU we find the largest local clusters of migrants in the EU 15 in the Île de France as well as Inner and Outer London and a markedly different settlement structure of migrants relative to natives: 23.9% of all migrants would have to change their region of residence in order to achieve a uniform distribution of migrants across EU-15 countries. Migrants from the NMS-8 show a lower degree of concentration than those from Bulgaria and Romania or the candidate countries, while they are more regionally concentrated than migrants from other countries. The biggest local clusters of NMS migrants can be observed in the London areas and Vienna. Looking at individual sending countries, Polish migrants show the lowest tendency to cluster regionally among migrants from the NMS. Furthermore, we find that low skilled migrants with primary education are much more concentrated than migrants with secondary or tertiary education, which confirms earlier findings.

The concentration of migrants did not differ substantially between migration cohorts: those who moved during the last 10 years are about as concentrated as those who migrated earlier. However, the target regions of more recent migration waves are considerably different from those of earlier cohorts. This applies in particular to migrants from the NMS-8, where the different institutional regimes since accession have shifted the target country structure of migration, which also affects the regional patterns of migration. Although the geographical concentration increased for more recent cohorts of migrants from the NMS-8, the correlation of local concentrations across time is rather low and even insignificant for some CEE countries. However, a regression analysis shows that—even after controlling for geographic and economic characteristics of the regions—ethnic networks do play a significant role in explaining the locational choice of migrants.

With respect to the extent of cross-border commuting in the EU 27 we find that this in general is limited to individual border regions and has a relatively low magnitude when considering the overall European labour market. In the two years observed cross-border commuters accounted for only 0.5% of total employment in the EU. In particular cross-border commuting is of relevance in a small number of border regions, located at the external border of the EU, the German-French and French Belgian borders, on the Austro-German border, at the Czech-Slovak border, in the Baltic countries and in Western Hungary as well as the German-Polish border and potentially southern Sweden, which are mostly characterised by strong linguistic, historic or institutional ties, only. In these regions usually more than 1% of the employed commute across borders and in individual cases cross-border commuting may surpass the 5% mark. For most other border regions

outside these "hot spots" out-commuting is below 0.5% of the employed. In sum the extent of commuting is small in the EU, but there is some variance among regions.

There are also some differences in the importance of cross-border commuting between the EU 15 and NMS 12. In particular, inbound cross-border commuting as a percentage of the employed in the country of work, is substantially lower in the NMS 12 than the EU 15 countries. In addition outbound cross-border commuting from the NMS 12 is strongly oriented towards the EU 15 countries rather than non-EU countries. This can be explained by the fact that most non-EU countries that are close enough to the NMS 12 to be destinations for cross-border commuting have substantially lower income levels than the NMS 12. By contrast, outbound cross-border commuting in the EU 15 is more strongly oriented to non-EU countries rather than to the NMS 12. Again, this can be explained by the differences in income levels.

Our results also indicate that cross-border commuters - in contrast to internal commuters in the EU 27 - are not in general better qualified than non-commuter and are drawn more than proportionately from manufacturing workers, males and the age group of the 20 to 29 year olds. Furthermore, these characteristics apply even more strongly to cross-border commuters from the NMS 12 than to commuters from the EU 15. While these results are largely consistent with the findings of earlier case studies in the literature, they also suggest that cross border commuters – in contrast to migrants – are not as strongly positively selected on educational criteria, but stem primarily from the intermediate qualification level.

Finally, - while our results in this respect are subject to a rather unsatisfactory data situation, our findings also imply that after controlling for other influences on cross-border commuting - flows from the NMS 12 to the EU 15 are not significantly smaller than those among the EU 15 countries, while flows from the EU 15 to the NMS 12 are significantly lower than those among the EU 15. The primary difference in the factors determining cross-border migration in the NMS 12 and the EU 15 seems to be a closer association of cross-border commuting with the industrial specialisation in the NMS 12 than the EU 15.

The case study of the CENTROPE region indicates that 10.9% of the interviewed in the CENTROPE regions of the Czech Republic, Hungary or Slovakia expressed the wish to migrate to one of the EU 15 countries in the future (and thus belonged to the general migration potential). Furthermore, 3.8% of the population in the region were willing to migrate and had either already collected information about their respective target country, taken training courses, learned the language, applied for a residence or work permit or for a job, or already had a confirmed job offer or a place to live and therefore belonged to the expected migration potential. 1.3% of the population had applied for a work permit and or already had a job offer abroad (real migration potential) in 2006-2007.

An additional 5.6% of the population in the region under consideration expressed the wish to commute to the EU 15 in the future (and thus belonged to the general

commuting potential). 1.4% of the population in the region were willing to commute and had either already collected information about their respective target country, taken training courses, learned the language, applied for a residence or work permit or for a job or already had a confirmed job offer (i.e. belonged to the expected commuting potential). Finally, 0.8% of the population had applied for a work permit and or already had a job abroad (real commuting potential) in 2006-2007.

Relative to the first wave of interviews in 2004-2006 this represents a decrease in the migration potential of between 1.5 percentage points (for the general migration potentials) and 0.1 percentage points (for the real migration potential). Furthermore commuting potentials declined more strongly for the general and expected commuting potentials, while the real commuting potential increased slightly.

A comparison with the Austrian subregions of this border region - for which data was collected in the 2004-2005 wave only – suggests that the general migration potential in Austria is as high as in the average of the NMS-regions. We interpret this as indication that the general migration and commuting potentials are very broad concepts which express vague wishes rather than real intentions and therefore must not be equated with actual or future migration: Only a small proportion of those who generally consider working abroad will actually do it.

The expected and real mobility potentials (migration potential plus commuting potential) in the Austrian part of this border region are thus lower than in the new EU member states (by 2.6 percentage points for the expected and by 1,2 percentage points for the real mobility potentials), primarily on account of the fact that commuting from Austria to the new member states is less attractive than commuting from the new member states to Austria because of wage differences.

In addition, the general decline in migration and commuting potentials in the NMS-regions was associated with relatively dissimilar developments in the individual countries:

- The general mobility potential in Slovakia decreased from 37.4 to 14.7%. This decrease was particularly pronounced in the general commuting potential (from 17.4% to 2.7%). Compared to 2004-2005, the general migration potential also decreased substantially by 8 percentage points to 12.0% in 2006-2007. Similarly, the expected mobility potential in Slovakia was less than half of its 2004-2005 value (15.4%) in the 2006-2007 survey. The real mobility potential decreased by approximately a third (first wave: 3.6%, second wave: 2.4%).

- In Hungary, the general mobility potential showed an opposite development: Due mainly to a higher general migration potential (2004-2005: 7.5%, 2006-2007: 12.0%), the general mobility potential increased significantly, from 19.5% to 25.3%. The expected mobility potential declined also in Hungary (6.8 to 5.4%). A significant rise was observed in the real mobility potential, which doubled between 2004-2005 and 2006-2007, from 1.3% in the first wave to 2.6% in the second.

Thus, Hungary was the only country with more nationals having undertaken concrete steps to work abroad in 2006-2007 than two years earlier.

- The lowest general mobility potential can be found in the Czech regions. In the second wave it declined further, from 15.9 to 13.8%. The changes in the expected and real mobility potentials (0.2 percentage points to 4.5% and 0.1 percentage points to 1.7%, respectively) were however not statistically significant.

We also use these data to analyse the determinants and structure of potential commuters and migrants. Our descriptive as well as econometric evidence suggests that in particular, the presence of kids or a spouse in the household is a more serious impediment for the willingness to migrate than for the willingness to commute. This suggests that kids and a partner in the household increase cross-border migration costs more strongly than cross-border commuting costs. Furthermore, gender differences in the willingness to commute are larger than for the willingness to migrate (although women are both significantly less willing to commute and to migrate), and the willingness to migrate reduces much more strongly with age than does the willingness to commute. While migrants may thus be considered to be composed mainly of young singles, commuters are more likely to be older and have a family. Furthermore, commuters may be expected to be more strongly selected by gender.

We also find that both those willing to commute as well as those willing to migrate are disproportionately often drawn from the two extremes of the educational distribution, and are thus often either highly or less educated. When, however, including education in a multivariate regression analysis we find that education has no significant effect on both the willingness to migrate and to commute, which we take to imply that - at least in the region analysed - potential migrants as well as potential commuters are neither positively nor negatively selected.

The willingness to migrate decreases much more rapidly with distance to the nearest potential workplace abroad than the willingness to migrate while the latter is positively influenced by English and other foreign language knowledge. The willingness to commute is, however, more strongly associated with German language knowledge. In addition, the willingness to migrate is also more strongly influenced by the presence of networks and previous experience of working abroad than the willingness to commute.

Finally, when analysing the changes in the preferences associated with the willingness to migrate and commute, we find that in contrast to similar research conducted before accession there is a striking difference with respect to the choice of country of work of potential migrants. In our data the proportion of those willing to migrate to Germany and Austria is about 40% (first wave: 40.7%; second wave: 39.5%) and thus substantially lower than in previous studies. On the other hand, the share of potential migrants preferring the United Kingdom is substantially higher than in earlier surveys (first wave: 20.9%; second wave: 24.3%). This shift is most obvious when looking at the migration potential but less so when looking at potential commuters, where the share of those who

prefer Austria as their preferred target country is about 65% in both waves of the questionnaire.

Comparing the motives for choosing the United Kingdom and Austria, respectively, shows that those who prefer Austria do so mainly because of its geographical proximity (which is obviously more important for commuters than for potential migrants) and its high wage level. All other motives, such as language skills, resident family members, relatives or friends, education or training opportunities as well as the relative easiness of obtaining a residence or work permit seem to speak for the United Kingdom.

Furthermore we also find that:

- Those willing to migrate or commute in the regions of the new EU member states analysed constitute a group that is strongly drawn by the better economic conditions in the recipient region, while the political and economic situation back home and personal reasons (except for family reasons) appear to exert less of an impact on the decision to become mobile

- The key motives for non-mobility, by contrast, are primarily personal factors and non-monetary costs, such as the fear of losing family and personal networks, the feeling of affinity to one's home country and knowledge of relevant local factors. Among the monetary factors identified real estate assets (ownership of a house, home or garden, etc.) or the lack of investments in human capital, like foreign language skills, belong to the most important deterrents for mobility. Less importance is accorded to institutional barriers, such as the difficulty of getting a work permit.

- Potential migrants tend to prefer urban regions (capital or other city/town) as a region of work, while potential commuters are more likely to also consider rural regions near the border. This is due to the fact that 91% of the potential daily commuters are not prepared to accept commuting times in excess of 2.5 hours daily.

- The relative majority of potential commuters expects substantial wage increases (of about double the amount earned currently) from mobility, would like to stay in the receiving country for as long as possible and would like to work in regular full time jobs.

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Appendix to Chapter 3: List of NUTS 2 codes used

Code	Region
AT12	Lower Austria
AT13	Vienna
DE11	Stuttgart
DE30	Berlin
DE71	Darmstadt
DEA1	Düsseldorf
DEA5	Arnsberg
ES30	Comunidad de Madrid
ES51	Cataluña
ES52	Comunidad Valenciana
ES61	Andalucía
FR10	Île de France
FR71	Rhône-Alpes
FR82	Provence-Alpes-Côte d'Azur
ITC4	Lombardy
ITD3	Veneto
ITE4	Lazio
LU00	Luxembourg
NL33	South Holland
SE22	South Sweden
UKH1	East Anglia
UKI1	Inner London
UKI2	Outer London