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The effects of structural factors in origin countries on migration

The case of Central and Eastern Europe

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- analyse migration as part of broader global change
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Abstract

This paper investigates the relationship between structural change, labour market imbalances and labour migration from the eight Central and Eastern European (CEE/EU8) economies during the transition and after their accession to the EU. The new accession states experienced markedly different migration patterns after 2004 enlargement which, given their similar wage differentials with the West, cannot be explained by the neoclassical framework. The paper deals with this puzzle by developing conceptual and empirical links between different transitional paths of CEE countries and varied migration rates. It argues that structural change that characterized their transition created different labour market imbalances across the CEE economies, hence creating different structures of employment and unemployment and varied risks and opportunities for workers of different demographic and skill profiles. These imbalances and labour market mismatches have in turn induced some workers to seek migration as an exit option more than others, and led to differences in migration rates and in the composition of migrants. In terms of theory, this paper contributes to literature which call for integrated approaches to researching migration that take into account social transformation, pointing out the limited ability of the neoclassical framework to understand migration patterns in their complexity.

Keywords: Central and Eastern Europe, labour market imbalances, labour migration, structural change, skills, wage differentials

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1 Introduction

After their accession to the EU in May 2004, as well as during the transition from a socialist to a market economy, the eight Central and Eastern European (CEE/EU8) countries – Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia – experienced markedly different migration patterns.¹ In proportion to their active labour force, the workers from the Czech Republic, Hungary and Slovenia were seeking employment abroad much less often than the workers from Poland, Slovakia and the Baltic states (Figure A1, Table A1 in the annex). Similarly, net migration throughout the transition was positive in the Czech Republic, Hungary and Slovenia, negative in Poland, Latvia and Lithuania, and mixed in Estonia and Slovakia (Table A2). Such varied migration dynamics occurred in spite of the fact that the countries have relatively similar wage and GDP differentials *vis-à-vis* the West, and that they jointly entered the EU in May 2004. This paper demonstrates that these diverse migration patterns can be explained through the analysis of macro-level structural changes that occurred during the transition in Central and Eastern Europe.

In the transition from a socialist to a market economy, the CEE economies experienced rampant structural change characterized by the shifts in product markets, export markets, sectoral transition and vast labour re-allocation from state to private enterprises and from old to new sectors. Structural changes were unprecedented in their speed and scope and required major restructuring during which skill endowments and the ability of labour to adjust to the new modern economies became the key elements of a politically and economically successful transition. While these countries' achievements in this process have been remarkable, the transition also produced persistent unemployment rates, high youth unemployment, serious skill mismatches in the labour markets and uneven development within countries. Evidently, this structural transformation is too important and too unique to be left out of the analysis of labour migration in the region.

The majority of studies of labour markets in the transition economies have analysed the adjustment processes as occurring within countries, typically across sectors (old to new, state to private) or in the form of internal migration. Little attention has been given to understanding the effect that the restructuring had on international labour adjustment or international labour migration. However, migration abroad can also be a possible option for dealing with labour market problems, imbalances, risks and insecurities caused by restructuring. This paper fills this gap and develops a conceptual and empirical link between macro-level structural changes in the CEE economies and micro-level decisions of migrants. It builds on the concept of labour market imbalances, defined as under-performance of labour markets in the form of under-utilization of labour and/or labour market bottlenecks when the workers' profiles do not match the profiles of available vacancies in a given locality, as a central analytical tool.

The paper demonstrates the importance of studying migration from the CEE region as part of the process of structural change and integration into world markets. By taking this approach and suggesting concrete analytical tools for incorporating structural factors into the analysis of migration, this work responds to recent calls in migration theorizing to study migration as part of broader social processes and changes (IMI 2006; Castles 2008a, 2008b;

¹ Abbreviations CEE and EU8 will be used interchangeably to refer to these eight countries.

de Haas 2007, 2009a, 2009b, 2010; Collinson 2009). In this way it also voices conceptual as well as empirical critique of the neoclassical framework that was most extensively applied in the studies which estimated migration potential from CEE prior to the enlargement (e.g. Bauer and Zimmermann 1999; Boeri and Bruecker 2001; Dustmann et al. 2003), and which failed to anticipate the overall rates of outflows but especially their uneven distribution across the CEE sending states (Cf. Kureková 2010).

The paper consists of four sections. The next section reviews the existing literature and briefly describes the process of structural change and its effects on labour market adjustments in CEE. Section 3 presents empirical evidence about the different nature of labour market imbalances across the CEE countries and within them, analyses the dynamics of unemployment and employment along occupational and sectoral lines and compares these with characteristics of CEE migrants in the West. Section 4 introduces spatial mismatches and looks at the impact of structural change on migration patterns from different regions in Slovakia after the accession of the country to the EU. The final section derives more general theoretical as well as policy-related implications for migration research.

2 From socialism to a market economy

The studies of migration based on the world system theory (Sassen 1988; Silver 2003; Wallerstein 1974) and dual labour market theory (Piore 1979) have contributed to the debate about the interrelation of restructuring, structural change and migration by postulating that globalization of world markets and the expansion of export manufacturing and export agriculture lead to a disruption of traditional work structures and mobilize new segments of the population into regional as well as long-distance migration. Theoretical expectations about the effect of economic restructuring on labour flows are not one-directional and are closely connected to the global capital flows. The changes in the structure of the economy and structural adjustments are likely to generate a pool of migrants, while at the same time enhancing the absorption capacity for immigrant workers coming into the country. Although these dynamics have been tested in other world regions, developed and developing alike (e.g. Anderson and Ruhs 2010; Castles and Delgado Wise 2008; Manning 2002; Piore 1979), they have not been studied in the context of transition economies. A comparative study that would concentrate on understanding the possible connection between labour market imbalances created in the process of restructuring, and international migration dynamics in the CEE economies, is missing to date.

However, a rich literature exists that has sought to explain labour market transitions, unemployment, job creation and job destruction in CEE (e.g. OECD 1996; Nešporová 2000; Boeri 2000; Faggio and Konings 2001). The initial expectations about unemployment predicted a temporary rise, followed by a decline once the markets adjusted (Boeri 2000; Jurajda and Terrell 2007). In reality, however, unemployment rose substantially very early on in all CEE economies (except the Czech Republic) and failed to decline until well into the 2000s. Moreover, the employment rates in several CEE states stabilized at levels below the average of advanced economies. While these economies had been growing since the mid 1990s, it was a jobless growth which failed to bring substantial increases in employment levels and accompanying unemployment relief. Long-term unemployment and high youth unemployment turned into protracted symptoms of CEE transition. And yet, by the mid 2000s, the shortage of jobs was replaced or accompanied by the shortage of workers (World

Bank 2007b). As an outcome of strong global and regional economic upturn and high growth rates, many CEE economies suffered from pressing labour and skill shortages which in some of the countries were further amplified by out-migration of the labour force to other EU countries. All this implied that many of the labour market problems were structural and more persistent than was initially expected, and that transition had produced complex mixes of labour market imbalances and mismatches (Arratibel et al. 2007; Boeri and Terrell 2002; World Bank 2007b). These emerged in the process of the entry of foreign capital into CEE economies and were shaped by the degree to which its characteristics mapped onto the existent skill endowments in these countries or the extent to which the education systems were able to respond to the labour market needs.

The key driver behind economic restructuring in CEE was foreign direct investment (FDI) which entered the region in the framework of privatization of state enterprises, absorbing a large fraction of workers released from the privatized state sector; but also as green-field investment (building production capacities anew). Much of the transition literature has argued for a beneficial impact of FDI on growth in CEE, emphasizing its role as a source of capital and technological and organizational knowledge (Bohle and Greskovits 2006; Liebscher et al. 2007; Mickiewicz et al. 2000; Nowak and Steagal 2001; Sengenberger 2002). The penetration of the region by foreign capital was vast and, together with liberalization of markets and trade, and global skilled-biased technological change, FDI was crucial in changing of the production structures and generating new demands on human capital endowments (Druska et al. 2002; Sabirianova 2003).

The well-qualified, cheap and acquiescent labour was initially among the major attraction factors for foreign investors, especially in the second wave of FDI entry towards the end of the 1990s and early 2000s (Arratibel et al. 2007; Janicki and Wunnava 2004; Nešporová 2000). However, it gradually became evident that education systems were not flexible enough to be able to respond well to the newly emerging market needs. In the mid 2000s, the workers in the post-socialist states still possessed the skill profiles inherited from the old regime. The communist education system invested in narrowly based vocational training which produced skills not transferable across jobs, not least because most training was done within schools attached to specific enterprises which further strengthened the specificity of the acquired skills (Boeri 2000; Mertaugh and Hanushek 2005). Vocational and technical education developed for the needs of socialist industrialization had generated skills that were obsolete during transition due to sectoral and technological shifts described earlier. Moreover, as the CEE economies generally had a lower share of people with tertiary education than the OECD average, the intake into tertiary education increased significantly. This led to the 'massification' of tertiary education, but often at the expense of quality.

Overall, the transition increased the demand for high-skilled human capital. The new types of skills and occupations in demand were in fields such as business and management, new state administration, and technological and IT-skilled industrial labour in complex industries such as automotive, electronics and chemicals; but also more generic skills such as knowledge of foreign languages, independent thinking or leadership skills. These new demands required curricular and structural changes which were in many countries delayed

incomplete as the more pressing issues gained priority in the reform agendas.² As a result, education systems have lagged behind both in the quality and in the type of skills that they invested in, producing human capital which has been joining unemployment registries rather than entering the labour markets (cf. Grajcar 2007). Moreover, under the radical transformation older workers with long tenures in the socialist enterprises found it especially difficult to adjust to new production methods and to shift to new occupations or industries. This 'disembedded' labour was unable to find employment under the new labour market conditions and became redundant. Boeri (2000, 55) concludes that 'the specificity of skills inherited from the previous regime was a major obstacle to job creation in the new sector' because it made the matching of workers and jobs more time-consuming and costly for employers. Indeed, those with vocational education have generally accounted for dominant shares of the unemployed while those with even lower educational attainment have suffered from the transition the most.³

Importantly, the transition process resulted in a significant differentiation among the countries in the region in terms of the predominant production profiles. By the time the CEE economies joined the EU, their production profiles had been altered and had diverged, which can be attributed to the differentiated nature in the timing and type of FDI that each of these economies received (Bandelj 2008; Bohle and Greskovits 2006; Mickiewicz et al. 2000). The Visegrad countries (Czech Republic, Hungary, Poland and Slovakia) and Slovenia specialized in the production and export of complex commodities (intensive in either physical or human capital or both), while the Baltic countries did not upgrade their export profiles relative to the beginning of transition and exported mainly basic commodities (EBRD 1999, 179; Greskovits 2005; World Bank 2007a). Such differentiation in the underlying economic structures is likely to result in the emerging jobs having different skills demands. In addition, the selective spatial allocation of foreign direct investment led to uneven distribution of production capacities across the regions *within* these countries, exacerbating regional wealth inequalities (Brown et al. 2007; Heidenreich and Wunder 2008; Jurajda and Terrell 2007; Medve-Balint, 2010).⁴ Regions or localities with a high concentration of heavy industries or with low diversity of economic production (single-industry towns) were hit especially hard by transition because their ability to adjust, partly due to skill specificity of labour or poor infrastructure, was very limited (Chase 1997; Heidenreich 2003). Such regions would in turn suffer from high unemployment levels, long-term structural unemployment and a lack of emerging job opportunities. The fact that the pool of idle workers possessed redundant skills was an additional reason for their not moving to localities with more work within the countries (cf. Fazekas 2004).

² Adjustment of skills supply to labour market demand has been difficult not least due to the speed of the structural change, difficulties in predicting future skill needs and the mixed extent of training offered by the companies themselves (German-Slovak Chamber of Commerce 2006).

³ While none of these phenomena are peculiar to the transition, and workers with vocational education and unskilled labour are generally more prone to unemployment and earning risk elsewhere too, the number of people with vocational technical qualifications in CEE is proportionally bigger than elsewhere, leading to a larger impact of the transition in absolute terms (See also Druska et al. 2002).

⁴ In response to this, differentiated schemes for FDI support emerged later in the transition to secure more even distribution of job creation and development within the countries. These were particularly successful in the Czech Republic (Jurajda and Terrell 2007).

In sum, the transition from a socialist to a market economy produced complex mixes of labour market imbalances and mismatches across and within the CEE economies. As an outcome of the differential effect of FDI and the varied success in adapting to new labour demands, some occupations and sectors have seen decline while others have grown in employment. This significantly affected workers whose skills and qualifications were shaped during the socialist regimes as well as the new labour market entrants. Migration represented an (exit) option for both these types of workers.

3 Empirical analysis

3.1 Hypotheses and indicators

The empirical analysis establishing a link between structural change and migration will be conducted in three steps. First I review general labour market conditions across the CEE economies prior to accession by developing an index of labour market slack, which combines a set of relevant labour market indicators comparable across countries and over time to measure general labour market performance. Lower rates of out-migration are expected from those economies that had a more favourable general labour market environment. Second, in order to grasp greater nuances in labour market structure, the analysis moves beyond the country level aggregate figures and studies imbalances within countries. For that I analyse changes in employment and unemployment patterns across occupations and sectors, using indicators such as relative occupational unemployment rate (over time), sectoral growth and decline, and the share of employment and unemployment along occupations and sectors. This helps to identify those groups that have in relative terms been affected by labour market problems the most, and can then be connected with the profiles of CEE migrants in the main receiving countries.

The third part of empirical material, elaborated in Section 4, extends the occupational and sectoral analysis to the spatial dimension and studies the impact of the regions of origin on migration patterns from Slovakia, which was one of the countries where the allocation of foreign capital exacerbated unequal opportunities within the country. This analysis will concentrate on micro-data, looking at whether and how the profiles of migrants are shaped by the region that they come from. I anticipate that different socio-economic performance among the regions in Slovakia, caused partly by the process of structural change (but partly inherited), will lead to different propensity to migrate, and shape differences in the profiles of migrants.

Labour market data used in the above analysis goes as far into the past as the availability of data allows for the comparative analysis of the eight economies, which in most instances is only the early 2000s. While the impact of structural change on migration should ideally be traced to the 1990s, when labour market restructuring was the harshest, most migrant characteristics data is only available after the EU accession. This paper therefore pays more attention to explaining post-accession migration. In doing so, however, I assume (and show) that labour market problems before 2004 were formative in affecting migration rates once the borders were liberalized.

3.2 Labour market conditions in EU8

National level labour market data provide useful information about the performance of CEE economies. In order to assess the general labour market conditions and to compare them across countries and over time, I developed a labour market slack index. It consists of five labour market related indicators which together aim to provide a measure of the 'quality' of the labour market in terms of the (lack of) job opportunities and structural problems. It merges the complex and multifaceted nature of labour market performance in one index which is easily comparable across countries and over time. The labour market slack index (LMSI) is estimated by the following formula:⁵

$$\text{LABOUR MARKET SLACK INDEX} = \text{UR} + 2 * \text{YUR} + (100 - \text{ER}) + \text{LTU} + \text{MIS}$$

where UR is the national unemployment rate, YUR is the youth unemployment rate, ER is the employment rate, LTU is the share of long-term unemployed in total unemployment and MIS is the mismatch index. The measurement of mismatch estimates the degree of dissonance between labour demand and supply across occupations and presents the variance of relative occupational unemployment rates $U(i)$.⁶ These are calculated as the number of unemployed (u) in occupational category (i) as a share of total labour force (employed (e) and unemployed (u)) in that occupational category $\{U(i) = u(i)/[u(i) + e(i)]\}$. Once these are calculated, the variance of $U(i)$ in nine ISCO 88 (International Standard Classification of Occupations) occupational groups is calculated to produce an index number. When unemployment rates of different occupations are similar, we can assume relatively similar demand and supply matching across these occupations. Greater differences in unemployment rates across occupational groups lead to higher variance and so higher occupational mismatch.

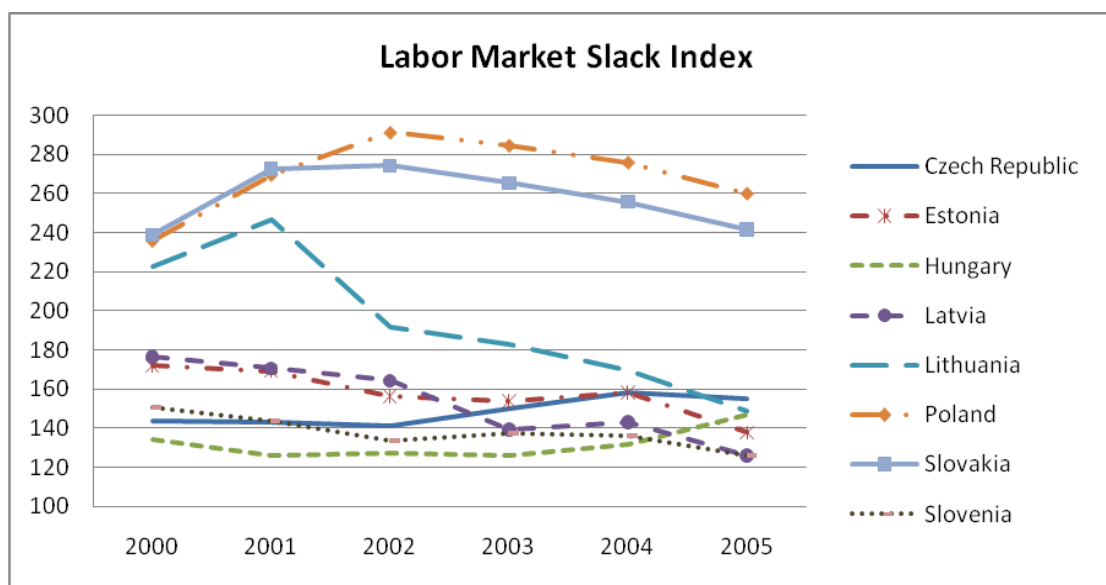
The indicators are weighted according to potential relevance for migration decisions. All these parameters are measures of labour market conditions of relevance for decisions of migrants and capture the migration potential of the unemployed, youth and employed. UR and LTU are indicators of labour market difficulties and lack of employment and are given equal weight. Given that the majority of migrants who left the countries after EU accession were of a young age, youth unemployment has been given double weight. Employment rate subtracted from 100 measures underemployment and will be higher when employment to population ratio is low. It helps to capture the 'free' labour, including the inactive. Mismatch indicator captures occupation-related problems through measuring variance across nine ISCO occupational groups. Higher index marks a worse labour market situation, lower index relatively better labour market conditions.

Figure 1 presents the labor market slack index calculated since 2000 to capture the condition of the labour markets before EU accession until 2005, when data for all countries was available. The raw data is presented in Table A3.

⁵ The index has been inspired by the work of Kahancová et al. (2008) but has been adapted to the relevance of this paper.

⁶ A standard way to measure skills/occupational mismatch is with computing unemployment-to-vacancies ratio (U/V ratio) which shows the number of jobseekers per one job opening (Rutkowski 2007, 8; Padoa Schioppa 1991, 87; Obadic 2006). Education and occupation are the most frequently used dimensions for the analysis of skill mismatches. Due to data limitation (comparative over time and cross-country data), I estimate skill mismatch through variance of relative unemployment rates, following Padoa Schioppa (1991).

Figure 1: Labour market slack index



Source: All data from LABORSTA. Author's calculations. Note: Change in methodology in Latvia in 2002.

The labour market slack index reveals that in the early 2000s labour market conditions between CEE countries varied significantly: Hungary, the Czech Republic and Slovenia were the best performers, Poland and Slovakia the worst and the Baltic countries fared in between. This general standing of the countries persisted until 2003 when the Baltic countries started to catch up and essentially outperformed the Czech Republic, Hungary and Slovenia in 2006. It is clear that the performance of labour markets in the Czech Republic, Hungary and Slovenia, which have not seen mass out-migration to the West after the accession, was superior to other countries also prior to 2004. Simultaneously, the significant improvement in labour market indicators after 2004 in all out-migration countries has been partly caused by the fact that many people used the option of seeking employment abroad, either in the UK and Ireland which liberalized their labour markets, or in the neighbouring countries or regions with better and more abundant employment opportunities (e.g. increased migration of Slovaks from Southern regions to Northern Hungary). Therefore, a strong improvement in general labour market indicators in the countries with strong out-migration is partly an artefact of people exiting the statistics due to going to work abroad (Bodnarova 2006; World Bank 2007b).

3.3 Occupations and sectors: outcomes of unequal restructuring

In order to understand internal labour market dynamics better and to gauge the effects of different restructuring paths on skill levels and skill profiles *within* countries, it is essential to look at the performance of subgroups within a labour market. The main indicator of interest is the relative occupational unemployment rate $U(i)$ which measures the number of unemployed in occupational category $u(i)$ as a share of the total labour force $[u(i)+e(i)]$ in that occupational category $[U(i) = u(i)/u(i)+e(i)]$. Table 1 presents two related measures of occupational performance: the share of unemployed and relative occupational unemployment rates in ISCO 88 categories in 2004. The distribution of unemployed across occupations reveals which skill categories within a given country contained the most unemployed. Relative unemployment rates in different occupational groups show, on the

other hand, how a certain group is performing within a given economy relative to the other groups. Combined, they help to estimate and grasp the differences in relative opportunities and risks of different occupations or skills within the CEE economies, and identify those groups which were the most disadvantaged at the time of EU accession.

Table 1: Intra-occupational unemployment patterns (%), 2004

Occupation (ISCO 88)	CR	ES	HU	LA	LI	PO	SK	SL
SHARE OF UNEMPLOYED								
1. Legislators, officials and managers	1.4	2.8	1.8	3.7	1.8	1.4	1.0	3.2
2. Professionals	2.1	3.1	2.6	2.7	2.6	1.8	1.1	3.2
3. Technicians and assoc. professionals	8.0	7.7	6.3	6.3	6.3	4.8	6.0	6.3
4. Clerks	5.2	3.1	3.8	4.1	3.8	5.0	3.6	6.3
5. Service workers	13.8	15.6	14.4	13.7	14.4	12.3	10.0	11.1
6. Skilled agricul. and fishery workers	2.1	1.9	2.3	1.8	2.3	1.1	1.3	N/A
7. Craft and related trades workers	16.0	16.7	17.8	14.5	17.8	18.6	14.2	12.7
8. Plant operators and assemblers	11.0	13.1	10.9	10.3	10.9	6.9	9.5	19.0
9. Elementary occupations	17.6	14.2	15.2	17.4	15.2	10.9	21.5	9.5
RELATIVE UNEMPLOYMENT RATE								
1. Legislators, officials and managers	2.0	2.4	1.5	3.8	2.2	5.8	3.3	1.8
2. Professionals	1.8	2.5	1.2	2.8	4.8	2.9	3.4	1.7
3. Technicians and assoc. professionals	3.4	5.9	2.8	4.4	6.9	7.6	7.6	3.4
4. Clerks	5.6	7.2	3.9	9.0	7.0	14.3	10.5	3.2
5. Service workers	9.3	12.1	5.7	10.0	11.7	19.5	14.7	5.5
6. Skilled agricul. and fishery workers	9.9	7.2	4.6	3.3	1.8	1.7	19.0	N/A
7. Craft and related trades workers	6.1	10.1	5.5	10.5	11.5	21.1	13.2	5.5
8. Plant operators and assemblers	6.9	9.1	5.6	9.4	9.2	14.5	13.5	7.1
9. Elementary occupations	17.7	11.2	11.5	11.6	17.8	26.2	29.0	14.0
AGGREGATE UNEMPLOYMENT RATE	8.3	9.7	6.1	10.4	11.4	19.0	18.1	

Source: LABORSTA. Author's calculations.

Note: CR – Czech Republic, ES – Estonia, HU – Hungary, LA – Latvia, LI –Lithuania, PO – Poland, SK – Slovakia, SL – Slovenia

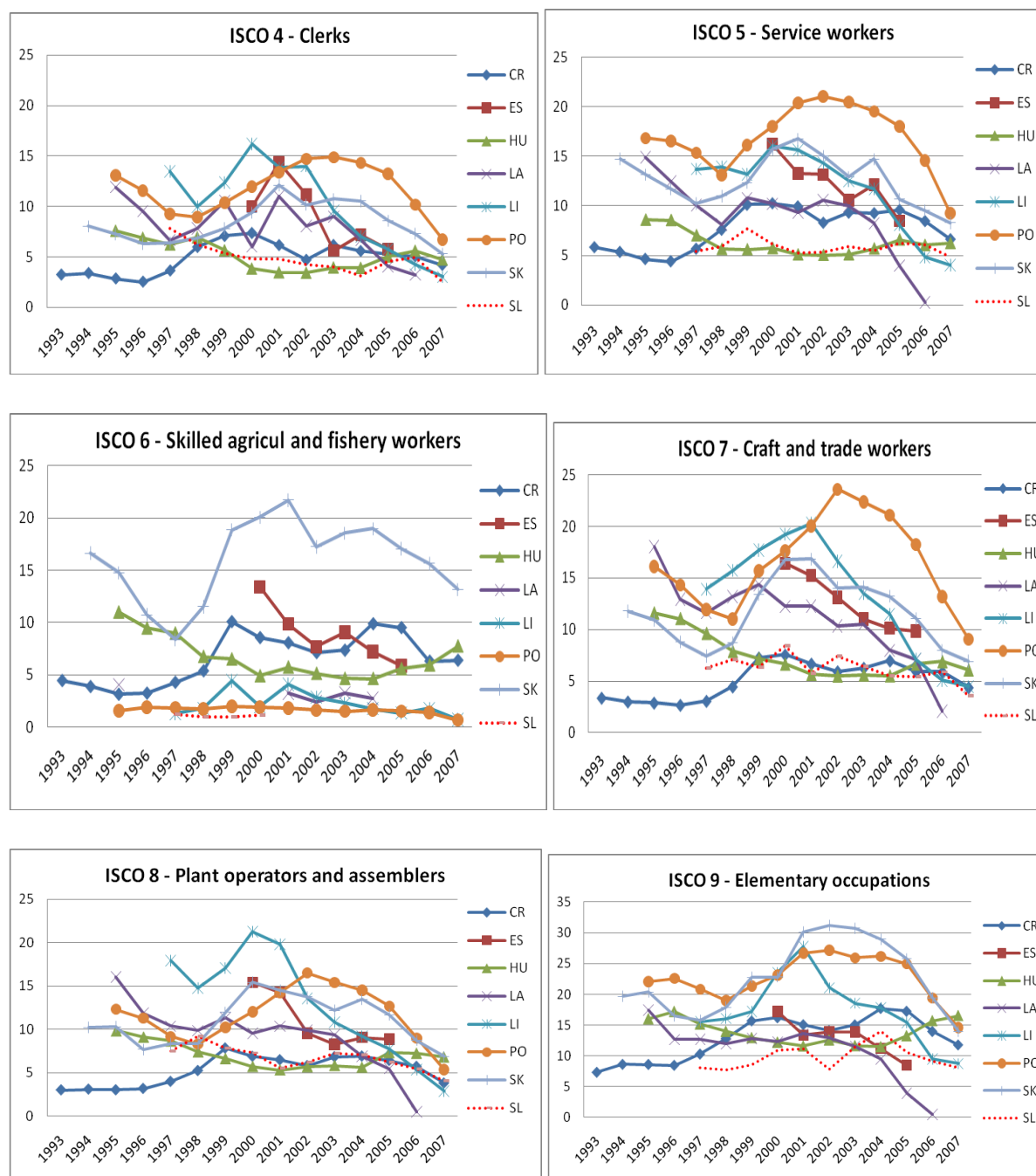
In the year of joining the EU, only a few high-skilled persons (ISCO 1-3) were unemployed in absolute as well as relative terms across all countries in the region. The negative impact of transition has been more significant for the medium and low-skilled occupations, but among these it has varied a lot across the EU8 countries in terms of relative unemployment and in absolute shares. The most affected were those skill categories which accounted for a large proportion of the unemployed, while having high relative unemployment rates. The prime examples of these are craft workers (ISCO 7) in Poland who suffered from a high unemployment rate of over 21 per cent and represented nearly 19 per cent of all unemployed. Similarly affected were unskilled workers (ISCO 9) in Slovakia, among whom the relative unemployment rate was the highest in the country (29 per cent) and who accounted for one-fifth of all unemployed people. Clearly, the situation of these occupational groups in these countries was dire. The medium-skilled industrial labour (ISCO 7 and 8) fared better in low out-migration countries but significantly worse not only in Poland and Slovakia but also in the three Baltic countries. A similar conclusion holds for the service workers in these countries. A relatively small share of the unemployed comes from

the skilled agricultural workers, although the unemployment levels vary widely (from 1.8 per cent in Lithuania to 19 per cent in Slovakia).⁷

Interestingly, the patterns distinguished for the year 2004 are quite stable over time. The over time comparison of relative occupational unemployment rates to the national unemployment rate shows that in all EU8 countries high-skilled occupations performed significantly better, while in all countries the unskilled labour together with the youth performed the worst (Figure A2 in the annex). In order to capture better the differences in relative performance of occupational groups *across* different CEE economies, a set of graphs in Figure 2 maps over time relative occupational unemployment rates in selected occupations across the eight CEE economies (leaving out the high-skilled occupations). Several interesting observations emerge from Figure 2. First, since the late 1990s, the countries' performance has diverged and there appear to be two distinct groups: the performance of the Czech Republic, Hungary and Slovenia in terms of relative occupational unemployment rates is relatively good and stable from the early 2000s on, while in the other countries it worsens between the 1990s and early 2000s and only starts to improve rapidly after EU accession. This is the case for all occupations except agricultural workers (ISCO 6) and unskilled labour (ISCO 9). Second, relatively better within-country performance of an occupational group can still imply a very high unemployment rate which can generate a pool of migrants and lead to cross-country differences in actual migration rates. For example, while in Slovakia skilled manufacturing workers (ISCO 7 and 8) performed relatively better in the context of the national labour market (see Figure A2 in the annex), in the cross-country comparison the unemployment rate of Slovak skilled manufacturing workers has been among the highest in the CEE region.

⁷ Against the general decline in agricultural employment especially in the Baltic countries and Poland, this is partly surprising. It could perhaps be explained by the fact that these workers are located in rural areas which on the one hand generally suffer from a higher incidence of unemployment but, on the other hand, provide for this particular skill group the opportunities for self-subsistence or self-employment, often supported by the governments and the EU structural funds. This makes such labour less likely to show in unemployment registries. Given the importance of agriculture in these economies, it could also mean that the governments addressed this particular group with other targeted help, leading to 'better performance' in unemployment statistics.

Figure 2: Relative occupational unemployment rates for selected occupations in EU8



Source: LABORSTA. Author's calculations.

Note: CR – Czech Republic, ES – Estonia, HU – Hungary, LA – Latvia, LI –Lithuania, PO – Poland, SK – Slovakia, SL – Slovenia

Sectoral data provides further information about the dynamics of change in labour markets as well as the current situation. Table 2 portrays employment across different sectors of the economy, showing the share of employment in 2004 and the change in employment between 2000 and 2007 (index, 2000=100) according to NACE classification (Statistical classification of economic activities in the European Community). Contrary to the trends prevalent in the advanced economies in the West, employment in industry still accounts for a high share of total employment in all CEE countries, albeit to a varying extent. The

manufacturing sector is the most significant employer in every country but employs significantly fewer persons in Latvia and Lithuania, where agriculture still figures prominently in the employment structure. Since 2000 agriculture has shed labour everywhere in the region except Slovenia, but at the time of EU accession it was still a very significant employer in Lithuania, Latvia and Poland. An important share of new employment was generated by services. Throughout the region, business and real estate lending and hotels and restaurants sectors have grown, although these occupy relatively small shares in total employment.

Table 2: Inter-sectoral employment patterns

Employment structure by economic activity in EU8 countries, 2004 (% of total)								
	CR	ES	HU	LA	LI	PO	SK	SL
Agriculture, forestry and fishing	4.3	5.3	5.3	13.2	15.7	18.2	5.1	10.2
Mining, quarrying and turf production	1.3	1.3	0.4	0.2	0.3	1.6	0.7	0.6
Manufacturing industries	27.1	23.7	22.9	16.1	17.7	19.9	26.8	28.5
Electricity, gas and water supply	1.6	2.0	1.6	2.5	2.1	1.6	2.0	1.1
Construction	9.3	7.9	7.9	8.5	8.1	5.7	9.5	5.7
Wholesale and retail trade	13.4	13.4	14.0	14.9	15.9	14.5	12.0	12.7
Hotels and restaurants	3.7	2.7	3.8	2.5	2.3	1.7	3.9	4.0
Transport, storage and communications	7.7	8.6	7.6	9.4	6.5	6.0	6.5	5.9
Financial intermediation	2.0	1.3	2.1	1.8	1.0	2.0	2.1	2.3
Business activities/real estate renting	6.0	6.6	7.0	4.0	3.9	5.8	5.5	6.1
Public administration and defence	6.9	6.2	7.7	7.2	5.4	6.3	7.0	5.9
Education	5.9	9.2	8.5	8.1	9.8	7.7	7.4	6.9
Health and social work	6.9	6.3	6.9	5.3	6.9	6.0	7.1	5.1
Other community & personal services	3.9	4.8	4.3	5.9	3.9	3.2	3.9	4.2
Private households	0.1	0.0	0.0	0.3	0.3	0.1	0.3	N/A
Index of employment change in NACE category, 2007 (2000=100)								
	CR	ES	HU	LA	LI	PO	SK	SL
Agriculture, forestry and fishing	0.76	0.75	0.73	0.81	0.61	0.82	0.71	1.19
Mining, quarrying and turf production	0.77	0.76	0.76	1.94	1.71	0.85	0.66	0.57
Manufacturing industries	1.10	1.04	0.94	0.97	1.05	1.09	1.17	0.99
Electricity, gas and water supply	0.95	0.65	0.80	0.99	0.78	0.83	0.80	0.90
Construction	1.02	2.04	1.23	2.24	2.04	1.03	1.41	1.27
Wholesale and retail trade	1.00	1.11	1.09	1.27	1.31	1.11	1.16	1.00
Hotels and restaurants	1.16	1.15	1.17	1.41	1.24	1.21	1.56	1.09
Transport and communications	0.98	1.03	0.97	1.32	1.23	1.09	0.99	1.00
Financial intermediation	1.02	1.22	1.00	1.77	1.54	0.96	1.28	1.05
Business activities/real estate renting	1.33	1.24	1.38	1.65	1.75	1.79	1.60	1.53
Public administration and defence	0.95	1.15	0.95	1.18	1.13	1.23	1.01	1.11
Education	0.97	1.22	1.00	0.94	0.90	1.11	1.01	1.37
Health and social work	1.16	1.28	1.08	1.04	1.04	0.93	1.05	1.24
Other community & social services	1.10	1.20	1.11	1.21	1.25	1.01	0.95	1.29
Private households	1.50	n/a	1.32	1.32	2.79	2.00	2.10	n/a
Total employment growth	1.04	1.14	1.02	1.19	1.10	1.05	1.12	1.11

Source: LABORSTA. Author's calculations.

In sum, the above analysis showed that different CEE economies have been affected by the process of economic transition very differently. Labour market conditions across the CEE prior to or at the time of accession varied not only in terms of general labour market performance but also with regard to performance of specific occupational groups and their relative standing to other occupations and skills within the country and across the countries. Overall, before accession the Czech Republic, Hungary and Slovenia performed better, while the other countries started catching up rapidly only after accession. Labour markets were more stable and tight in the former group of countries, while the latter were still undergoing major adjustments and were in greater disequilibria overall (see labour market slack index), but also along specific occupational or sectoral lines. Across countries, different sectors have experienced decline or development, leading to the disembedding of different types of human capital. The analysis in this section therefore demonstrated that macro level occupational and sectoral labour market dynamics in the region clearly differed, and are likely to have led to different types of migrants leaving the CEE economies. This proposition is investigated in the next section.

3.4 EU8 migrant employment in destination countries: occupations and sectors

A direct link between structural change that took place in the region, and migration patterns, can be established when sectoral and occupational employment patterns of CEE migrants are studied in a broader context and compared to EU15 population or to the third-country migrants in the EU. On a general level, finding high shares of CEE labour in manufacturing employment in the West would point to the link between restructuring and the strong vocational education basis in the CEE region. In addition to this, I expect to find different profiles of migrants from CEE economies depending on the type of structural change and human capital endowments of the country of origin. The workers from the Baltic countries should thus be more likely to get jobs in agriculture or industry, whereas harsh conditions for the medium-skilled blue-collar labour in Poland and Slovakia lead to the expectation of higher proportions of Polish and Slovak workers in these types of professions. Such comparison is likely to shed some light on the relative importance of economic structures on the demand side versus that of the sending countries. The migrant structures are presented for recent EU8 migrants in EU15 (Tables 3 and 4) and then specifically for two major receiving countries after the enlargement – the UK (Table 7) and Ireland (Tables 5 and 6).

Table 3: Employment structure by occupation, 2004: EU8, UK, Ireland, EU15 and EU8 migrants in EU15

	CR	ES	HU	LA	LI	PO	SK	SL	UK	IR	EU8 average 2004	Change in EU8 average 2007/2004	Total EU15 resident population 2007	Recent EU10* movers in EU15 2007
1. Legislators and managers	6.2	12.4	7.5	9.8	7.9	6.2	6.3	6.1	14.6	17.5	7.8	0.1	8.8	2.6
2. Professionals	10.6	13.2	13.4	11.6	17.4	12.8	10.6	13.5	12.4	17.3	12.9	1.1	13.9	4.3
3. Technicians & professionals	20.7	13.2	14.3	13.0	8.7	12.7	18.0	15.6	13.5	6.3	14.5	0.9	17.4	5.2
4. Clerks	7.9	4.3	6.1	5.9	4.1	6.9	6.3	8.9	12.5	12.6	6.3	-0.1	11.9	4.4
5. Service workers	12.3	12.0	15.5	14.3	11.5	11.5	14.2	11.2	15.6**	15.5	12.8	-0.1	13.9	17.6
6. Skilled agricultural workers	1.7	2.6	3.0	6.1	11.3	16.5	1.2	8.5	11.7***	0.7	6.4	-1.7	2.5	N/A
7. Craft and trades workers	19.2	15.8	19.7	16.0	18.5	15.8	19.3	13.0	11.4	13.3	17.2	-0.4	13.6	16
8. Plant & machine operators	13.4	14.0	11.9	10.8	9.4	9.5	13.8	15.9	7.5	7.8	12.3	0.3	8.1	18
9. Elementary occupations	7.4	12.0	7.6	12.2	10.8	7.4	9.6	5.4	N/A	8.6	9.1	-0.1	9.9	31

Source: LABORSTA. Author's calculations. Last two columns: EC, 2008: 129-130 (based on EU LFS). Notes: * - Recent movers defined as EU10 citizens resident in EU15 country four years and less. Includes Cyprus and Malta. ** - the figure for service workers in the UK includes category ISCO 9 – elementary occupations. *** - skilled agricultural workers AND elementary occupations.

Table 4: Employment structure by sector, 2004: EU8, UK, Ireland, EU15 and EU8 migrants in EU15

	CR	ES	HU	LA	LI	PO	SK	SL	UK	IR	EU8 average 2004	Change in EU8 average 2007/2004	Total EU15 resident population 2007	Recent EU10 * movers in EU15
Agriculture, forestry and fishing	4.3	5.3	5.3	13.2	15.7	18.2	5.1	10.2	1.3	6.3	9.6	-1.5	3.4	2.3
Mining & quarrying	1.3	1.3	0.4	0.2	0.3	1.6	0.7	0.6	0.3	0.4	0.8	-0.1	0.2	n/a
Manufacturing industries	27.1	23.7	22.9	16.1	17.7	19.9	26.8	28.5	13.5	15.3	22.8	-0.6	17.5	25.3
Electricity, gas, water supply	1.6	2.0	1.6	2.5	2.1	1.6	2.0	1.1	0.6	0.7	1.8	-0.3	0.7	n/a
Construction	9.3	7.9	7.9	8.5	8.1	5.7	9.5	5.7	7.8	11.2	7.8	1.6	8.3	13.2
Wholesale and retail trade	13.4	13.4	14.0	14.9	15.9	14.5	12.0	12.7	15.5	14.1	13.8	0.4	14.3	12.1
Hotels and restaurants	3.7	2.7	3.8	2.5	2.3	1.7	3.9	4.0	4.4	6.1	3.1	0.2	4.6	13.3
Transport & communications	7.7	8.6	7.6	9.4	6.5	6.0	6.5	5.9	6.7	6.1	7.3	0.2	6.1	7.7
Financial intermediation	2.0	1.3	2.1	1.8	1.0	2.0	2.1	2.3	4.2	4.5	1.8	0.1	3.3	n/a
Business activities/real estate	6.0	6.6	7.0	4.0	3.9	5.8	5.5	6.1	11.3	8.4	5.6	1.0	10.6	9.4
Public admin. and defence	6.9	6.2	7.7	7.2	5.4	6.3	7.0	5.9	6.9	4.8	6.6	-0.1	7.4	n/a
Education	5.9	9.2	8.5	8.1	9.8	7.7	7.4	6.9	9.0	6.4	7.9	-0.3	7.1	2
Health and social work	6.9	6.3	6.9	5.3	6.9	6.0	7.1	5.1	12.0	9.7	6.3	-0.3	10.7	6.3
Other social and personal serv.	3.9	4.8	4.3	5.9	3.9	3.2	3.9	4.2	5.6	5.1	4.3	0.0	4.9	4
Private households	0.1	0.0	0.0	0.3	0.3	0.1	0.3	N/A	0.5	0.4	0.2	0.0	1.3	2.1

Source: LABORSTA. Author's calculations. Last two columns: EC, 2008: 129-130 (based on EU LFS). Notes: * - Recent movers defined as EU10 citizens resident in EU15 country four years and less. Includes Cyprus and Malta.

Table 3 shows employment structure by occupation for each CEE economy, the UK and Ireland in 2004 and compares it to the profile of recent EU8 migrants ('recent EU10 movers')⁸ in EU15 in 2007 as well as to the structure of the EU15 labour force. This allows us to identify similarities and differences between EU8 economies, EU8 migrant labour employment (as an aggregate category) and the receiving labour markets (the UK, Ireland and EU15). 'EU8 migrants' as an aggregate category in fact represent mainly workers from the high out-migration countries.

In line with the findings of the analysis of relative occupational unemployment rates of high-skilled workers (ISCO1-3), recent EU8 migrants are under-represented among high-skilled occupations relative to domestic employment structure as well as relative to EU15 resident population. This is the case first of all due to the fact that high-skilled human capital with previous work experience tends to migrate less, as the demand for high-skilled workers during the transition was high and increasing across the region. Second, young EU8 migrants in the West with little or no previous work experience are unlikely to get jobs in better ranked positions but rather become employed in low-skilled, low-paid jobs. The latter factor is well demonstrated by the fact that nearly one-third of recent EU8 migrants in EU15 works in the elementary occupations, a share three times higher than that of the unskilled employment in home labour markets. Indeed, the under-utilization of human capital from EU8 countries has been widely documented in the research about CEE migration (Clark and Drinkwater 2008; Pollard et al. 2008; Kahanec and Zimmermann 2010).

Another notable observation is the fact that a sizeable 34 per cent of EU8 migrants are employed in blue-collar medium-skilled jobs (ISCO 7 and 8). The share of labour in craft workers (ISCO 7) matches well the structure of employment at home. However, the EU8 migrants are significantly over-represented in the occupational category of plant and machine operators (ISCO 8) *vis-à-vis* the resident EU15 population and also in respect to average employment share in home labour markets. This seems to fit well with the expectation that the restructuring that the countries experienced, and which affected disproportionately industrial sectors, would generate migrants with human capital with strong vocational basis.

Occupational distribution of EU8 labour is in line with the sectoral structure of employment of EU8 migrants in the West (Table 4). Relative to the structures of receiving economies (EU15, UK and Ireland), EU8 migrants as a group get drawn to a much greater extent into the manufacturing industry. This is, however, proportional to the manufacturing employment shares in home economies. Allocation in the construction sector and hotels and restaurants sectors, on the other hand, is higher relative to both receiving countries' structures and the shares in domestic employment. This is not surprising given that these are traditional migrant labour sectors dependent on highly flexible, cheap and seasonal labour. In addition, skills in the hospitality industry can be acquired quickly in the form of on-the-job training and this sector tends to provide demand for student employment. It would therefore be the sector where many over-educated EU8 migrants would seek and find employment (cf. Anderson et al. 2006, 36).

⁸ Figures include Cyprus and Malta. Out-migration from these countries has been low and therefore it is safe to consider these figures as describing primarily EU8 migrants.

The figures from Irish census data (Tables 5 and 6) and the UK Worker Registration Scheme (WRS) (Table 7) provide useful information about the differences in occupational and sectoral allocation of migrants from each CEE country separately, and compare them to the host country labour force or to other immigrant populations in the host country.

The Irish census data capture all EU8 nationals present in the territory of Ireland at the time of the census, not only the post-accession migrants. Nevertheless, other studies have established that a majority of CEE migration in the country dates from after May 2004 (EC 2008). Table 5 presents distribution of EU8 immigrant labour force by broad occupational group and nationality and compares them to the Irish labour force. The occupational groups do not match the ISCO classification and are organized into 'sectoral occupations' (rather than skill levels), and as such are not directly comparable to the earlier analysis. Overall, Ireland is relying on foreign labour in building, construction and services, which are traditional migrant labour sectors, but also in manufacturing. The EU8 migrants, however, dominate manufacturing and construction employment where they outperform other European migrants in Ireland on average by about 3%. Latvians, Lithuanians and Poles have especially high shares of workers in manufacturing and building and construction jobs – over 40 per cent. Latvia and Lithuania have higher shares of workers in agricultural jobs.

Table 6 presents the immigrant labour force in Ireland from different regions by sector. It reveals perhaps most clearly that migration patterns seem to be affected by both demand but equally, if not more, by the supply factors. EU8 migrants differ significantly from the Irish population, EU15 migrants in Ireland, and the third-country migrants in Ireland. A booming construction sector has attracted over one-fifth of all EU8 migrants in Ireland, which is a significantly higher proportion than among the other immigrant groups. On the other hand, EU8 migrants do not get attracted to the health and social work sector which seems to be the domain of the third-country migrants. The human capital endowments of EU8 workers come about through the concentration of workers in the manufacturing sector – over one-fifth of EU8 migrants in Ireland work in manufacturing. These shares closely correspond to the endowments in EU8 domestic labour markets.

A somewhat different picture of employment structure is offered in Table 7, which shows the distribution of employment of migrants arriving in the UK between May 2004 and December 2007. The WRS is one of the few sources that provide information about sectoral employment of migrants from EU8 countries by nationality after accession, but unfortunately its sectoral classification does not correspond to the NACE classification presented earlier. Self-employed people, people in legal employment 12 months before the launch of the Scheme, and au-pairs were not required to register. The figures therefore underestimate the sectors with a high share of self-employment, such as construction. Due to a noted non-compliance with the Scheme, it also underestimates the real number of EU8 migrants in the UK (Anderson et al. 2006, 96–7). It should also be kept in mind that the data capture information about the migrants' first job does not incorporate re-registrations and subsequent changes in employment which, however, have been taking place (Anderson et al. 2006).

Table 5: Ireland: EU8 immigrant labour and domestic labour by broad occupational group (%), 2006

	CR	ES	HU	LA	LI	PO	SK	SL	EU8 average	Irish
Farming, fishing and forestry w.	1.4	2.6	1.6	7.0	3.9	1.5	1.5	0.9	2.6	4.7
Manufacturing workers	19.4	22.6	16.4	20.1	19.6	21.0	18.2	8.2	18.2	11.7
Building and construction w.	11.7	14.3	15.4	17.9	20.3	20.3	14.9	13.6	16.1	8.4
Clerical, managing and government	5.8	5.1	8.1	3.1	3.4	4.7	4.7	8.2	5.4	18.8
Communication and transport w.	5.3	6.1	4.9	5.9	5.9	6.3	5.4	8.2	6.0	5.7
Sales and commerce workers	11.3	13.3	9.1	9.8	9.5	10.1	10.7	11.8	10.7	14.1
Professional, technical and health w.	6.2	2.2	5.4	1.9	1.8	4.7	4.0	15.5	5.2	16.8
Services workers	23.2	19.8	22.9	13.3	14.0	15.5	23.0	13.6	18.2	10.2
Other workers	15.7	13.9	16.3	21.0	21.7	15.9	15.1	15.5	16.9	9.6
All occupations total	4,229	1,827	2,868	10,672	19,114	52,144	7,377	110	-	-

Source: Irish CSO 2008. 2006 Census data. Author's calculations. People aged 15 and over. Slovenia seems to stand out in its structure but due to very few cases – only 110 migrants – the results are unreliable.

Table 6: Ireland: Immigrant labour force by sector (%), 2006

Economic activity	Ireland 2006			
	Irish Nationals	EU15*	EU10**	Rest of world
Agriculture, forestry and fishing	5.3	1.6	3.9	2.0
Mining and quarrying	0.4	0.1	0.4	0.2
Manufacturing industries	13.1	14.9	21.4	11.7
Electricity, gas and water supply	0.7	0.5	0.2	0.2
Construction	11.7	4.4	20.8	8.3
Wholesale and retail trade	14.4	9.7	17.0	11.7
Hotels and restaurants	4.3	14.2	16.5	17.0
Transport, storage and commun.	6.1	7.0	3.7	3.6
Banking and financial services	5.0	6.4	0.9	2.8
Business activities and real estate	9.6	24.3	9.0	12.9
Public admin. and defence	6.3	1.5	0.2	1.4
Education	7.7	6.1	0.6	3.1
Health and social work	10.8	5.7	2.4	20.8
Other community & pers. services	4.5	3.7	3.1	4.3
Private households	N/A	N/A	N/A	N/A

Source: CSO (2008). Notes: * Excludes UK and Ireland. ** Includes Cyprus and Malta.

The data shows that there has been a notable diversity in terms of the initial sectors of employment across the EU8 migrants. A majority become employed within administrative, business and management services. This is a general category which indicates white-collar work where temporary working arrangements prevail. This hinders any strong conclusions on skill profiles in this category. However, it does indicate a greater concentration of migrants from the high out-migration countries – Poland, Slovakia, Latvia and Lithuania – in these temporary and unstable jobs, normally provided through employment agencies. It is also likely to encompass the migrants with little or no previous work experience, such as fresh graduates. Interesting inferences can be made in relation to the distribution of migrants across the remaining sectors. Generally speaking, the Baltic countries, especially Latvia and Lithuania but also Estonia, have higher shares of employment in agriculture and food, fish and meat processing. This is in line with the previous evidence which showed that these countries employ significant shares of the population in these areas at home. Given that the sector has experienced decline in employment levels, it is not surprising that some of the labour market tension has been reduced through out-migration to similar jobs abroad. On the other hand, migrants from the Czech Republic, Hungary and Slovenia show higher employment shares in both low- and high-skilled services: hospitality and catering, health and medical services and wholesale and retail services. As discussed earlier, blue-collar workers suffered much less in these countries, which results in service sector employment showing higher shares. Overall, however, the rates of migration in this group have been significantly lower than from the other CEE countries.

Table 7: Employment in the UK in top 10 sectors by nationality

(Cumulative total May 2004-December 2007, in % of total)

	CR	ES	HU	LA	LI	PO	SK	SL
Administration & manag. services	31.8	31.9	29.5	38.6	37.2	41.1	44.3	26.3
Hospitality & catering	27.8	21.1	35.3	13.0	15.5	18.8	22.1	32.5
Agriculture activities	6.9	11.5	3.7	24.1	20.5	9.1	6.7	1.8
Manufacturing	7.0	10.2	4.7	8.1	7.7	7.7	6.6	7.9
Food/fish/meat processing	3.9	6.0	1.8	6.9	6.3	5.0	4.6	1.8
Health & medical servic.	6.8	6.0	7.1	1.7	2.7	4.6	5.0	7.9
Retail & related services	5.5	4.9	5.9	2.5	3.3	4.6	4.5	11.4
Construction & land servic.	4.0	3.3	4.2	2.9	4.2	4.5	3.1	3.5
Transport	3.0	2.9	3.9	0.8	1.4	3.2	1.4	3.5
Entertainment & leisure servic.	3.3	2.4	3.9	1.3	1.2	1.4	1.9	3.5
Total applications (in thousands)	34,425	6,815	25,610	37,190	73,070	505,905	78,350	700

Source: AMR (2008). Notes: Data captured registered workers rather than number of applications made. Initial applications only (not the re-registered workers).

3.5 Addressing (some) critique

This analysis has implicitly suggested that skill profiles developed in home economies in CEE are transferred and utilized during the immigrant employment in the West. This assumption goes partly against the general knowledge about employment outcomes of the recent EU8 migrants after accession, who have been reported to become employed mainly in low-skilled low-paid jobs (Clark and Drinkwater 2008; Drinkwater et al. 2009; Blanchflower and Lawton 2010). At the same time, the evidence gathered here has very consistently shown that high proportions of EU8 migrants were attracted to manufacturing and construction sectors and to medium-skilled occupations. This holds for recent movers in EU15 but is also

the case for EU8 migrants in Ireland. The figures about the structure of EU8 migrants in EU15 could be shaped by migration to Germany which has attracted workers with vocational skills. It therefore seems to be the case that a large share of EU8 migrants with tertiary education are attracted to *low-skilled service sector jobs* – due to the characteristics described earlier such as temporariness, seasonal availability and few skill pre-requisites. This seems to be confirmed by the WRS data about EU8 migrants in the UK, and similar evidence was found by Anderson et al. (2006, 36). At the same time, it appears that a significant share of migrants who leave after acquiring some work experience (or training) at home would target sectors such as manufacturing but perhaps take on lower-end jobs within these sectors. In sum, while the utilization of skills gained at home is limited, it does take place to some degree.

The second question which could be raised in response to the analysis presented above is whether the sectoral earnings differentials between each EU8 economy and the receiving country could explain these variations in the migrants' profiles. To this end I calculated sectoral earnings differentials between EU8 countries and the UK.⁹ These are presented, together with sectoral earnings levels, in Tables A4 and A5 in the annex. In order to measure differences in earnings, I use data about average gross annual earnings in 2004 and calculate the share of sectoral earnings in each EU8 country relative to the sectoral wage in the UK in 2007 (earlier figures not available). Data on gross earnings do not take into account different levels of social security contributions and taxation, but they are presented in purchasing power parity (PPP) to correct for different purchasing powers. The lower the number, the higher the gap between the sectoral wage in the EU8 country and the wage in the UK.

The figures show that while Slovenia and Latvia stand at opposite ends, sectoral wage differentials across the countries are very diverse. For the argument presented in this paper, it is important to look at the differentials in the manufacturing sector. The wages in manufacturing and construction are generally lower, but in none of the countries are these wages the lowest. At the same time, we have seen major proportions of EU8 migrants attracted to the West to work in this sector. It is therefore rather a combination of the strong demand in manufacturing or construction in the receiving countries *and* of the oversupply of such labour in the sending countries that explain why migrant workers of these profiles migrate. An abundant supply of labour in these sectors can also explain why the wages in manufacturing and construction have generally been lower throughout the transition. In other words, sectoral wage levels in the sending countries are *an outcome* of structural change (although wage setting is a complex process conditioned by many factors). In sum, while differences in wages might partly explain migration rates from CEE in terms of overall tendencies (e.g. Slovenia has sent relatively less labour than Latvia), wages alone cannot account for different profiles of EU8 migrants in the West and the structuring of migration presented above.

⁹ Wages for Ireland or EU15 average were not available.

4 Structural change and labour migration in Slovakia: a regional level analysis

Slovakia is a good case for the analysis of the spatial impact of structural change on migration patterns for two reasons. First, the country is infamous for stark differences between the Western versus the Central and Eastern regions in the country. In poor and lagging regions, the conditions were worse initially due to a less favourable structure of production (greater reliance on agriculture and heavy manufacturing) but these regional inequalities were exacerbated by an uneven entry of foreign direct investment to the country, especially since the late 1990s. The transition generally resulted in greater restructuring in the non-Western regions of the country where it was more costly in social terms. Most economic prosperity has concentrated in the capital city of Bratislava and the Western part of the country: in 2004 when the country joined the EU the differences in regional unemployment rates ranged from 8.3 per cent in Bratislavský region to nearly 27 per cent in Banskobystrický region located in central Slovakia. Due to persistent unemployment problems, people are known to have migrated for work especially (but not only) from the Eastern and Central part of Slovakia. While some migration flows took place within the country, the international flows have been dominant.¹⁰ These did not cease but rather increased during the time of high aggregate growth rates since the mid 2000s when the country began to suffer major skill and labour shortages.

The second reason for this section's focus on Slovakia is the availability of a micro-level dataset that surveyed Slovak migrants in 2007.¹¹ Its analysis will concentrate on seeing whether and how the profiles of migrants are shaped by the region that they come from. I expect to find that the underlying causes for migration of people living in a region with abundant working opportunities are different from the reasons for the migration of people based in depressed localities. Significant differences in the profiles of migrants and in the underlying causes of migration across different regions would provide additional confirmation of the general hypothesis suggested in this paper. It anticipates that people based in different regions have a varied propensity to migrate and different underlying reasons to do so, shaped by the inequality of opportunities and risks produced by the transition in these regions. The analysis assumes that the regions, measured at the NUTS 3 (Nomenclature of Units for Territorial Statistics) level, represent micro-economies which have the capacity to affect migration decisions. This is justified in the context of the administrative changes to the organization of regional governance structures induced by the EU accession process at the end of 1990s.¹²

4.1 Dataset

The dataset of the actual migrants contains comprehensive information about the demographics of the migrants, sectors of employment, countries of destination and

¹⁰ Only a few studies have investigated *international migration* from (or to) different regions within the CEE economies. Among the exceptions are Fihel and Okolski (2009) and Kaczmarczyk and Okolski (2008).

¹¹ The author wishes to express gratitude to the Institute of Labor and Family Research in Bratislava, Slovakia, for making micro-data for this empirical analysis available.

¹² NUTS regions became the statistical units on the basis of which a number of regional policies are conducted, i.e. regional development, cohesion policies, investment promotion, etc.

patterns of employment. It was collected in 2007 for the purposes of learning more about the wave of out-migration from Slovakia after accession to the EU. The data was collected in two ways: through a questionnaire published at the EURES (European Employment Services) web portal and other portals related to life and work abroad, and through EURES employees in regional labour offices who served as interviewees and approached the respondents based on professional links (Hanzelová et al. 2007).¹³ This analysis takes into consideration only those migrants who were interviewed by regional labour offices, assuming that the migrant's residence was in the region where the interview was carried out. Out of the total sample of 743 migrants, a sub-sample of 320 migrants with the information about their region of origin is available, and was analysed by the method of cross-tabulation and Chi-square test (X²) of difference to see if the region of origin significantly shapes the remaining characteristics of the migrants. The results of the Chi-square statistics need to be taken with caution due to the empty cells problem, but cross-tabulated distributions along different indicators are nevertheless informative and interesting.

4.2 Results

As expected, the region of origin produces differences in migrants' profiles along several other indicators, namely age, marital status, length of stay, country of destination and, most importantly –sector of employment (Table 8).¹⁴ Moreover, the results suggest different underlying causes of migration and different profiles of migrants from more depressed regions of origin. Generally, Banskobystrický, Prešovský and Košický regions have been the losers of transition and have consistently suffered from high unemployment rates, low inflows of foreign direct investment and relatively limited employment opportunities. On average, migrants who have left from these depressed regions were more often unemployed before leaving, found employment more often in industry and construction (followed by work in hotels and restaurants and private household help), and indicated inability to find work in Slovakia more often as the reason for leaving than did the migrants from other regions. They had also chosen less often the UK and Ireland as destinations and preferred more traditional migration destinations (Czech Republic and Austria). They were more often married than were migrants from the other regions. Migration of people above the age of 35 was quite frequent, especially in the case of Prešovský kraj.

¹³ I conducted a Chi-square test to see whether the two groups differ along the main demographic variables of interest. The group where the region of origin is known is on average older and there are more married or divorced people than in the group of people where the region of origin is unknown. There were no statistically significant differences in gender and education levels across the two groups.

¹⁴ Merging the regions to two groups (low performance regions and high performance regions) could solve the empty cell problem but would also hide a lot of information.

Table 8: Structure of Slovak migrants by region of origin (%), 2007

	Total	BA	TN	TR	NT	ZI	BB	PR	KE	
Gender (X2 = 0.380)										
Male	55.5	45.0	60.0	52.4	70.3	60.0	51.6	56.4	46.2	
Female	44.5	55.0	40.0	47.6	29.7	40.0	48.4	43.6	53.8	
Age (X2 = 0.03**)										
18-24	16.6	20.0	20.0	19.0	10.8	14.0	22.6	20.0	15.4	
25-34	51.3	30.0	60.0	47.6	73.0	54.7	51.6	32.7	56.9	
35-44	15.9	10.0	20.0	4.8	5.4	19.8	16.1	23.6	15.4	
45 and more	16.3	40.0	0.0	28.6	10.8	11.6	9.7	23.6	12.3	
Marital status (X2 = 0.05*)										
Single	50.6	60.0	20.0	52.4	67.6	51.2	64.5	41.8	40.0	
Married	35.9	20.0	80.0	23.8	24.3	31.4	25.8	49.1	47.7	
Divorced	9.4	20.0	0.0	19.0	5.4	12.8	6.5	7.3	4.6	
With a partner	4.1	0.0	0.0	4.8	2.7	4.7	3.2	1.8	7.7	
Length of stay (X2 = 0.000***)										
Less than 1 year	42.8	80.0	60.0	61.9	29.7	27.9	58.1	54.5	33.8	
More than 1 year	57.2	20.0	40.0	38.1	70.3	72.1	41.9	45.5	66.2	
Labour market status before leaving (X2 = 0.828)										
Employed	49.5	55.0	40.0	57.1	59.5	52.3	45.2	41.8	45.3	
Unemployed	26.3	25.0	20.0	28.6	13.5	22.1	41.9	30.9	28.1	
Student	16.3	15.0	40.0	14.3	18.9	15.1	9.7	16.4	18.8	
Self-employed	4.4	0.0	0.0	0.0	8.1	7.0	0.0	3.6	4.7	
At home	1.6	5.0	0.0	0.0	0.0	1.2	3.2	3.6	0.0	
Maternity leave	1.9	0.0	0.0	0.0	0.0	2.3	0.0	3.6	3.1	
Education (X2 = 0.808)										
Primary	1.3	0.0	0.0	0.0	2.7	1.2	0.0	1.8	1.5	
Secondary	67.5	65.0	80.0	52.4	59.5	66.3	74.2	78.2	66.2	
Tertiary	31.3	35.0	20.0	47.6	37.8	32.6	25.8	20.0	32.3	
Sector of employment (X2 = 0.037**)										
Agriculture	7.5	20.0	0.0	14.3	0.0	8.3	7.4	0.0	10.3	
Food	6.1	5.0	0.0	0.0	8.6	4.8	14.8	6.5	5.2	
Industry	16.3	10.0	50.0	19.0	14.3	10.7	22.2	26.1	13.8	
Construction	12.9	10.0	0.0	0.0	17.1	19.0	11.1	13.0	8.6	
Wholesale and retail	5.8	0.0	25.0	0.0	8.6	11.9	0.0	6.5	0.0	
Hotels and restaurants	16.9	5.0	0.0	19.0	17.1	14.3	14.8	19.6	24.1	
Transport	5.8	0.0	0.0	14.3	11.4	6.0	3.7	2.2	5.2	
Education and research	2.4	10.0	0.0	0.0	0.0	3.6	0.0	2.2	1.7	
Health care and services	7.8	15.0	0.0	9.5	17.1	4.8	3.7	2.2	10.3	
Other social services	7.1	10.0	25.0	9.5	2.9	6.0	0.0	10.9	8.6	
Private household help	11.2	15.0	0.0	14.3	0.0	10.7	22.2	10.9	12.1	
Reason for leaving (X2 = 0.574)										
Could not find work in SK	18.4	20.0	0.0	19.0	13.9	14.5	32.1	22.6	17.5	
Wanted to earn money	52.1	70.0	60.0	38.1	41.7	62.7	53.6	52.8	41.3	
To improve foreign language	7.8	5.0	20.0	19.0	5.6	7.2	3.6	3.8	11.1	
To gain work experience	5.5	5.0	20.0	9.5	8.3	4.8	0.0	3.8	6.3	
To travel/get to know country	1.6	0.0	0.0	0.0	2.8	2.4	0.0	0.0	3.2	
To live outside of Slovakia	4.2	0.0	0.0	4.8	11.1	2.4	3.6	3.8	4.8	
To follow the partner	8.4	0.0	0.0	9.5	13.9	4.8	7.1	7.5	14.3	
Studies	1.9	0.0	0.0	0.0	2.8	1.2	0.0	5.7	1.6	
Country of destination (X2 = 0.000***)										
UK	30.6	50.0	60.0	28.6	43.2	38.4	22.6	7.3	29.2	
Ireland	8.1	0.0	0.0	4.8	8.1	8.1	16.1	9.1	7.7	
Czech Republic	15.9	0.0	0.0	9.5	16.2	17.4	12.9	29.1	12.3	

Germany	9.4	0.0	20.0	14.3	10.8	10.5	3.2	10.9	9.2	
Austria	8.1	30.0	0.0	0.0	2.7	9.3	19.4	1.8	6.2	
Hungary	3.4	0.0	20.0	0.0	2.7	1.2	3.2	0.0	10.8	
Other	24.4	20.0	0.0	42.9	16.2	15.1	22.6	41.8	24.6	
	N	320	20	5	21	37	86	31	55	65
Regional unemployment rate 2004	18.2	8.3	12.5	8.6	20.4	17.5	26.7	23.1	25.4	

Source: Dataset from the Institute for Research of Labour and Family, Bratislava. Author's analysis.

Note: X2 = Chi-square statistics: *** - Significant at the 0.01 level, ** - Significant at the 0.05 level, * - Significant at the 0.1 level. BA – Bratislavský kraj, TN – Trnavský, TR – Trenčiansky, NT- Nitriansky, ZI – Žilinský, BB – Banskobystrický, PR – Prešovský, KE – Košický kraj. To be interpreted with caution due to empty cell problem and possibly biased results.

All together these findings could be interpreted as suggesting that there has been continuity in migration from these regions, which has its origins in the early transition period and is related to massive and harsh adjustments during the transition, the lack of job opportunities and the mismatch between jobs and the skill profiles of workers. Migration from more depressed regions therefore resembles migration carried out by selected members of households in the situation of labour market risk. Different socio-economic performance among the regions in Slovakia, partly caused by the process of structural change and partly inherited, has led to a different propensity to migrate and resulted in different profiles of migrants across regions. The impact of structural change induced the migration of workers whose skills were made redundant in the 1990s, but possibly also of the young graduates who face difficulties in school-to-work transition.

5 Implications for conceptual approaches in migration studies

This paper argued that different patterns of pre- and post-accession migration in Central and Eastern Europe can be explained through the analysis of the impact of transition and economic restructuring on labour markets. It showed that labour market imbalances have differed across the CEE economies in their degree and type (occupational, sectoral and spatial). Transition produced different risks and opportunities for people with different profiles across these countries, across occupations and sectors within them. In turn, these imbalances and labour market mismatches led some workers to seek migration as an exit option more than others, producing cross-country variation in the rates of out-migration. In addition to the scale of migration, the underlying labour market restructuring patterns and human capital endowments also resulted in differences with regard to the profiles of migrants from these countries. The economies that experienced greater labour market problems – the Baltic countries, Poland and Slovakia – saw greater outflows of workers during the transition. These countries therefore typically had more middle-aged migrants than the Czech Republic, Hungary and Slovenia. But the numbers of younger migrants were also higher in the countries where transformation had been more radical, as the structural shifts resulted in scarcer employment opportunities matching their qualifications and labour market expectations. Thus labour market structure and labour market problems serve as an indication of the profiles of potential migrants.

The analysis of micro-data evaluated the impact of structural change on migration propensity and the profiles of migrants from Slovakia. The composition of actual migrants leaving from different regions in Slovakia differed according to important demographic

characteristics, the countries of destination and the sectors of employment abroad. Overall, the more depressed regions in Slovakia sent more migrants. Massive and harsh adjustments suffered by the Eastern and Central parts of the country during the process of transition carried over to the post-accession migration dynamic as the employment potential remained relatively limited or was exacerbated by the mismatches between emerging jobs and the labour force qualifications. This suggests that structural change has been affecting the migration patterns not only of those workers whose skills were made redundant in the 1990s but also of the young graduates who face difficulties in school-to-work transition.

The findings of this paper have important theoretical and policy-related implications. First, they offer critical evidence in respect to the literature which based the investigation of CEE migration on wage differentials between receiving and sending countries and looked at the employment opportunities only in the countries of destination. I showed that while wages and earning differentials are important individual level migration determinants, these alone have been neither sufficient nor necessary for migration to take place in the CEE region. Looking at the way transition in the region evolved helps to account for the relative differences in earnings across countries and also across different occupations within these countries. Suitable employment at home, in combination with social remedies which can help to mediate the impact of immediate or more lasting misfortunes in the labour market, can hamper migration even in the case of the existence of wage differentials. Workers are embedded in particular economic and social contexts; therefore, the types of opportunities and constraints that these provide are crucial for shaping their decisions to stay or migrate. These opportunities can be increased by developing effective tools that aid adjustment to labour market misfortunes (i.e. unemployment benefits, active labour market policies, family benefits) (see Kureková 2011).

Second, studying specific conditions of localities and their change over time and taking into account a wider range of migration determinants related to labour market conditions and factors such as the match between employment opportunities and human capital endowments and skills can help us to understand and foresee possible migration flows and their composition better than the (oversimplified, de-contextualized and ahistorical) neo-classical framework. Rather than concentrating on earning levels, which is typically done in studies which estimate migration potential, this analysis showed that migration should be analysed in the context of social change and home labour market opportunities (or the lack thereof). This is a crucial finding for the ongoing debate about the migration–development nexus. On the other hand, its implications are equally important for receiving states that increasingly try to manage and alter the patterns of incoming migrants to suit the needs of their labour markets.

This in turn implies that sending countries need to be given more attention than they have received in the recent research on patterns and determinants of migration. In addition to structures and institutions on the receiving side, structural conditions in home countries are equally important in helping to understand who migrates, when and into which sectors, and hence can broaden our understanding of migration structures, patterns and dynamics. Such theoretical embedding helps to explain not only migration but also a lack of it.

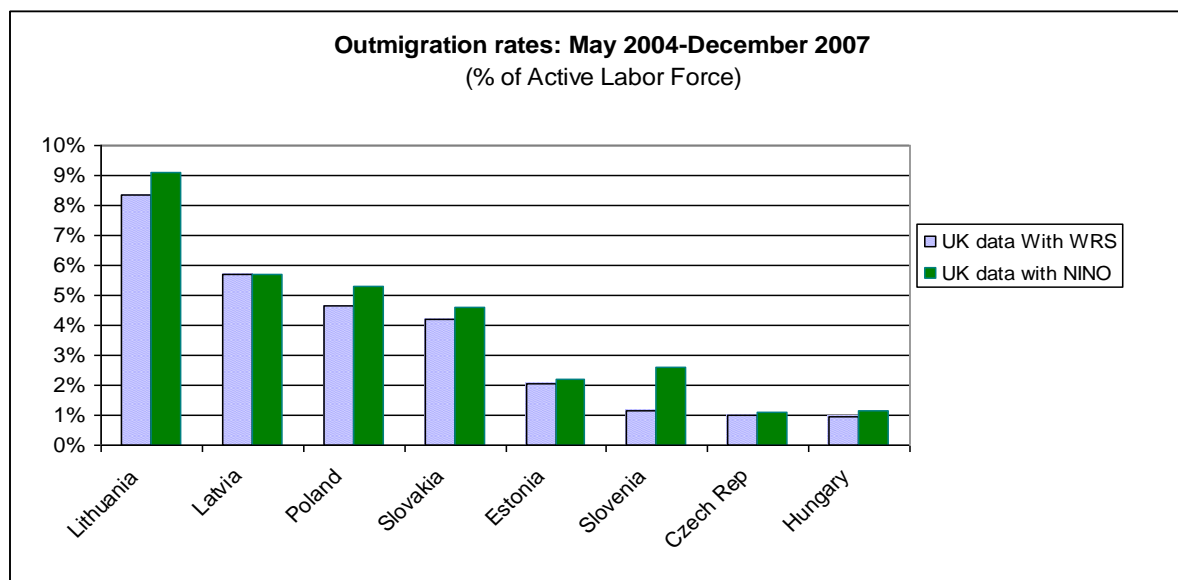
Annex

Table A1: Post-accession migration flows to UK, Ireland and Sweden: April/May 2004-December 2007

	UK (WRS)*	Ireland	Sweden	Total per country	% Active Population (with NINO)**	% Active Population (with WRS)*	% Population 15-64
Czech Rep.	34,425	15,844	513	50,782	1.1	1.0	0.7
Estonia	6,815	5,696	1,502	14,013	2.2	2.0	1.5
Hungary	25,610	14,107	1,587	41,304	1.1	1.0	0.6
Latvia	37,190	28,080	1,034	66,304	5.7	5.7	4.2
Lithuania	73,070	56,842	2,824	132,736	9.1	8.4	5.7
Poland	505,905	263,425	19,119	788,449	5.3	4.7	3.0
Slovakia	78,350	32,520	491	111,361	4.6	4.2	2.9
Slovenia	700	292	169	1,161	2.6	1.1	0.1
Total	762,065	416,806	27,239	1,206,110	-	-	-

Source: Author's calculations based on: UK: *Worker Registration Scheme – May 2004 – December 2007/ Various Accession Monitoring Reports/Home Office 2007, 2008. ** National Insurance Numbers - NINO data: Department of Work and Pensions, 2009. NINO data start from April 2004. Ireland: Personal Public Service Numbers: May 2004 – December 2007/Department of Social and Family Affairs; Sweden: Residence Permits: 2004-2006, Tirpak (2007) and Swedish Migration Board for 2007 data. Active labour force and population as of 2006. Eurostat.

Figure A1: Out-migration rates to the UK, Sweden and Ireland with different UK data source



Source: See Table above. WRS - Worker Registration Scheme. NINO – National Insurance Numbers.

Table A2: Crude net migration in Central and Eastern Europe

	1990-94	1995-99	2000	2001	2002	2003	2004	2005	2006	2007	2008
Czech Republic	-0.6	1	0.637	-4.207	1.204	2.527	1.824	3.539	3.381	8.123	6.887
Estonia	-14.4	-6.2	0.164	0.122	0.116	0.103	0.099	0.104	0.122	0.119	0.095
Hungary	1.8	1.7	1.631	0.951	0.348	1.536	1.797	1.712	2.116	1.449	1.631
Latvia	-8.7	-6.1	-2.319	-2.191	-0.784	-0.364	-0.467	-0.245	-1.071	-0.282	-1.122
Lithuania	-5	-6.3	-5.802	-0.735	-0.569	-1.825	-2.798	-2.572	-1.431	-1.553	-2.298
Poland	-0.4	-0.4	-10.66	-0.438	-0.469	-0.36	-0.246	-0.337	-0.947	-0.537	-0.39
Slovakia	-1.4	0.4	-4.138	0.188	0.168	0.262	0.534	0.632	0.715	1.259	1.306
Slovenia	-1.4	0.1	1.381	2.491	1.107	1.769	0.861	3.217	3.123	7.061	9.645

Note: Data up to 2001 are not comparable with 2002 and more recent data (change in methodology) but do show the trends that correspond to those identified in other works.

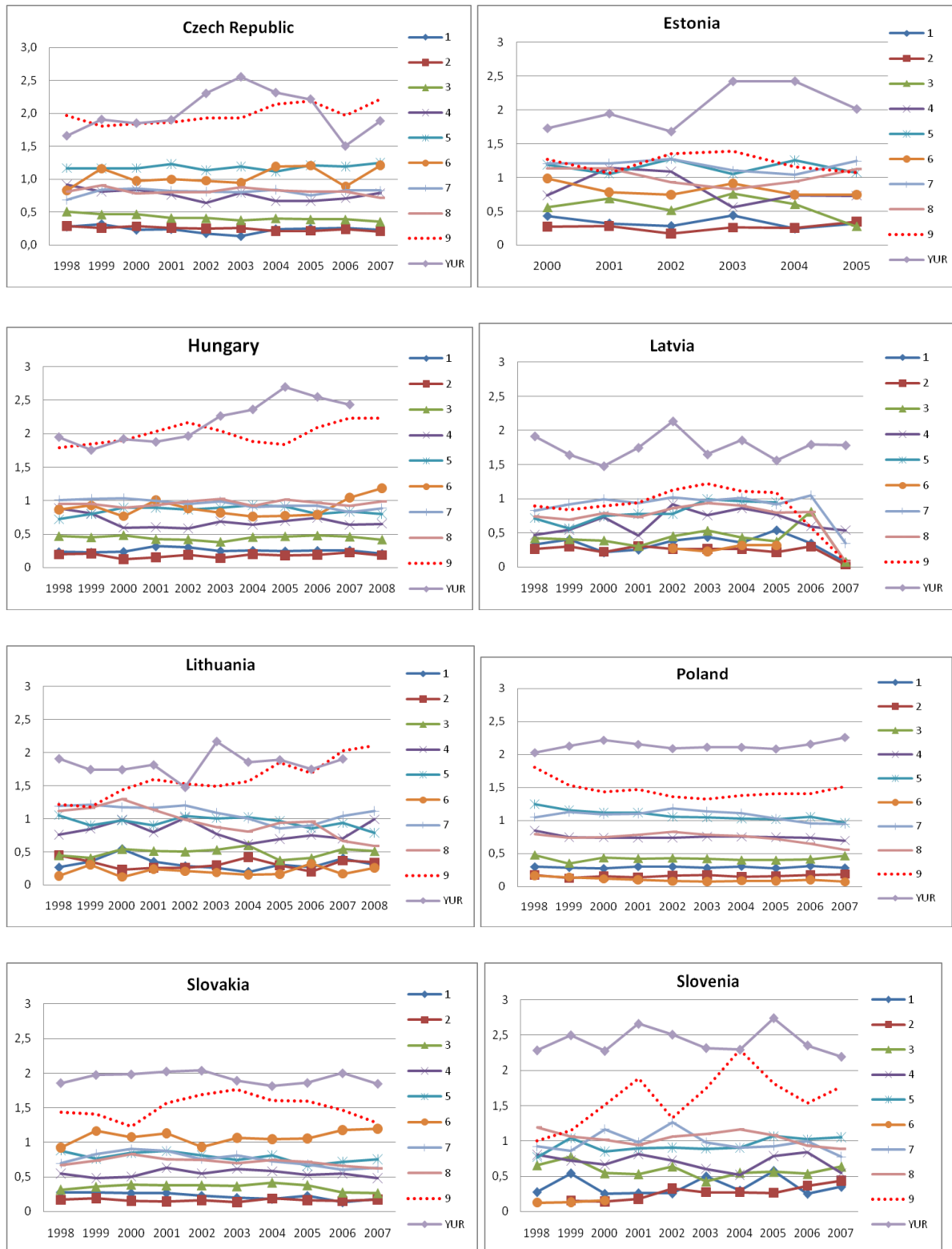
Source: Eurostat. The indicator is defined as the ratio of net migration plus adjustment during the year to the average population in that year, expressed per 1 000 inhabitants. The net migration plus adjustment is the difference between the total change and the natural change of the population.

Table A3: Main labour market indicators: 2000-2007

	2000	2001	2002	2003	2004	2005	2006	2007
Unemployment rate								
Czech Republic	8.80	8.10	7.30	7.80	8.30	7.90	7.10	5.30
Estonia	13.6	12.6	10.3	10	9.7	7.9	5.9	4.7
Hungary	6.4	5.7	5.8	5.7	6.1	7.2	7.5	7.4
Latvia	14.4	13.1	12	10.6	10.4	8.7	6.8	6
Lithuania	16.4	17.4	13.8	12.4	11.4	8.3	5.6	4.3
Poland	16.1	18.2	19.9	19.6	19	17.7	13.8	9.6
Slovakia	18.6	19.2	18.5	17.4	18.1	16.2	13.3	11
Slovenia	7.2	5.9	5.9	6.6	6.1	5.8	5.9	4.6
Youth unemployment rate								
Czech Republic	16.3	15.4	16.8	19.9	19.2	17.5	10.7	10.0
Estonia	23.5	24.5	17.3	24.2	23.5	15.9	12.0	10.0
Hungary	12.3	10.7	11.4	12.9	14.4	19.4	19.1	18.0
Latvia	21.3	22.9	25.6	17.5	19.3	13.6	12.2	10.7
Lithuania	28.6	31.6	20.4	26.9	21.2	15.7	9.8	8.2
Poland	35.7	39.2	41.6	41.4	40.1	36.9	29.8	21.7
Slovakia	36.9	38.9	37.7	32.9	32.8	30.1	26.6	20.3
Slovenia	16.4	15.7	14.8	15.3	14	15.9	13.9	10.1
Employment rate								
Czech Republic	65.0	65.0	65.4	64.7	64.2	64.8	65.3	66.1
Estonia	60.4	61.0	62.0	62.9	63.0	64.4	68.1	69.4
Hungary	56.3	56.2	56.2	57.0	56.8	56.9	57.3	57.3
Latvia	57.5	58.6	60.4	61.8	62.3	63.3	66.3	68.3
Lithuania	59.1	57.5	59.9	61.1	61.2	62.6	63.6	64.9
Poland	55.0	53.4	51.5	51.2	51.7	52.8	54.5	57.0
Slovakia	56.8	56.8	56.8	57.7	57.0	57.7	59.4	60.7
Slovenia	62.8	63.8	63.4	62.6	65.3	66.0	66.6	67.8
Long-term unemployed								
Czech Republic	48.6	52.1	50.2	48.8	51.0	53.0	54.2	52.2
Estonia	45.8	48.5	52.4	45.9	52.2	53.4	48.2	49.5
Hungary	48.0	45.4	43.4	41.1	44.0	45.0	45.1	46.8
Latvia	57.8	56.1	45.3	41.4	43.8	46.0	36.5	26.4
Lithuania	48.7	56.3	53.5	48.0	51.2	52.5	44.3	32.0
Poland	46.1	50.2	54.7	55.9	54.0	57.7	56.1	51.3
Slovakia	54.7	58.6	65.2	65.2	64.7	71.9	76.3	74.2
Slovenia	61.4	60.3	55.6	52.8	51.5	47.3	49.3	45.7
Mismatch (variance of relative occupational unemployment rates)								
Czech Republic	18.9	17.2	15.3	18.1	24.5	23.8	14.5	11.4
Estonia	26.0	20.1	20.9	12.4	12.4	9.1	-	-
Hungary	11.3	10.0	11.6	10.4	9.3	12.8	17.5	19.8
Latvia	19.2	14.3	16.2	14.1	12.5	7.4	-	-
Lithuania	59.6	67.2	43.2	30.1	26.1	18.9	7.0	5.6
Poland	57.1	76.2	85.0	77.6	74.5	63.6	36.4	19.1
Slovakia	48.7	73.7	71.9	74.8	64.4	51.2	35.5	19.9
Slovenia	11.8	9.9	5.6	9.8	16.1	7.4	6.0	4.3

Source: EUROSTAT. Mismatch calculated from LABORSTA data.

Figure A2: Within country differences in relative occupational unemployment rates and youth unemployment rate (over-/underperformance relative to national unemployment rate)



Source: LABORSTA. **Legend:** 1-Legislators, officials and managers; 2 – Professionals; 3 - Technicians and associate professionals; 4– Clerks; 5–Service workers; 6-Skilled agricultural and fishery workers; 7-Craft workers; 8-Plant operators and assemblers; 9-Elementary occupations; YUR–youth unemployment rate. **Explanation:** Ratio greater than 1 indicates that a given occupational category has been affected by the

incidence of unemployment higher than the national average (underperformance) and ratio lower than 1 indicates that it has performed better relative to the national average (over-performance). In addition to nine standard ISCO occupational categories, the graphs also present youth unemployment rates relative to the national average.

Table A4: Earnings differentials (%): EU7* versus UK, 2004

	CR	ES	LA	LI	PO	SK	SL	Differential EU7 aver./ UK
Mining & quarrying	28.1	18.5	13.9	20.2	40.4	25.4	42.3	27.0
Manufacturing industries	30.5	22.3	16.3	20.1	29.4	33.0	40.7	27.5
Electricity, gas, water supply	35.6	23.7	24.1	24.5	36.4	37.6	49.0	33.0
Construction	30.2	24.1	14.5	21.0	27.0	31.1	37.6	26.5
Wholesale and retail trade	39.3	29.4	18.5	24.7	38.0	43.7	54.0	35.4
Hotels and restaurants	29.2	25.2	17.8	21.3	36.6	35.6	57.0	31.8
Transport & communications	34.5	25.0	21.1	22.7	37.3	36.6	52.3	32.8
Financial intermediation	34.4	26.1	22.7	24.3	31.3	34.5	38.3	30.2
Business activities/real estate	29.4	23.6	16.1	19.1	27.1	33.9	41.7	27.3
Public admin. and defence	38.9	27.8	26.0	33.4	40.4	36.5	58.3	37.3
Education	33.6	21.5	18.9	18.7	33.0	27.6	59.8	30.5
Health and social work	31.2	20.7	17.2	17.2	26.0	28.5	56.3	28.2
Other social and personal serv.	31.7	22.4	16.9	20.7	34.5	31.9	65.5	31.9

Source: Eurostat. Annual gross earnings by NACE in 2004 and 2007. Author's calculations.

Note: * - Hungary not available. Data for Slovakia and UK: 2007.

Table A5: Annual gross earnings by NACE (2004, PPS): EU7 and UK

	CR	ES	LA	LI	PO	SK	SL	UK
Mining & quarrying	14,344.5	9,450.8	7123.4	10,351.7	20,659.0	12,981.2	21,631.8	51,137.6
Manufacturing industries	11,222.1	8,209.2	5987.2	7,411.5	10,825.9	12,139.3	14,964.2	36,788.8
Electricity, gas, water supply	15,586.5	10,361.7	10561.8	10,717.9	15,931.3	16,475.6	21,473.2	43,780.2
Construction	11,623.9	9,267.3	5586.1	8,085.0	10,373.3	11,969.0	14,484.4	38,472.8
Wholesale and retail trade	11,402.9	8,531.5	5369.2	7,186.5	11,037.6	12,702.6	15,690.7	29,050.5
Hotels and restaurants	6,778.3	5,865.1	4132.2	4,945.3	8,510.1	8,272.9	13,244.6	23,233.0
Transport & communications	12,681.7	9,201.0	7753.1	8,360.4	13,708.3	13,442.9	19,239.4	36,774.7
Financial intermediation	23,405.4	17,768.5	15439.3	16,559.0	21,263.2	23,453.2	26,015.6	68,009.4
Business activities/real estate	13,470.2	10,809.0	7380.4	8,768.6	12,422.1	15,513.0	19,131.0	45,823.8
Public admin. and defence	14,279.3	10,191.3	9523.7	12,236.8	14,797.5	13,369.4	21,378.4	36,660.6
Education	12,137.0	7,744.0	6825.6	6,765.1	11,909.1	9,969.9	21,583.0	36,090.0
Health and social work	11,445.7	7,618.0	6326.5	6,310.3	9,550.5	10,450.4	20,684.0	36,725.4
Other social and person. serv.	10,416.6	7,364.1	5557.8	6,826.1	11,358.6	10,490.9	21,552.5	32,898.7

Source: Eurostat. Annual gross earnings by NACE in 2004. Author's calculations. Note: * - Data for Slovakia and UK: 2007. Hungary and Ireland not available.

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