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Cross-border labour mobility: do East-West and East-East cross-border labour flows differ?¹

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Abstract

The aim of this paper is to outline differences in the socio-demographic and employment characteristics of Estonian people who have worked in a neighbouring country – Finland, Sweden, Latvia or Russia. In a broader context the paper tries to provide some new empirical evidence based knowledge of possible differences in determinants of the East-West and East-East cross-border labour flows. The empirical part of this paper relies on data from *CV Centre* – an online employment portal bringing together jobseekers and vacant job posts. The results of our analysis show that different destination regions – the wealthier countries of Finland and Sweden (referred to as East-West mobility) and Latvia and Russia (referred to as East-East mobility) have attracted workers with different personal and job-related characteristics. Ethnicity and higher education are important determinants in explaining differences between East-West and East-East labour flows. Non-Estonians and people with a higher education have been less likely to work in Finland or Sweden (East-West mobility).

JEL Classification: J61, O57, R.23, P52

Key words: international labour mobility, cross-border labour flows, East-West and East-East labour migration, Estonia

1. Introduction

The model of the European Single Market has increased awareness towards the mobility phenomenon. There is broad political consensus regarding the freedom of movement for capital, goods, services as well as labour in the European Union (EU). The European Commission announced 2006 as the European Year of Worker Mobility, and has continued to

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consolidate new knowledge and practices as a means to facilitate geographic and job-to-job mobility for the European labour force.

Geographic labour mobility covers both trans-national migration as well as cross-border commuting. Although much research activity has been devoted to trans-national migration as well as to different types of job-to-job migration since the eastward enlargement of the EU (e.g. Zaitseva and Zimmermann, 2008; Kahanec and Zimmermann, 2010; Kahanec 2012), the type of geographic labour mobility – cross-border commuting – has received less attention. Our analysis provides some input in terms of research into cross-border labour flows, focusing on labour mobility from Estonia to its neighbouring countries.

Geographic labour mobility, especially labour outflows, is a hot topic for Estonia – a small EU Member State with a population of about 1.3 million, of whom around 30% are ethnic minorities. Since joining the EU, the yearly out-migration figures in Estonia have more than doubled compared to 2004, reaching 6,214 in 2011 and already 10,871 in 2012 (Statistics Estonia, 2013). With around 50% of migrants moving there each year, Finland is the most popular destination for Estonian migrants². Migration has increased significantly in all age groups with the exception of those aged 60 and more (Statistics Estonia, 2013). This means that the country is losing (at least temporarily) people of prime working age.

International migration, especially labour outflows, is a hot topic for Estonia – a small EU Member State with a population of about 1.3 million. Since joining the EU, the yearly out-migration figures in Estonia have more than doubled compared to 2004, reaching 6,214 in 2011 and already 10,871 in 2012 (Statistics Estonia, 2013). With around 50% of migrants moving there each year, neighbouring country Finland is the most popular destination for Estonian migrants. Besides increasing migration numbers, Estonia is a country where the number of cross-border commuters per 1,000 inhabitants is one of the highest in the EU, reaching 15.8 (MKW Wirtschaftsforschung: 2009). The high level of cross-border commuting and increasing migration numbers signal that the country's institutions have to profoundly monitor international labour mobility in order to elaborate and implement policy measures that reduce permanent labour outflows and also attract labour force with a range of knowledge, skills and new networks' connections in order to benefit from the free movement of labour in the long run.

² Statistics Estonia data include only registered flows that require a change of primary residence. Thus, official statistics underestimate actual flows by 30-60% according to Eamets (2011)

The empirical part of the paper relies on data from CV Centre (CV Centre) – an online job portal bringing together jobseekers and vacant job posts. This database makes it possible to examine the main socio-demographic characteristics (e.g. age, gender, education, language skills) and job characteristics (occupations, duration of employment) of Estonian people who have worked in a neighbouring country – Finland, Sweden, Latvia or Russia. The former two countries are among the wealthiest states in the EU, whereas the latter two are post-Soviet states. The study outlines possible differences in the socio-demographic and job-related characteristics of people who have worked in Finland and Sweden (this is referred to as East-West mobility) compared to people who have worked in Latvia and Russia (this is referred to as East-East mobility) implementing descriptive statistics and logistic regression models.

The paper is the first attempt to monitor Estonian labour flows to four neighbouring countries – Finland, Latvia, Sweden and Russia based on the CV Centre database. In a broader context the novelty of the paper is to provide some new empirical evidence based knowledge of possible differences in determinants of the East-West and East-East cross-border labour flows. We suppose that additional knowledge about cross-border labour movement and its determinants provides valuable information for elaborating policy measures that can support sustainable development and competitiveness of countries' economies.

2. Framework for analysing labour mobility

Cross-border labour mobility, especially migration, has been a hot research topic for decades and with numerous strands. Sjaastad (1962) established what has later been termed the “human capital theory of migration,” a framework under which the decision to migrate is considered an investment in an individual's human capital, taking into account the costs and benefits of the act of migration. Some years later Lee (1966) formulated a general framework for migration analysis, distinguishing between mainly social or economic push and pull factors in origin and destination regions, institutional or physical barriers to migration and personal factors affecting the decision to migrate. Lee's framework for studying migration processes includes inter-regional macroeconomic disparities, as well as individual characteristics of geographically mobile people. Departing from an individual framework, Mincer (1978) further looked at migration decisions in the family context. Going ahead, Massey (1990) argued that migration analysis should include the individual, household and community level information, the latter being connected to macroeconomic disparities between regions in income and employment levels. Although Lee (1966) and Massey (1990) already noted the importance of pre-existing networks in the country of destination, this

aspect of migration has become a strand of research on its own, as migrant networks in the destination country lower the costs of moving abroad for new migrants. Following Roy's (1951) discussion that was developed into a model by Borjas (1987), the question of the positive and negative selectivity of immigrant workers has become an important field in migration research focusing on examining possible impact of several determinants on migration processes. Recent literature has further looked at the magnetic effects of several welfare benefits; for example, Borjas (1999) found evidence from the US that generous benefits attracted more immigrants with lower education.

Following literature about general framework for understanding migration processes, numerous empirical studies have been conducted focusing several perspectives of international mobility of people. Jennisen (2005) showed that GDP per capita has a positive and unemployment rate a negative effect on net international migration in the EU. The young, male, single and more educated people from urban areas are more likely to migrate (e.g. Zaiceva & Zimmermann, 2008; European Commission, 2008). Delbecq and Waldorf (2010) show that pre-existing communities in the destination country are the most important predictor in East-West labour movements. These results confirm the findings of Pedersen et al. (2004), who found distance (both physical and cultural) between the source and destination country and pre-existing networks in the destination country to have a significant effect on migration decisions. Evidence about the effects of welfare benefits from the EU is controversial. De Giorgi and Pellizzari (2009) found that greater welfare benefits act as a magnet for immigrants as include higher wages and lower unemployment rates. Giulietti et al. (2011) find no significant effects of unemployment benefit systems on immigration for EU migrants, although some significant effects for non-EU migrants.

Commuting literature has mainly focused on intra-regional (e.g. rural-urban commuting) movements or, linked to our analysis, on specific border regions (e.g. Gottholmseder & Theurl, 2011; Greve & Rydberg, 2003). To our knowledge, analyses of cross-border commuting at EU level are scarce. Based on European Labour Force Survey data, Huber (2011) shows that, compared to non-commuters, cross-border commuters are more often male workers with medium level education who are more likely to be employed in manufacturing or construction and less likely in non-market services. Comparing EU12-to-EU15 (East-West mobility) with EU15-to-EU15 commuters (West-West mobility), Huber and Nowotny (2008) show that the former group has a larger share of young people (aged 20–29) with medium education levels who are more represented among construction, machine operating and

agricultural occupations. The results mainly indicate a negative selectivity of workers in EU12 (new member states after the EU eastward enlargement) to EU15 (the so-called old member states) flows. High-skilled workers primarily commute between EU15 countries and low-skilled between EU12 countries or from EU12 to EU15 (MKW, 2009).

Empirical evidence for Estonia shows that after joining the EU, people with university degrees are significantly less likely to emigrate and people with primary education most likely to do so (Anniste, et al., 2012a and 2012b). In addition, the majority of emigrants in 2007 were non-specialists and there were several times more manual workers compared to professionals and managers that left Estonia (Eesti Pank, 2008). The European Commission reports show that commuting between Estonia and Finland takes place weekly or even monthly rather than daily (MKW, Wirtschaftsforschung, 2009). National labour market experts highlighted construction and agriculture as important fields of activity for Estonian workers in Finland.

3. Data on methodology

The paper provides a brief insight into some aspects of cross-border labour mobility focusing on examining labour mobility in the EU, including movements between old member states (EU15) and the new member states (EU12) that joined the EU in 2004 or after. We are looking answer on the research question whether different destination regions of labour flows (East-West and East-East flows) are characterised by differences in socio-demographic and job-related characteristics of mobile workers.

The empirical part of the paper bases on the CV Centre (CV Centre) database. CV Market Group (CV Centre) is the largest jobseeker database in the Baltic States. The database includes information about the socio-demographic characteristics and employment history of jobseekers. CV Centre data enables us to analyse cross-border movements of workers as CVs include information about the past five jobs.

Our analysis bases on CVs that were updated between December 2004 and January 2010. People with multiple jobs in abroad are considered more than once in this database. Our initial sample size is nearly 10 000 observations. But after cleaning the database taking into account availability of information about socio-demographic and occupational characteristics of mobile people, the number of observations that include cross-border labour mobility cases

from Estonia to its neighbouring countries (Finland, Sweden, Latvia and Russia) is 8456: 83.8% belong to East-West flows (71.2 % in Finland; 12.6 % in Sweden) and 16.2 % belong to East-East *flows* (12.7% in Russia and 3.5 % in Latvia).

Based on the CV Centre database which includes information of the past five jobs on mobile people, we cannot clearly distinguish between past commuters and long-term and short-term migrants. Around 25% of the cases declared in the CV-s show that the duration of jobs in abroad lasted for up to three months and around 2% of the cases show that duration of jobs lasted in a neighbouring country for at least ten years. Thus, in the majority cases, the duration of jobs of mobile people lasted between four months and ten years.

We are aware that the database has several shortcomings that present limitations for conducting an empirical analysis. First, it might not be representative of the population of mobile workers as some occupational fields (e.g. medical workers) may be under represented. Jobs abroad have also been categorized using a special approach, which sometimes makes them difficult to group into larger categories (e.g. sectors). The data include demographic information about each person – year of birth, education (with years of obtaining different levels of education reported), language skills, marital status and number of children but this information is not presented in all cases and the people present this information in their CV-s according to their self-understanding and self-perceptions. We cannot correctly use data about marital status and children of jobseekers because these variables are not always linked to a year of marrying or ages of children as well as to previous job posts. The same applies to language skills. English language skills could be regarded as a proxy for capabilities of people who have worked in Estonia's neighbouring countries, and therefore, we include these skills in our analysis. Although the data does not necessarily consists of information about ethnicity, we use mother tongue as a proxy for this. We are aware that mother tongue is not always fully related to ethnicity.

In order to characterize labour flows between Estonia and its neighbouring countries we provide some descriptive information about socio-demographic and job-related characteristics of Estonian people who worked in a neighbouring country. We also estimate two logistic regression models to enlarge the results of the descriptive analysis and to test whether the socio-demographic and job related characteristics of the mobile Estonian people are statistically different in the case the East-West and East-East labour flows.

The estimated logistic regressions are models are as follows:

$$\log \frac{p(Y_i = 1)}{1 - p(Y_i = 1)} = \beta_0 + \sum_{k=1}^K \beta_k X_{ik} + u_i \quad (1)$$

Where

$p(Y_i = 1)$ is the probability that an individual $i = 1, \dots, n$ worked in Finland or Sweden (East–West cross-border mobility) and $1 - p(Y_i = 1)$ is the probability that an individual $i = 1, \dots, n$ worked in Latvia or Russia (East-East mobility);

X_{ik} are explanatory variables that contain socio-demographic (age, gender, education, mother tongue) and job-related (occupations, job durations) characteristics for individual i ($k = 1, 1, \dots, K$, K -the number of explanatory variables). All explanatory variables are categorical.

The number of observations considered by the estimation of the logistics regressions is 5273. Due to some missing information, the number of initially observed cross-border mobility cases somewhat declined.

The logistic models look at the odds ratios of East-West flows (to Finland and Sweden) compared to East-East flows (to Latvia and Russia). We consider the odds ratio as a measure of effect size describing the strength of association between the outcome (dependent variable) and an explanatory variable. The odds ratio represents the odds that an outcome (in our case East-West mobility) will occur if a certain characteristic of an individual is present, compared to the odds of the outcome occurring in the absence of that characteristic. The difference between the two models is that the first model regresses only to socio-demographic variables, the second additionally controls for the individuals' job-related characteristics.

Although our analysis offers only a basic insight into a rather unique database of Estonian jobseekers CV-s, we try to offer some broader contribution to research about cross border labour mobility dealing with East-West and East-East labour flows. From this perspective, Estonia offers an interesting case as it neighbours with wealthy Nordic countries (Finland and Estonia) and post-socialist Eastern-European (Russia and Latvia) countries.

4. Empirical results

Table 1 presents descriptive information about socio-economic characteristics of Estonian people who worked in neighbouring countries. This information bases on the self-reported data of the past five jobs of the jobseekers presented in their CV-s and made public through the CV Centre database. Ethnicity (mother tongues is used for a proxy) and gender of cross-border workers show some differences, when comparing East-West (working in Finland

and/or Sweden) and East-East labour (working in Russia and/or Latvia) flows from Estonia. The former group is clearly dominated by males and Estonians. Workers in Latvia and Russia have predominantly been non-Estonians, and male workers show only a slight majority.

Table 1. Shares of Estonian people by some socio-demographic characteristics working in a neighbouring country, %

| | | Latvia | Russia | Finland | Sweden | Total |
|---------------------------|------------|--------|--------|---------|--------|-------|
| Gender (male) | | 52.0 | 54.8 | 70.3 | 64.2 | 66.9 |
| Ethnicity (mother tongue) | Estonian | 26.3 | 11.8 | 62.8 | 54.3 | 54.0 |
| | Other | 48.0 | 68.2 | 11.3 | 16.9 | 20.5 |
| | Unknown | 25.7 | 20.0 | 25.9 | 28.8 | 25.5 |
| Age | 15-20 | 19.3 | 21.3 | 20.8 | 20.0 | 20.7 |
| | 21-25 | 36.8 | 40.1 | 30.8 | 37.7 | 33.1 |
| | 26-30 | 19.3 | 18.8 | 17.1 | 18.5 | 17.5 |
| | 31-35 | 9.8 | 9.1 | 10.5 | 9.2 | 10.2 |
| | over 36 | 14.8 | 10.7 | 20.8 | 14.6 | 18.5 |
| Education | Primary | 4.4 | 3.4 | 8.7 | 6.6 | 7.6 |
| | Secondary | 29.4 | 28.0 | 45.1 | 41.2 | 41.9 |
| | Vocational | 18.6 | 18.0 | 28.4 | 28.0 | 26.7 |
| | Higher | 32.4 | 37.3 | 7.3 | 12.0 | 12.6 |
| | Unknown | 15.2 | 13.3 | 10.5 | 12.2 | 11.2 |
| Number of mobile people | | 296 | 1 070 | 6 019 | 1 071 | 8 456 |
| Share, % | | 3.5 | 12.7 | 71.2 | 12.6 | 100 |

Source: CV Centre data, authors' calculations.

The majority of mobile people are young (25 years and below). Finland have attracted somewhat more male workers aged 36 and above compared to other countries. Data presented in Table 1 also indicate that labour flows from Estonia to Finland and Sweden are clearly characterised by lower shares of highly educated people than labour flows to Latvia and Russia. Even though there is a greater share of highly educated female workers, the rates fall far behind those of Latvia and Russia. Labour flows to Finland and Sweden are dominated by people with secondary and vocational education. In addition, while people with primary education make up the smallest group in other countries, there have been more Estonian workers with primary education in Finland than workers with a higher education.

The results of descriptive overview of CV Centre data about labour flows from Estonia to its neighbouring countries confirm the findings of Huber and Nowotny (2008) that younger age groups are more mobile and East-West labour flows are most likely to have medium levels of

education. The descriptive information also shows that there are no remarkable differences between East-East and East-West flows in terms of age groups.

We also analysed mobility on the Estonian people to the neighbouring countries according to occupations. The job posts mentioned in the CV are classified relying on the occupation categories of the U.S. The number of different job posts mentioned in the CV-s consists of 24 occupations (see also Kaska and Paas, 2013) and these are aggregated to the 5 main occupation categories in this part of the analysis (Table 2). The East-West labour flows are in most cases concerned with lower-skilled occupations (e.g. construction, maintenance, transport, production). In the majority of cases, East-East labour flows concern managers and professionals, but also sales and office posts. These results are also consistent with previous empirical findings (MKW Wirtschaftsforschung, 2009; Huber & Nowotny, 2008) that East-West flows in the EU are characterised by a high share of low-skilled workers, whereas high-skilled workers move between EU15 (West-West mobility) or EU12 countries (East-East mobility).

Table 2 . Shares of aggregated groups of occupations of Estonian workers in a neighbouring country, %

| | Latvia | Russia | Finland | Sweden | Total |
|--|--------|--------|---------|--------|-------|
| Management, Professional, and Related Occupations | 39.9 | 39.3 | 9.9 | 13.6 | 15.2 |
| Service Occupations | 11.8 | 9.9 | 6.9 | 11.8 | 8.1 |
| Sales and Office Occupations | 25.0 | 18.6 | 12.7 | 18.7 | 14.6 |
| Agriculture, Construction, and Maintenance Occupations | 9.8 | 17.5 | 49.9 | 40.6 | 43.3 |
| Manufacturing, Production, Transport | 13.5 | 14.7 | 20.6 | 15.3 | 18.8 |

Source: CV Centre data, authors' calculations.

We also analyse how long jobs in neighbouring countries have lasted (Table 3). It is worth noting that job posts in Latvia and Russia lasted, on average, twice as long as in Finland and Sweden. In all four destination countries the largest share of durations falls between 4 and 12 months. For East-West flows we can say that shorter job durations are dominant. However, for East-East labour flows seasonal (up to 3 months) posts are most seldom. Over a third of the people who worked in Russia or Latvia worked for more than two years on their most previous job post in those countries. The same figures for Finland and Sweden fall below 20%. We can conclude that job-related characteristics indicate that East-West flows are rather concerned with lower-skilled and short-term occupations that are often seasonal.

Table 3. Share of average duration of jobs of Estonian people in neighbouring countries, %

| Duration (months) | Latvia | Russia | Finland | Sweden | Total |
|-------------------|--------|--------|---------|--------|-------|
| ...-3 | 13.2 | 9.3 | 27.4 | 24.3 | 24.2 |
| 4-12 | 28.7 | 24.8 | 36.8 | 40.1 | 35.4 |
| 13-24 | 21.3 | 19.4 | 17.1 | 16.8 | 17.6 |
| 25-48 | 17.9 | 21.7 | 13.4 | 11.4 | 14.3 |
| 49-... | 18.9 | 24.8 | 5.3 | 7.4 | 8.5 |

Source: CV Centre data, authors' calculations.

In order to test whether there are statistically significant differences between the East-West and East-East cross-border flows according to the socio-demographic and job-related characteristics of the Estonian people, we estimate two logistic regression models. Table 4 reports the odds ratios from the two models along with robust standard errors below them in brackets. Our study outlines possible differences in the socio-demographic and job-related characteristics (age, gender, education, occupations, etc.) of people who have worked in Finland and Sweden (East-West mobility) compared to people who have worked in Latvia and Russia (East-East mobility) implementing descriptive statistics and logistic regression models.

The first model includes socio-demographic variables and a dummy variable indicating whether working abroad took place before or after joining the EU. Model 2 includes job-related characteristics (occupations, durations). Both models look at labour flows after 1991 (i.e. after Estonia regained independence). Excluding the younger age groups (below 25) from the analysis, to provide a higher probability that workers have obtained their highest level of education, has very little effect on the results; these results are not reported in the table below.

Empirical results that rely on the Model 1 are generally in line with results from the descriptive analysis. Men have been 1.5 times more likely to work in Finland or Sweden than in Latvia or Russia. Minorities, however, work about 17 (1/0.06) times less likely in Finland and Sweden. Results do not show significant differences between East-East and East-West flows in the age groups of workers. People with higher education are 7.7 (1/0.130) times less likely to follow the pattern of East-West cross-border labour mobility compared to East-East mobility. When controlling for job-related characteristics in Model 2, the odds ratio is reduced to 5.6 (1/0.180), but it still confirms that East-West labour flows are as a rule characterised by less educated workers than East-East flows. More importantly, grouped job categories explain gender differences resulting in an insignificant estimate for the gender variable in Model 2. This indicates that the occupational choice between genders is not random.

Table 4. Odds ratios from logistic regressions comparing East-West to East-East labour flows from Estonia

| | Model 1 | Model 2 |
|--|---------------------|---------------------|
| Male | 1.521*** (0.178) | 0.960 (0.137) |
| Ethnic minorities | 0.060*** (0.007) | 0.061*** (0.008) |
| Age 15-20 | (Reference group) | (Reference group) |
| Age 21-25 | 1.126 (0.194) | 1.136 (0.204) |
| Age 26-30 | 1.108 (0.210) | 1.079 (0.213) |
| Age 31-35 | 0.978 (0.216) | 0.958 (0.222) |
| Age 36-... | 1.307 (0.261) | 1.359 (0.287) |
| Primary education | (Reference group) | (Reference group) |
| Secondary education | 0.716 (0.147) | 0.750 (0.157) |
| Vocational education | 0.839 (0.178) | 0.892 (0.195) |
| Higher education | 0.130*** (0.029) | 0.180*** (0.042) |
| After joining EU | 5.927*** (0.681) | 4.040*** (0.606) |
| English skills | 1.102 (0.133) | 1.193 (0.153) |
| Managers and professionals | - | (Reference group) |
| Service | - | 2.152*** (0.454) |
| Sales and Office work | - | 1.427 (0.260) |
| Natural resources, construction, maintenance | - | 5.783*** (0.899) |
| Production, transport, materials | - | 5.711*** (1.019) |
| Duration up to 3 months | - | (Reference group) |
| Duration 4-12 months | - | 0.630** (0.110) |
| Duration 13-24 months | - | 0.472*** (0.092) |
| Duration 25-48 months | - | 0.521** (0.109) |
| Duration over 48 months | - | 0.375*** (0.092) |
| Constant | 8.660*** (2.150) | 8.060*** (2.669) |
| Number of observations | 5273 | 5273 |
| Akaike information criterion | 2465.458 | 2286.785 |

Dependent variable equals 1 in case of East-West mobility and 0 in case of East-East mobility.

*** denotes significance at 5% level.

Source: CV Centre data, authors' calculations.

The statistical significance of the dummy variable for the period of starting working abroad indicates in both models that after Estonia joined the EU, East-West labour flows have increased more than East-East flows.

Occupation groups show the strongest positive effects of jobs for Sweden and Finland in such fields as natural resources, construction, production and transport compared to other fields. Thus, the results from Model 2 confirm that East-East labour flows are more likely to comprise high-skilled workers. Job posts in Sweden and Finland show a significantly lower tendency for posts to last more than 3 months compared to posts in Latvia and Russia. As durations increase the odds ratios get smaller indicating a higher probability of working in Latvia or Russia for longer periods. There is a clear tendency for Estonian people to work on seasonal or short-term job posts in Finland and Sweden (East-West mobility). East-East cross-border labour flows are more long-term compared to the less educated and short-term East-West labour flows.

5. Conclusion and discussions

The focus of the paper has been on the outlining the differences in the socio-demographic and employment characteristics of Estonian people who have worked in a neighbouring country – Finland, Sweden, Latvia or Russia. In a broader context the paper provides some new empirical evidence based knowledge of possible differences in determinants of the East-West and East-East cross-border labour flows. The empirical part of the paper relied on the data from *CV Centre* – an online employment portal bringing together jobseekers and vacant job posts.

The results of the study have confirmed that different destination regions – the wealthier countries of Finland and Sweden (East –West flows) on the one hand and the post-socialist countries of Latvia and Russia (East-East flows) on the other – have attracted workers with different socio-demographic and job-related characteristics. Ethnicity and education are important determinants in explaining differences in East-West and East-East cross-border labour flows in the case of Estonia as a home country. Minorities and people with higher education have been less likely to work in Finland or Sweden. Younger people have been more mobile in the case of both East-East and East-West flows and there are no statistically significant differences in age groups between the two groups of neighbouring countries. The results of the study also indicate that East-East and East-West flows do not differ on the basis of gender once job categories are controlled for.

East-West labour flows are statistically significantly more likely to be characterised by lower-educated workers in fields such as construction, agriculture, manufacturing and production and customer service. East-East flows are more evenly distributed between managerial professions and more likely to be characterised by occupations that require higher education. In addition, labour flows to wealthier neighbouring countries are characterised by

significantly shorter durations of job posts. More than 60% of people involved in cross-border labour mobility worked in wealthier neighbouring countries for less than a year. Our results are consistent with previous empirical studies of cross-border labour flows (Huber 2011; MKW Wirtschaftsforschung 2009) indicating that international labour mobility in the case of Estonia as a small country with post-socialist path-dependence follows similar patterns compared to cross-border labour flows between larger and also richer countries and regions.

We argue that the possible consequences of cross-border labour mobility are twofold. On the one hand, cross-border labour mobility may support the economic development of both source and target country. For instance close proximity of wealthy neighbouring countries (like Finland and Sweden) provides opportunities for Estonian workers to significantly increase their income and to avoid unemployment, particularly in the rural areas, and thereby diminishes pressure on the Estonian social system. The neighbouring countries Latvia and Russia mainly attracted better educated and well qualified Estonian workers, who got new challenges for developing their skills and obtaining experience of working in a new business environment. As a rule, such workers also earned salaries above the Estonian average thereby creating good preconditions for some new consumption demand in Estonia. Cross-border labour mobility also provides possibilities to create new business networks and to get new working skills and experience that can be useful for continuing working career after returning to home country. Thus, in that sense cross-border labour mobility has a positive impact on the economic development of both source and target countries. But on the other hand, cross-border labour mobility provides some concern of brain waste taking into account the sharp increase of lower-skilled jobs of Estonian people who are working in economically well-developed neighbouring countries Sweden and Finland. People who are working in economically more developed countries have often jobs that are below their qualifications.

In conclusion, to achieve the expected win-win situation of the increasing international labour mobility, policy measures that reduce possible skill mismatches and brain waste and create favourable preconditions for effective skills exchange and return migration should be further elaborated and implemented. The packages of socio-economic policy measures should beside others include comprehensive and supportive information for potential return migrants about possible working and living conditions in home countries and regions, advisory services that support adjustment of all family members in new working and living environment, working places for spouses, suitable conditions for children in kindergartens and schools, language support for children and spouses if necessary, psychological services, etc.

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Appendix 1. Overview of the main demographic statistics by country of origin, as a %

| | | Latvia | Russia | Finland | Sweden | Total |
|--------------------------|--------------|---------------|---------------|----------------|---------------|--------------|
| Gender | Female | 47.45 | 46.64 | 28.07 | 34.39 | 30.91 |
| | Male | 52.55 | 53.36 | 71.93 | 65.61 | 69.09 |
| Ethnicity | Estonian | 21.90 | 5.85 | 62.69 | 56.09 | 56.05 |
| | Non-Estonian | 54.74 | 77.61 | 12.16 | 18.18 | 19.50 |
| | Unknown | 23.36 | 16.54 | 25.14 | 25.73 | 24.45 |
| Age at leaving | | 27.058394 | 25.929104 | 28.275391 | 26.751286 | 27.864053 |
| Education | Primary | 20.07 | 26.37 | 21.72 | 19.47 | 21.79 |
| | Secondary | 31.39 | 25.50 | 43.52 | 42.45 | 41.56 |
| | Vocational | 17.88 | 10.70 | 28.21 | 28.04 | 26.45 |
| | Higher | 30.66 | 37.44 | 6.56 | 10.03 | 10.21 |
| Before joining EU | | Latvia | Russia | Finland | Sweden | Total |
| Gender | Female | 45.83 | 43.46 | 32.62 | 48.82 | 38.20 |
| | Male | 54.17 | 56.54 | 67.38 | 51.18 | 61.80 |
| Ethnicity | Estonian | 15.28 | 3.85 | 47.65 | 52.13 | 37.73 |
| | Non-Estonian | 58.33 | 75.00 | 12.35 | 16.59 | 28.26 |
| | Unknown | 26.39 | 21.15 | 40.00 | 31.28 | 34.01 |
| Age at leaving | | 26.958333 | 25.292308 | 27.308725 | 26.199052 | 26.700311 |
| Education | Primary | 22.22 | 22.69 | 24.03 | 22.27 | 23.37 |
| | Secondary | 34.72 | 28.85 | 40.27 | 46.45 | 38.66 |
| | Vocational | 19.44 | 13.08 | 27.38 | 23.70 | 23.45 |
| | Higher | 23.61 | 35.38 | 8.32 | 7.58 | 14.52 |
| After joining EU | | Latvia | Russia | Finland | Sweden | Total |
| Gender | Female | 48.02 | 48.16 | 27.57 | 31.20 | 29.80 |
| | Male | 51.98 | 51.84 | 72.43 | 68.80 | 70.20 |
| Ethnicity | Estonian | 24.26 | 6.80 | 64.36 | 56.96 | 58.84 |
| | Non-Estonian | 53.47 | 78.86 | 12.14 | 18.53 | 18.16 |
| | Unknown | 22.28 | 14.34 | 23.50 | 24.50 | 22.99 |
| Age at leaving | | 27.094059 | 26.233456 | 28.382432 | 26.873298 | 28.041879 |
| Education | Primary | 19.31 | 28.13 | 21.46 | 18.85 | 21.54 |
| | Secondary | 30.20 | 23.90 | 43.88 | 41.57 | 42.00 |
| | Vocational | 17.33 | 9.56 | 28.30 | 29.01 | 26.91 |
| | Higher | 33.17 | 38.42 | 6.36 | 10.58 | 9.55 |

Source: CV Centre data, authors' calculations.

Appendix 2. Job categories of workers in destination countries (frequencies and %)

| | Latvia | | Russia | | Finland | | Sweden | | Total | |
|----------------------------------|--------|-------|--------|------|---------|-------|--------|-------|-------|-------|
| | Freq. | % | Freq. | % | Freq. | % | Freq. | % | Freq. | % |
| Assisting / administration | 14 | 5.11 | 55 | 6.84 | 88 | 1.18 | 54 | 4.63 | 211 | 2.17 |
| Construction / Real estate | 22 | 8.03 | 64 | 7.96 | 3,195 | 42.75 | 407 | 34.91 | 3,688 | 37.95 |
| Electronics / Telecommunication | 6 | 2.19 | 18 | 2.24 | 72 | 0.96 | 10 | 0.86 | 106 | 1.09 |
| Energetics / Natural Resources | 0 | 0 | 16 | 1.99 | 69 | 0.92 | 9 | 0.77 | 94 | 0.97 |
| Finance | 10 | 3.65 | 61 | 7.59 | 27 | 0.36 | 10 | 0.86 | 108 | 1.11 |
| Media / New Media / Creative | 18 | 6.57 | 26 | 3.23 | 24 | 0.32 | 8 | 0.69 | 76 | 0.78 |
| IT / E-commerce | 9 | 3.28 | 62 | 7.71 | 29 | 0.39 | 10 | 0.86 | 110 | 1.13 |
| Management | 31 | 11.31 | 49 | 6.09 | 57 | 0.76 | 19 | 1.63 | 156 | 1.61 |
| Commerce | 8 | 2.92 | 29 | 3.61 | 81 | 1.08 | 13 | 1.11 | 131 | 1.35 |
| Human Resources / Training | 2 | 0.73 | 16 | 1.99 | 46 | 0.62 | 19 | 1.63 | 83 | 0.85 |
| Culture / Entertainment | 7 | 2.55 | 33 | 4.10 | 35 | 0.47 | 12 | 1.03 | 87 | 0.90 |
| Agriculture / Forestry / Fishing | 3 | 1.09 | 4 | 0.50 | 550 | 7.36 | 69 | 5.92 | 626 | 6.44 |
| Mechanics / Engineering | 8 | 2.92 | 26 | 3.23 | 366 | 4.90 | 50 | 4.29 | 450 | 4.63 |
| Sales / Retail | 24 | 8.76 | 52 | 6.47 | 57 | 0.76 | 14 | 1.20 | 147 | 1.51 |
| Law / Jurisprudence / Security | 4 | 1.46 | 26 | 3.23 | 13 | 0.17 | 1 | 0.09 | 44 | 0.45 |
| Public / Governmental service | 1 | 0.36 | 10 | 1.24 | 8 | 0.11 | 4 | 0.34 | 23 | 0.24 |
| Customer service | 20 | 7.30 | 52 | 6.47 | 657 | 8.79 | 130 | 11.15 | 859 | 8.84 |
| Healthcare / Pharmacy | 4 | 1.46 | 11 | 1.37 | 87 | 1.16 | 27 | 2.32 | 129 | 1.33 |
| Catering | 15 | 5.47 | 20 | 2.49 | 236 | 3.16 | 32 | 2.74 | 303 | 3.12 |
| Transportation / Logistics | 16 | 5.84 | 33 | 4.10 | 326 | 4.36 | 57 | 4.89 | 432 | 4.45 |
| Tourism / Hotels | 11 | 4.01 | 13 | 1.62 | 119 | 1.59 | 42 | 3.60 | 185 | 1.90 |
| Marketing / Advertising / PR | 17 | 6.20 | 50 | 6.22 | 25 | 0.33 | 6 | 0.51 | 98 | 1.01 |
| Manufacturing / Production | 12 | 4.38 | 48 | 5.97 | 1,248 | 16.70 | 136 | 11.66 | 1,444 | 14.86 |
| Education / Science / Research | 12 | 4.38 | 30 | 3.73 | 58 | 0.78 | 27 | 2.32 | 127 | 1.31 |

Source: CV Centre data, authors' calculations.

Appendix 3. Job categories according to the US Bureau of Labour Statistics

Management, Professional, and Related Occupations includes the following categories from CV Centre data:

- Energetics / Natural Resources
- Finance
- Media / New Media / Creative
- IT / E-commerce
- Management
- Culture / Entertainment
- Mechanics / Engineering
- Law / Jurisprudence / Security
- Marketing / Advertising / PR
- Education / Science / Research

Service Occupations includes the following categories of from CV Centre data:

- Human Resources / Training
- Public / Governmental service
- Healthcare / Pharmacy
- geographic labour mobility, neighbouring countries, cross-country labour flows, Estonia
- Catering
- Tourism / Hotels

Sales and Office Occupations includes the following categories of from CV Centre data:

- Assisting / administration
- Commerce
- Sales / Retail
- Customer service

Natural Resources, Construction, and Maintenance Occupations includes the following categories of from CV Centre data:

- Construction / Real estate
- Electronics / Telecommunication
- Agriculture / Forestry / Fishing

Production, Transportation, and Material Moving Occupations includes the following categories of from CV Centre data:

- Transportation / Logistics
- Manufacturing / Production

Military workers were not reflected in CV Centre data. Problems in categorizing mainly concerned such fields as electronics and telecommunications, energetics and natural resources, human resources and training, public and government services and advertising, marketing and PR. These categories made up less than 5% of all observations.

Appendix 4. Shares of job categories by destination countries before and after Estonia joined the EU on May 1st 2004.

| Duration (months) | Latvia | | Russia | | Finland | | Sweden | |
|----------------------|--------|----------|--------|----------|---------|----------|--------|----------|
| | Pre EU | After EU | Pre EU | After EU | Pre EU | After EU | Pre EU | After EU |
| ...-3 | 6.94 | 19.80 | 9.23 | 22.79 | 17.99 | 30.80 | 14.69 | 30.79 |
| 4-12 | 22.22 | 39.60 | 26.92 | 42.46 | 22.95 | 41.53 | 31.28 | 43.87 |
| 13-24 | 27.78 | 26.73 | 18.85 | 21.51 | 18.12 | 16.62 | 16.11 | 16.86 |
| 25-48 | 43.06 | 13.86 | 45.00 | 13.24 | 40.94 | 11.06 | 37.91 | 8.48 |

Source: CV Centre data, authors' calculations.