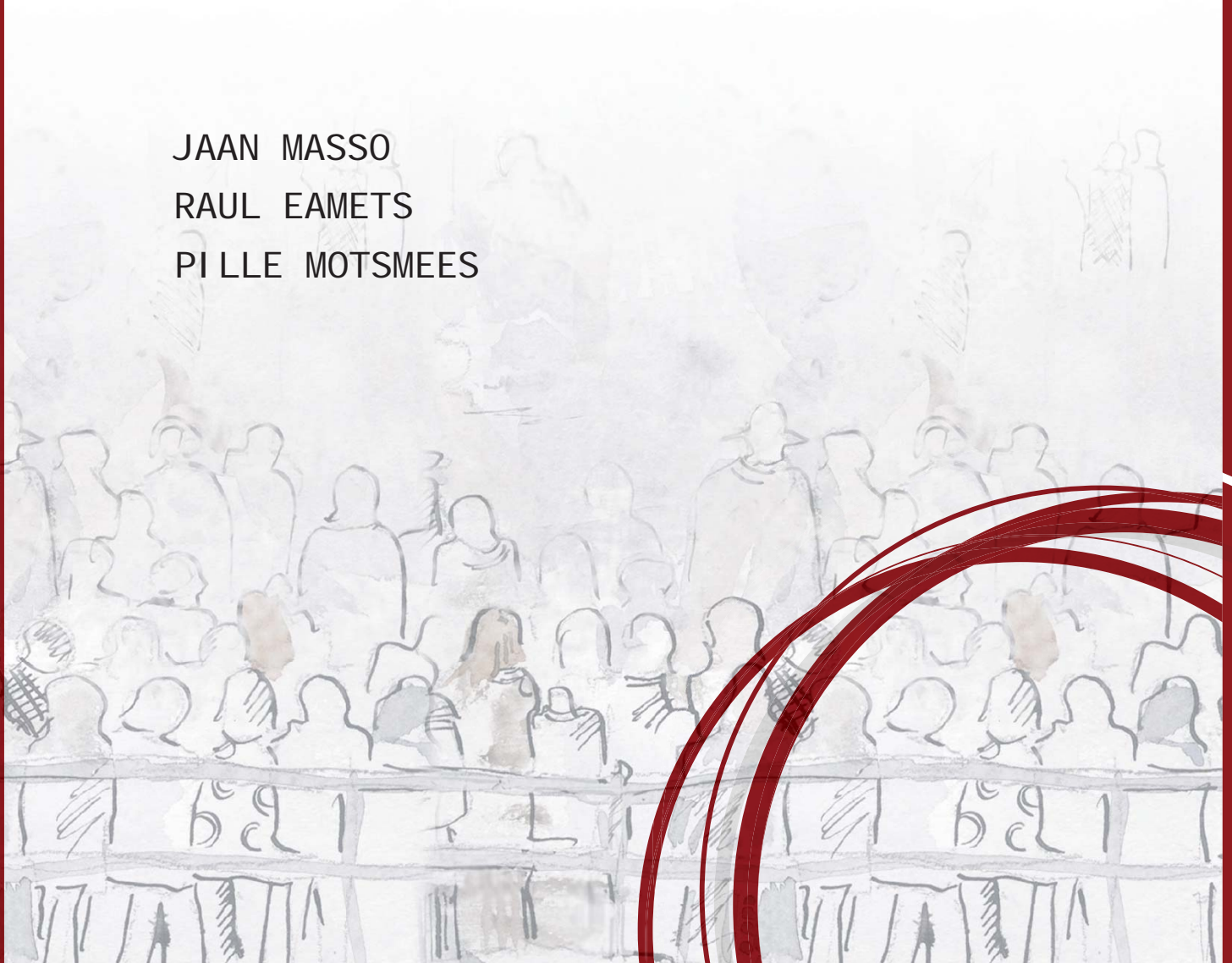CELSI Discussion Paper No. 14

THE EFFECT OF MIGRATION EXPERIENCE ON OCCUPATIONAL MOBILITY IN ESTONIA

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JAAN MASSO

RAUL EAMETS

PILLE MOTSMEES

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Jaan Masso
University of Tartu

Raul Eamets
University of Tartu

Pille Motsmees
University of Tartu

ABSTRACT

The Effect of Migration Experience on Occupational Mobility in Estonia*

The existing literature on return migration has resulted in several studies analysing the impact of foreign work experience on the returnees' earnings or their decision to become self-employed; however, in this paper we analyse the less studied effect on occupational mobility — how the job in the home country after returning compares to the job held before migration. The effect of temporary migration on occupational mobility is analysed using unique data from an Estonian online job search portal covering approximately 10–15% of the total workforce, including thousands of employees with temporary migration experience. The focus on data from a Central and Eastern European country is motivated given that the opening of labour markets in old EU countries to the workforce of the new member states has led to massive East-West migration. We did not find any positive effect of temporary migration on upward occupational mobility and in some groups, such as females, the effect was negative. These results could be related to the typically short-term nature of migration and occupational downshifting abroad as well as the functioning of the home country labour market.

Corresponding Author:

Jaan Masso
Faculty of Economics and Business Administration, University of Tartu
Narva mnt. 4, Tartu, 51009, Estonia
E-mail: Jaan.Masso@mtk.ut.ee

1. Introduction

The opening of the labour markets of the old EU countries to the workforce of the new member states has led to massive East-West migration. That is especially the case for the Baltic States, foremost Latvia and Lithuania, but also Estonia, where it is reflected in a significant drop in the population (Hazans, Philips 2011). While outward migration, especially of young and educated people, may seriously undermine the further competitiveness of countries, temporary or return migration may also benefit the countries if the migrants attain new skills to be used later in the home (or sending) country, or if they accumulate savings in order to start as entrepreneurs[1]. There are three major channels through which international labour migration is considered to have a direct positive effect on the development of the sending country: return migration, remittances, and the transfer of knowledge, technology or investments (Lowell and Findlay, 2002; Katseli et al. 2006 among the others)[2].

In this paper we study the relationship between temporary migration and occupational mobility; that is, whether the human capital acquired abroad enables people to take more highly paid jobs or jobs requiring higher human capital on their return. The existing literature on return migrants has conducted extensive analysis of the impact of foreign work experience on the earnings of returning migrants or their decision to become self-employed. Socio-economic motivations and determinants of return migration have been extensively analysed in the literature (e.g. Borjas and Bratsberg, 1996; Dustmann 2003; Prelipseanu 2010, Cobo et al 2010), although most studies primarily focused on the decision of migrants to return to their home country and the amount of time spent abroad. Wage premiums among temporary migrants have also been observed (Iara 2006; Barrett and O'Connell 2001; Co et al. 2000; de Coulon and Piracha 2005; Hazans 2008; Brownell 2010; Dustmann 2003; Luthra 2009) with studies mostly confirming the higher earnings of return migrants even after accounting for

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[1] We use temporary and return migration as synonyms. According to EU definitions temporary migration is migration for a specific motivation and/or purpose with the intention that, afterwards, there will be a return to country of origin or onward movement (European Migration Network, 2011). In this sense return migration is broader concept as it consists also those returners, who left country long time ago. Temporary migration is more short-term phenomenon. From economic point of view we do not see big differences between two categories.

[2] Its commonly claimed that migrants return with newly acquired specific experience, skills and savings that are likely to raise domestic productivity and employment upon repatriation (Lowell and Findlay, 2002; Bauer et al., 2005; Fan and Stark, 2007). Savings of returning migrants may be used to acquire durable consumption goods, and to allow for a steady income after returning, but savings may also be put into productive use. Savings and remittances of migrants may provide badly needed capital inflows. For instance Kahanec and Shields (2010) found that temporary migrants work more hours in order to accumulate savings and invest in financial capital that can be transferred back to their country of origin upon return.

selectivity. Returning migrants may also increase human capital and skills when they come back to the home country, and contribute to economic prosperity. At the cross-country level, Kugler and Rapoport (2007) and Javorcik et al. (2011) find a positive relationship between the number of skilled migrants a country has in the United States and the level of foreign direct investment from the US economy to that country. Gibson and McKenzie (2011) find the main forms of knowledge flow among high-skilled migrants from Ghana, Micronesia, Papua New Guinea and Tonga are information about educational and work opportunities abroad, with few migrants providing advice to home country companies or governments. On the other hand, there are also doubts about the positive effects on the human capital of the return migrants, for example, due to outward migration reacting to the shortage of unskilled labour in destination countries (Mesnard 2004), or that the applicability of the specific skills acquired in the foreign country may be limited due to a technological gap between the receiving and sending country (Katseli et al. 2006).

The literature on return migration is not very extensive, and there are only a few papers dealing with the occupational change or mobility of the return migrants. Naturally, the effects of wages and occupation could be related, as occupational change may be one channel via which migration affects the earnings of the return migrants. Occupational mobility or choice can be understood in this context as upward or downward mobility based on a ranking of occupations at various levels of detail (e.g. 1-digit ISCO classification) based on the earnings offered or human capital required in various occupations (e.g. Campos and Dabušinskas 2009, Sabirianova 2002, Carletto and Kilic 2011), while some studies have also included self-employment as one of the occupational choices (e.g. Ilahi 1999) or looked on occupations based on sectors (Kupets 2011). Given the low number of earlier studies, Cobo et al. (2010), using a multinomial logit model, looked at the occupational choice of Latin American return migrants to the US by distinguishing between 5 categories of occupations; these were non-manual high qualification, non-manual low qualification, manual high qualification, manual low qualification, unemployed. They found that return migration enhanced upward occupational mobility especially at a young age. Carletto and Kilic (2011) analysed the occupational mobility of Albanian return migrants across 6 categories (not working, agriculture, low-skilled blue-collar, high-skilled blue collar, low-skilled white collar, high-skilled white collar), and found that upward occupational mobility was enhanced by past migration to Italy or countries further afield but not to Greece. Kupets (2011), using Ukrainian data, found that return migration did not bring the expected brain gain for the

economy. The majority of Ukrainian temporary migrants engaged in non-farm activities end up working in the informal sector, predominantly in construction, trade and repair. Ilahi (2009) modelled the occupational choices of return migrants between wage employment, self-employment in agricultural activities and self-employment in non-agricultural activities. He found that return migrants have a higher tendency towards self-employment over wage employment. Appendix 1 provides a short summary of the results of these studies.

The aim of our paper is to investigate the occupational mobility of temporary migrants in Estonia, a new European Union member state since 2004. The eastern enlargement of the EU and lifting of the restrictions of the free movement of labour[3] has led to massive East-West migration and the Baltic States, especially Latvia and Lithuania but also Estonia, have demonstrated the highest labour outflow rates among the new member states after EU enlargement (Hazans 2008). While these flows declined in 2006 and 2007 following the tightening of the domestic labour market (Randveer, Rõõm 2009), the especially deep economic recession in the Baltic States led to a renewed increase in outmigration (Eamets 2011). As earlier studies have shown, the majority of migrants from new member states have been temporary (Hazans, Philips 2011); therefore, the impact of return migration is a crucial and relevant question – is the loss of human capital due to the emigration of the youngest and most capable employees at least partly compensated for by the higher human capital they have accumulated during the time they spent working abroad. For instance, Hazans (2008) found in the Latvian case using instrumental variables and propensity score matching techniques that returnees acquired a substantial (on the average 15%) wage premium. Yet, the number of studies on the labour market performance of returnees is limited not only in the case of CEE countries but in the context of migration literature in general.

For our study, we will use a unique dataset from the leading online job search portal (hereinafter CV Keskus) for Estonia, which contains about 261 thousand self-reported resumes (employment histories). Due to its size, the data include thousands of employees with foreign work experience, making it more appropriate for the analysis compared to Labour Force Survey Data. Labour Force Survey samples are often not large enough to assess migration flows, especially in the case of smaller countries like Estonia. Many earlier studies of return migrants have been based on quite small samples of returnees, even less than one

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[3] Different countries lifted the restrictions on the free movement of labour at different times, e.g. Ireland, UK and Sweden on 1 May 2004, Finland, Greece, Italy, Spain and Portugal on 1 May 2006, Netherlands on 1 May 2007 (Randveer, Rõõm 2009).

hundred returnees (Hazans 2008). Our advantage is that we also have some information on the jobs held abroad (duration, host country, occupation) – differences in the duration of foreign experience may affect the returns to migration (Commander et al. 2013).

In summary, our contribution to the literature is that we extend limited list of existing studies on the connection between return migration and occupational mobility by using a more detailed occupational ranking (based on 1-digit ISCO classification) and a much larger sample of returnees compared to those used previously. That enables us to study whether the effects of return migration on labour market performance after return differ across destination countries, duration of temporary migration or the kind of job held abroad. In addition, it is also relevant that we contribute to the limited literature on post-enlargement return migrants of new EU member states.

The remainder of the paper is organised as follows. The second section introduces our data from the Estonian online job search portal CV Keskus. The third section will discuss issues associated with the measurement of occupational mobility, including career mobility. The fourth section discusses issues concerning econometric estimation – how to analyse the determinants of occupational mobility, temporary migration and the effects of the latter on the former. The fifth section presents the results of the regression analysis while the sixth complements the quantitative analysis with some qualitative evidence from interviews with employers and returnees. The final section presents conclusions together with a discussion of possible policy implications.

2. Overview of the online job search portal data used in the analysis

In our study we use an extensive and novel dataset from the largest online job search portal in Estonia, CV Keskus (in Latvia, Lithuania, Poland, Czech Republic and Hungary it operates under the name CV-Market). The extract from the database from January 2010 includes about 261 thousand resumes (employment histories) from job seekers. Therefore, due to its size the data allow us to study the effects of migration across different socio-economic groupings. The resumes were mostly updated between 2008 and 2009 (i.e. the period covered in our data ends in early 2009). Depending on the year, the data covers about 10–15% of employment in Estonia (50–90 thousand employees) for 2000–2009. The data on employment history includes the last five jobs, and these are used to calculate various occupational mobility and migration indicators. As employment spells are of different length, the length of employment

history covered varies. For each of the 5 jobs, we know name of employer, country of employer, job start and end dates with monthly precision, and job title and category[4]. The information on employers (e.g. industry of employment) was obtained by matching the CV Keskus data with Estonian Business Registry data for all business enterprises based on the employer's names. Therefore, for a large number of people we are able to identify their job both before and after working abroad. In addition, the data includes general background information (age, family status), information about education, training courses, skills (languages, driving licenses) and also a description of the person's desired job and wage. Such data are rarely used in economic research and have clear advantages in terms of sample size and informational content. Yet we also acknowledge the weaknesses of the data, as these work histories are self-reported and we do not know what kind of information was left out as undesired by the job seeker. Many data fields (like occupation, education) do not follow standard classifications and are filled with open text by the owner of the CV.

According to our data, the percentage of people working abroad in 2003 was 2.8%, but increased to 5.3% in 2007 and decreased to 5.1% in 2009. These numbers probably do not include most of the permanent migrants not considering returning to Estonia (i.e. we observe mostly temporary flows)[5]. The share varied across socio-economic characteristics as expected; for example, it was higher for those without children (6%), males (8.1%) and single people (5.9%). Given that up to the 5 last jobs are available for each individual along with the countries of employment, we are also able to identify return migrants. All the definitions are based on location and entry and exit dates for the jobs – returnees are those who worked in a position abroad and their next job was in Estonia. In our analysis, we will also focus on those migrants that had a job before outward migration, yet it has been shown that among migrants (compared to non-migrants), there is a higher proportion of unemployed or students indicating that working abroad has been a coping strategy (Hazans, Philips 2011). In total, we identified 7,557 temporary migrants in our data. By comparison, earlier studies have had only a rather small number of return migrants (Hazans 2008); for example, Iara (2006) 93, Barrett and O'Connell (2001) 158 and Hazans (2008) about 500 return migrants. We also have information about posted workers, identified as those being employed by Estonian companies but working abroad (altogether 748 individuals were posted workers). Our data also includes

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[4] There were 24 categories, including e.g. "Sales", "Construction / Real Estate", "Tourism / Hotels". These categories did not follow the standard ISCO occupational classifications and thus we did not use these.
[5] The estimated migration flows from new to old member states tend to be much lower when reported by the sending countries and higher as reported by the receiving countries (Randveer, Rõõm 2009).

people who are still employed abroad (but probably considering returning to Estonia); for example, in January 2009, 10,721 employees[6]. Consequently, in many cases we know the occupational status of the migrant before, during and after migration.

Table 1 shows that the most significant destination countries are Finland (41% in 2008), the UK (12.3%), Norway (9.2%), Ireland (7.1%) and the US (4.6%). The rather short distance between Estonia and Finland and good ferry connections makes commuting possible (returning home for weekends). As the data presented in appendix 2 shows, the average length of working spells in the home country (Estonia) is about 28 months and abroad about 15 months. The shorter job tenure among migrants also indicates the temporary nature of migration. The variation across countries is not very great; for example, 31 months in Russia and 7.6 in Australia, but for the most frequent destination countries (Finland, UK, Ireland, US) it is within the range of 10–17 months. Given that the length of the spell might be a measure of the intensity of treatment, working in different countries might have quite a similar effect.

Table 1 Overview of the most important destination countries for migration over years

Rank	2000		2003		2005		2007		2008		2009	
1	RU	18.7%	FI	19.6%	FI	20.8%	FI	31.7%	FI	41.0%	FI	47.6%
2	FI	17.6%	US	16.9%	UK	17.5%	UK	17.5%	UK	12.3%	UK	9.5%
3	US	13.6%	RU	11.7%	IE	12.2%	IE	10.2%	NO	9.2%	NO	8.4%
4	DE	6.7%	UK	6.5%	US	10.8%	NO	6.5%	IE	7.1%	IE	4.2%
5	SE	5.9%	IE	6.4%	RU	7.1%	US	5.9%	US	4.6%	SE	3.9%
6	UK	5.2%	SE	6.1%	SE	5.6%	RU	5.0%	RU	4.3%	AU	3.6%
7	LV	3.5%	DE	5.1%	NO	4.2%	SE	4.7%	SE	4.0%	RU	2.8%
8	DK	2.8%	NO	3.8%	DE	3.7%	DE	1.6%	AU	1.7%	SP	2.5%

Note. The numbers in the table refer to the number of people working in the respective foreign country as a percentage of all people working abroad. The standard ISO 2-letter abbreviations for countries are used (i.e. "FI" for Finland etc.).

One peculiarity of Estonian outward migration is that the largest group of Estonian emigrants have moved to the neighbouring country Finland. One criticism of interpreting this as international migration is that it should rather be considered as commuting due to the proximity of the two countries (the distance between the capitals Tallinn and Helsinki being just 85 kilometres), and their similar cultures and languages (high percentage of Finnish speakers especially among people in northern Estonia). We could argue that even under these

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[6] That number should under-represent the actual number of immigrants of Estonian origin in the destination countries as most probably only those intending to return to Estonia post their CV-s on the Estonian job search portal.

conditions it need not to be equivalent to commuting within Estonia as there are still differences between Estonia and Finland (language, migration costs), still it is expected that the selection of migrants is weaker and there may also be weaker effects of temporary migration to Finland. For instance, Estonian migrants in Finland have been found to have good labour market outcomes thanks to a good command of the Finish language and cultural affinity (Hazans, Philips 2011), with quality of jobs and unemployment rates being close to those of the Finnish employees. There has been observed weaker selection of migrants to Finland; for example, Estonian migrants to Finland are relatively older compared to migrants to other countries (Hazans and Philips 2011). To account for this, we have undertaken several calculations separately for migrants to Finland and migrants to other foreign countries. King and Skeldon (2010) provide a discussion of the relationship between internal and international migration, arguing that while the distinction between international and internal migration is becoming blurred, the studies of these two have still been separated from each other, and there are few studies comparing the effects of internal and international migration.

Table 2 outlines the major differences between the personal characteristics of the various labour market participants regarding their relation to working, and these are 1) stayers (without foreign work experience), 2) potential migrants (without foreign experience, but willing to try it), 3) stayers not willing to work abroad, 4) return migrants, 5) not returned migrants (still working abroad at the time the resume was updated). Many of the differences are in line with expectations and earlier studies – among migrants there is a higher frequency of those without children, males, youngsters; the same differences also show up when comparing returnees and not returned migrants. Non-Estonians are more ready to work abroad and possibly also stay there for longer periods (if not permanently), as indicated by their lower percentage among the returnees. The observed differences in education and skills are in accordance with Hazans and Philips (2011) – those with lower skill or education levels are more ready migrate, return migrants show the highest level of education and not returned migrants are between the two groups. Hazans (2008) found similarly that disproportionately high number of return migrants had high levels of human capital.

Table 2 The main socio-economic characteristics of stayers and migrants

Variable	Stayer	Stayers not ready to work abroad	Stayers ready to work abroad	Return migrants	Not returned migrants	All
Age up to 24	29%	29%	29%	24%	28%	29%
Age 25-49	61%	62%	63%	72%	67%	62%
Age 50-75	8%	8%	7%	4%	5%	8%
Female	57%	59%	36%	46%	41%	56%
Children (dummy)	39%	39%	36%	33%	33%	38%
Cohabitation (dummy)	49%	50%	46%	46%	44%	49%
Tertiary education	17%	17%	12%	19%	15%	17%
Secondary education	55%	56%	51%	57%	55%	55%
Primary education	28%	27%	37%	24%	30%	28%
Mother tongue Estonian	61%	62%	54%	71%	67%	61%
Mother tongue Russian	32%	31%	36%	27%	28%	32%
Desired wage, EUR	665.7	646.2	875.5	803.8	803.4	674.7
Willingness to work abroad, dummy	9%	0%	100%	25%	36%	11%

Note: The information on readiness to work abroad includes just one variable (yes/no).

It has been a peculiarity of Estonia that people with low levels of education were more likely to migrate, as in the conditions governing movement within the EU, there are no differences between entry barriers for low versus high-skilled people (Randveer and Rõõm 2009). Another explanation could be that as highly skilled individuals were also taking up low-skilled jobs abroad, they had lower returns to migration, thus previous occupation in Estonia could be related to the returns to migration.

Concerning work related migration intentions, about 11% of job seekers are ready to work abroad. The percentage is about 3 times higher for those with some work experience abroad (29%); this means that those who have worked abroad are ready to do so again. The readiness to work abroad is higher for Russian-speakers, females, those whose last job was as a blue-collar worker or in the secondary sector. Past work experience is important for all groups of employees, but more for blue-collars (10.9% versus 31.8%) than white-collars (6.2% vs. 18.6%) – blue-collars form a group that is likely to have higher levels of factors inhibiting migration intensions (i.e. language).

We do not have data on actual wages, and since we possess detailed data on occupations, the focus of the article is to measure the impact of return migration on career mobility.

Nevertheless, it could be useful to have a brief look at the desired wages reported in the data[7]. These clearly show that foreign work experience is associated with higher wages in all categories of workers (on average by 20%), but even more in the case of blue-collars (27%), although the difference also clearly exists for white-collars[8]. There exist rather notable differences in the desired wages for men and women. This reflects Estonia's rather high gender pay gap of almost 30%, yet it also shows that foreign experience matters a bit more for men (14% versus 19% difference in desired wages for returnees and stayers). Those who are ready to work abroad have higher desired wages.

For our study, they key variable is the occupational categories of the jobs. The original data only include the names of the occupations, for instance, "secretary", "doctor", "dentist" et cetera. These were converted into ISCO 88 4-digit codes by specialists from Statistics Estonia. To give readers some idea of occupations at 4-digit levels, 3415 denotes "Sales representatives and consultants", 341 "Finance and sales associate professionals", 34 "Other associate professionals" and 3 "Technicians and associate professionals". Similarly, 2221 denotes "Doctors", 222 "Health professionals (except nursing)", 22 "Life science and health professional" and 2 "Professionals". In the coding exercise, in addition to the name of the occupation, other information was also considered, such as the education of the employee (i.e. for some occupations, like teacher, the presence or absence of higher education is relevant for the occupational code) and the sector of the person's employer according to the NACE Rev. 2 5-digit code. As a result, in a number of cases (e.g. occupation "operator"), the occupational code was also left out due to the absence of sufficient relevant information (e.g. we had no data on how many people were working under a person's supervision, if any). Table 3 presents the data describing the occupational structure of jobs in Estonia, as well as the data from Statistics Estonia for comparison. According to our data the share of blue-collared occupations is somewhat higher compared to the aggregate data because white-collars are expected to use to large variety of other job search channels, although job searches via the internet has been shown to be positively correlated to, for example, tertiary education (Thomsen and Wittich 2009). The growing share of white-collar occupations seen in the Estonian Labour Force Survey (hereinafter LFS) data also does not show up in our data. One

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[7] We have decided not to refer to the indicated wage as a reference wage but rather as the desired wage. While the figure mentioned could be quite different from actual wages, perhaps surprisingly, in a study by Mõtsmees and Meriküll (2012) on the gender pay gap, the estimated gap using wages reported in CV Keskus data was very similar to those estimated from labour force survey data and actual wages.

[8] This is in line with the findings of Hazans (2008), where manual workers among return migrants enjoyed a much higher earnings premium compared to non-manual workers.

group that is rather underrepresented is category 6 "Skilled agricultural and fishery workers" but given it is the smallest of the 1-digit occupational categories anyway, that should not be a major problem.

Table 3 Structure of occupations in CV Keskus data and LFS data over time

Occupational group	CV Keskus, 2003, Estonia	CV Keskus, 2003, abroad	CV Keskus, 2009, Estonia	CV Keskus, 2009, abroad	Statistics Estonia, LFS, 2003	Statistics Estonia, LFS, 2009
Legislators, senior officials and managers	12.3	13.1	10.8	7.7	11.7	12.1
Professionals	5.5	3.9	5.3	1.4	13.9	16
Technicians and associate professionals	18.5	12.6	18.9	7.1	12.1	13.9
Clerks	10.1	8.6	10.7	3.8	5.1	5.5
Service workers and shop and market sales workers	21.5	21.0	22.8	16.1	12.8	12.6
Skilled agricultural and fishery workers	0.3	1.3	0.2	0.6	2.5	1.5
Craft and related trade workers	11.9	16.2	12.1	37.7	15.8	14.1
Plant and machine operators and assemblers	6.0	4.3	5.2	4.5	14	14.3
Elementary occupations	13.8	19.0	14.0	21.1	11.5	9.5
White-collars	46.4	38.2	45.7	20.1	42.8	47.5
Blue-collars	53.6	61.8	54.3	79.9	56.6	52.0

Notes: LFS – labour force survey

The jobs held abroad are quite different from those in Estonia, the share of white-collar jobs is drastically lower than in Estonia, and this tendency is especially visible in 2009. This seems to be at least partly caused both by non-random selection, in other words, people in blue-collar jobs are more eager to migrate (e.g. due to the higher wage and unemployment gaps among people with lower levels of education, Randveer and Rõõm 2009), but also that even people working in white collar jobs in Estonia are ready to work in blue-collar jobs abroad due to the large income gaps between Estonia and sending countries (e.g. highly qualified individuals earn more abroad even in occupations that do not correspond to their qualification)[9]. As standard stylized facts in the literature suggest, immigrants may work in host country labour markets in jobs they are over-qualified for due to the less than full utilization of their skills, at least in the beginning (Dustmann et al. 2008). In the Baltic States, it has been found that among the higher educated, up to 70% of migrants were over-qualified for their job (Hazans, Philips 2011). Jobs available to migrants from Eastern Europe mostly required low-skilled

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[9] In the East-West migration in the extreme case the highest paid sector or occupation in the source country could be less rewarding than the highest paid one in the destination country (Commander et al. 2013).

labour, thus most highly educated immigrants also accepted jobs below their level of qualification (Drinkwater et al. 2009). When migrants from the new EU Member States (NMS) accept these jobs, this may also be related to the fact that their migration is temporary. Hazans and Philips (2011) also found evidence of brain waste in the Baltic States as the percentage of over-qualified was much higher among high-educated migrants than stayers. This is in accordance with various other studies showing that most of the migrants from CEE countries are employed in various manual or low-skilled jobs (Hazans 2008; Mattoo et al. 2008 for migrants from Eastern Europe in US labour market). Furthermore, Commander et al. (2013) found for Ukrainian return migrants that occupational downshifting was more likely in the case of a downshift in the home country prior to migration, but was less likely in the case of a longer stay in abroad and knowledge of the local language or English.

3. Occupational mobility: measurement issues and descriptive evidence

As a general background, appendix 3 reports our calculated measures of occupational mobility at different levels of the occupational ISCO codes; nevertheless, most of our estimations are based on 1-digit ISCO codes. We can see that in each year 5–13% of people change their occupation. The average extent of such flows seems to behave somewhat pro-cyclically; for example, during the strong growth period 2006–2007, people may have been more eager to change occupations, and in 2008, when Estonia entered recession, people may have been more cautious and remained with their current occupation and employer. We can also note that in most cases (80–90%), employees switching occupations also change sectors; that is, they are complex switches (as defined by Neal 1999). To be more specific, among all occupational changes, 11% occur within the firm, 13% include a change of employer within the same 2-digit NACE Rev. 2 industry and 76% involve both a change in the firm and the industry; these proportions were rather similar among return migrants and stayers. One possible explanation for this peculiarity in our data could be that job seekers experience limited interest in reporting different jobs within the same organization in their CVs. For comparison, in Campos and Dabušinskas (2009) for 1989–1995, according to Estonian LFS data, the share of complex switches was a lot lower – 69%. Only a minority of the occupational flows are related to net flows – changes in the structure of occupations (e.g. decreasing share of blue-collar jobs).

Next we move on in the direction of occupational mobility; that is, career mobility or occupational upgrading. In principle, occupations could be ranked in different ways; for instance, according to average earnings (i.e. mobility from low-wage to high-wage occupations), the amount of human capital or the prestige of the occupation as indicated by the respondents (Sicherman and Galor 1990). Upward or downward occupational mobility is then the vertical movement on this ladder of occupations. In previous studies, vertical occupational mobility has been measured in different ways; for instance, Cobo et al. (2012) used 5 categories (non-manual high qualification, non-manual low qualification, manual high qualification, manual low qualification, unemployed), Campos and Dabušinskas (2009) 1-digit ISCO (9) categories and Sabirianova (2002) 2-digit categories (28) categories. Carletto and Kilic (2011) analysed the change in the occupational ranking of the 6 categories (not working, agriculture, low-skilled blue-collar, high-skilled blue collar, low-skilled white collar, high-skilled white collar).

Following Sicherman and Galor (1990) and Campos and Dabušinskas (2009), we use the vertical ranking of the 1-digit ISCO 88 occupations based either on returns to various occupations (how much these increase wages after controlling for other factors) or on the average level of human capital required in the respective occupation. The earnings ladder was constructed similarly to Sabirianova (2002) by estimating the returns to occupations based on wage regressions using the different waves of the Estonian LFS data for 1996–2009, where the log of the hourly net wage was regressed on employee age and a set of occupational dummy variables[10]. In addition to these rankings, we can also mention different occupational rankings developed by sociologists based on occupational status or prestige (Sicherman, Galor 1990). The educational or schooling rankings were based on the derived index of the amount of human capital needed for different occupations calculated similarly following Sabirianova (2002) and Campos and Dabušinskas (2009). In particular, we first ran similar wage regressions, and thereafter, the ranking index for a particular occupational category was derived by multiplying the estimated return (parameter value) of that variable with the value of the variable for each educational variable, summing over all of the human capital variables in the regression, and thereafter, the derived sum was divided using the number of people in that occupation. Our estimated educational ranking (see Table 4) is strikingly similar to the one derived by Campos and Dabušinskas (2009); they also found little variations in the

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[10] As it was said, the CV Keskus data included the wage data only for a subset of observations and the reported wage indicator was the desired wage, not the actual wage.

schooling rankings for 1989–1994. The educational and earnings-based rankings are also quite highly correlated.

Table 4 Ranking of 1-digit occupations according to schooling and earnings ladders

1-digit ISCO code	Occupation name	2006	2007	2008	2009
	Ranking of occupations (one-digit) according to earnings ladder				
0	Armed forces	4	4	4	3
1	Legislators, senior officials and managers	1	1	1	1
2	Professionals	2	2	2	2
3	Technicians and associate professionals	3	3	3	4
4	Clerks	6	8	8	6
5	Service workers and shop and market sales workers	9	9	9	9
6	Skilled agricultural and fishery workers	8	6	6	5
7	Craft and related trade workers	5	5	5	7
8	Plant and machine operators and assemblers	7	7	7	8
9	Elementary occupations	10	10	10	10
	Ranking of occupations (one-digit) according to human capital ladder				
0	Armed forces	5	5	4	5
1	Legislators, senior officials and managers	2	2	2	2
2	Professionals	1	1	1	1
3	Technicians and associate professionals	3	3	3	3
4	Clerks	4	4	5	4
5	Service workers and shop and market sales workers	6	6	6	6
6	Skilled agricultural and fishery workers	7	7	8	9
7	Craft and related trade workers	10	9	9	7
8	Plant and machine operators and assemblers	9	10	11	10
9	Elementary occupations	8	8	10	8

Source: own calculations based on Estonian Labour Force Survey Data. The rankings were calculated in fact for all years between 1997–2009 yet show little variation over time.

Table 5 shows the probability of upward occupational mobility on the basis of different job rankings (different levels of detail and sources of rankings) for various groups (socio-economic characteristics) and on the basis of the kind of return migration experienced (host country, job held abroad, length of stay). The frequency of upward mobility was 55% of all changes; Campos and Dabušinskas (2009) found a broadly similar frequency of upward and downward flows for an earlier period in Estonia. The proportion need not be equal to 50% due to the changing structure of occupations and the different occupations of individuals entering and exiting the labour market. In general, the upward mobility is somewhat lower among return migrants (compared to stayers), and this seems to hold across different socio-economic groups (gender, education), yet the characteristics of the working spell abroad seem to be somewhat important. Quite robustly, the downward mobility of return migrants seems to be

related to having worked in lower ranked, specifically, blue-collar jobs; as we saw, that is quite a common characteristic even among skilled migrants from CEE countries. The probability of upward mobility decreases with age, and especially for older employees, the relationship between temporary migration and lower upward mobility can be seen. In a way, this can be interpreted as evidence of brain waste, yet the interpretation should be cautious, as higher performance within a given occupation is also possible.

Table 5 The probability of upward occupational mobility on the basis of different worker characteristics

Value	Has not worked abroad	Has worked abroad	Worked abroad in blue-collar position	Worked abroad in white-collar position	Worked abroad in Finland	Worked abroad in country other than Finland	Abroad up to 1 year	Worked abroad more than 1 year
White/blue-collar								
Age up to 24	64.2%	65.5%	62.8%	72.5%	70.4%	63.4%	67.1%	56.3%
Age 25-49	53.5%	48.8%	47.7%	51.7%	48.1%	49.1%	50.4%	46.2%
Age 50-75	44.4%	36.4%	34.9%	41.7%	40.0%	35.0%	28.0%	39.1%
Tertiary education	50.8%	46.2%	48.3%	41.3%	33.3%	48.6%	52.0%	36.6%
Secondary education	57.5%	52.4%	47.0%	68.8%	56.7%	49.7%	56.8%	41.1%
Primary education	55.7%	54.2%	53.0%	57.4%	54.6%	54.0%	55.0%	53.1%
Females	55.5%	56.0%	52.7%	60.8%	56.1%	56.0%	57.5%	52.3%
Males	54.6%	50.0%	50.4%	51.7%	51.9%	49.0%	53.1%	44.6%
Totals	55.1%	52.3%	51.1%	56.5%	53.2%	51.9%	54.9%	46.6%
1-digit occupations, educational ranking								
Age up to 24	62.5%	64.9%	62.5%	69.4%	66.5%	64.3%	65.0%	65.7%
Age 25-49	60.0%	53.2%	51.1%	57.7%	48.5%	54.9%	54.5%	50.6%
Age 50-75	44.1%	39.1%	36.8%	45.8%	37.9%	39.7%	39.5%	34.9%
Tertiary education	59.1%	54.5%	53.4%	56.2%	46.5%	55.8%	59.4%	45.1%
Secondary education	58.0%	54.6%	51.0%	63.4%	55.3%	54.2%	56.9%	47.1%
Primary education	59.7%	56.6%	54.3%	61.5%	53.0%	58.0%	57.3%	55.0%
Females	61.5%	60.8%	56.7%	63.6%	59.4%	61.1%	61.8%	57.4%
Males	55.6%	51.2%	49.7%	54.9%	49.3%	52.2%	53.3%	47.4%
Totals	59.2%	55.8%	51.9%	60.7%	52.9%	56.9%	57.8%	51.1%
1-digit occupations, earnings ranking								
Age up to 24	64.4%	65.2%	63.1%	69.1%	61.9%	66.5%	64.8%	68.6%
Age 25-49	60.9%	57.1%	56.9%	57.6%	57.6%	56.9%	56.9%	57.5%
Age 50-75	42.1%	43.5%	44.1%	41.7%	41.4%	44.4%	42.1%	41.9%
Tertiary education	60.6%	57.2%	58.0%	55.8%	51.2%	58.2%	61.8%	48.7%
Secondary education	59.6%	55.8%	54.2%	59.7%	55.3%	56.1%	56.3%	52.9%
Primary education	60.1%	60.4%	59.4%	62.4%	60.7%	60.2%	59.5%	63.0%
Females	61.0%	59.6%	56.3%	61.1%	58.4%	59.9%	59.9%	58.0%
Males	58.6%	58.2%	59.2%	59.0%	58.1%	58.3%	58.7%	57.3%
Totals	60.1%	58.9%	58.3%	60.4%	58.2%	59.1%	59.4%	57.6%

Note. Mobility is measured over various periods for 2002–2009. For return migrants, mobility is calculated between the job in Estonia before and the job in Estonia after return migration.

The differences between Finnish and other host country return migrants are generally small and not always consistent. Longer stays abroad are mostly associated (but only marginally in case of 1-digit occupations ranked on the basis of earnings) with a higher probability of upward mobility.

Table 6 Occupational mobility of temporary migrants in Estonia

Job before migration	Job after migration	Blue-collar job abroad		White-collar job abroad		Share of blue-collar jobs abroad
		Observations	Share	Observations	Share	
Blue-collar	Blue-collar	1834	66.1%	233	8.4%	88.7%
Blue-collar	White-collar	499	18.0%	208	7.5%	70.6%
White-collar	Blue-collar	485	11.2%	160	3.7%	75.2%
White-collar	White-collar	2107	48.9%	1561	36.2%	57.4%

The final descriptive table (Table 6) presents the occupational mobility flows in a slightly different way. For that purpose, for each temporary migrant, we record the job before migration (white-collar or blue-collar), the job abroad and the job after returning. This reveals that while the total number of upward flows (from blue-collar to white-collar occupation) exceeds the number of downward flows, this was also indicated in the aggregate data. Therefore, all in all no correlation between temporary migration and upward mobility can be seen. The occupational downshifting while working abroad is clearly associated with mobility between occupations before and after migration; that is, the share of blue-collar jobs abroad is higher in the case of downward mobility and lower in the case of upward mobility.

4. Method for studying the determinants of occupational mobility and temporary migration

We will now discuss the details of the econometric estimation of the determinants of temporary migration and occupational mobility, and thereafter, the details of the calculations for the explanatory variables. The particular approach adopted for the econometric estimation depends on the measure of the occupational mobility. Occupational mobility has been modelled either within the framework of a bivariate probit model (whether the particular kind of mobility takes place or not, e.g. Campos and Dabušinskas 2009), an ordered probit model whereby the degree of mobility in the occupational ranking is modelled (Carletto and Kilic 2011) or a multinomial logit model (e.g. for upward mobility, downward mobility and staying in the same occupation, Cobo et al. 2010). In our main specification, our dependent variables were the dummies for upward and downward occupational mobility. Similarly, for

migration, the modelled variable was the indicator variable for temporary migration[11]. The probit model for temporary migration can be derived from the latent variable model; in other words, for individual i the latent variable $ret\_mig_i^*$ is determined using the following equation:

(1) $ret\_mig_i^* = \beta_1 x_{1i} + \varepsilon_{1i}$,

where x_{1i} is the vector of variables determining temporary migration and β_1 is the associated coefficient vector. In which case ret_mig_i is the observed indicator variable for temporary migration that equals 1 for returnees and 0 for stayers. A person undertakes temporary migration ($ret\_mig_i = 1$) if $ret\_mig_i^* > c$, where c is some constant threshold level summarizing, for example, the costs and benefits of temporary migration. Similarly for upward mobility the equation will be as follows:

(2) $up\_mob_i^* = \beta_2 x_{2i} + \varepsilon_{2i}$,

Where $up\_mob_i^*$ is the latent variable, x_{1i} is the vector of variables determining mobility and β_1 is the associated coefficient vector. The indicator variable up_mob_i is equal to 1 for $up\_mob_i^* > d$, where d captures, for example, the returns to and costs of mobility (such as returns to current and alternative occupations). The list of variables in x_{1i} and x_{2i} will be discussed below.

In order to infer an unbiased estimate of the effect of return migration on occupational mobility one needs to account for the non-random selection to return migration[12]. If there are unobservable variables affecting both the past migration decision and the outcome variable (occupational mobility) then not-accounting for non-random selection results in a biased estimate of the effect of temporary migration on occupational mobility. Consequently, we have adopted an instrumental variables approach. The instruments should be uncorrelated with the outcome variable (occupational mobility) to be exogenous but should be correlated with the endogenous variable (return migration) to be relevant[13].

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[11] Multinomial logit could also be used to model the choice between destination countries (de Grip et al. 2010).
[12] To be more specific, in the econometric estimation of the effects of return migration one would ideally need to address different issues, like selection of migration (working abroad), selection of return migration, selection of employment and inclusion in surveys (Hazans 2008).
[13] Therefore, in a similar modelling problem, Carletto and Kilic (2011) run the 1st stage probit model on the independent variables of the occupational mobility equation and the instruments, and the predicted values of the endogenous variable were used in the mobility equation.

In the case of temporary migration measured as a dummy we have the problem that both the treatment variable and the outcome variable (occupational mobility) are dummies, consequently, probit with instrumental variables cannot be used (Woolridge 2002), and so we use the bivariate probit instead. The seemingly unrelated bivariate probit model, where a variable (dummy for foreign work experience) appears both on the right of one equation and the left of the other equation, has the same log-likelihood as the binary outcome – binary instrument case (Greene 2000). Therefore, the following equations will be estimated jointly as bivariate probit models:

$$(3) \quad \begin{aligned} \Pr[ret\_mig_i = 1] &= \Pr[ret\_mig_i* > 0] = \Pr[\gamma \cdot z_i + \beta_1 x_i + \varepsilon_{1i}] \\ \Pr[up\_mob_i = 1] &= \Pr[up\_mob_i* > 0] = \Pr[\alpha \cdot ret\_mig_i + \beta_2 x_i + \varepsilon_{2i}] \end{aligned},$$

where z_i denotes the set of instrumental variables. As in earlier studies, we have additionally used the linear instrumental variables estimator while acknowledging the issues related to linear probability models.

We have use dummies for cohabitation (being either in an official or unregistered marriage) and the number of children as the instruments. The validity of these instruments assumes that these influence migration decisions (e.g. it is expected that it is harder to leave or commute with children and it should be easier for singles) but not occupational mobility. As these instruments are expected to be stronger (i.e. more strongly correlated with return migration) for women, we also performed the estimations separately for women and men. Another instrument we considered was past migration experience, which is expected to be quite important for current migration. For instance, in our data the frequency of return migration for 2006–2009 among those having worked before 2006 was 46%, while among those without that experience the same figure was just 2.7%. At the same time, these measures had practically no correlation (values for the correlation coefficient being about 1–2%) with upward mobility variables – implying that any benefits from return migration in terms of occupational mobility are probably acquired relatively soon after return.

We use the determinants (push and pull factors) of occupational mobility in line with those used by Sabirianova (2002) and Campos and Dabušinskas (2009); the latter used the modified version by Shaw (1987) for occupational mobility. In brief, occupational mobility is expected to decrease with returns to current occupation, increase with returns to alternative occupation (i.e. those where the individual is likely to move), and increase with transferability of skills

between occupations, costs of mobility (e.g. current employer-specific investment), and occupation-specific matches (experience in the same occupation). The calculation of these variables will be as follows. Returns to current and alternative occupations were calculated as in Sabirianova (2002) by running the following wage regressions using Estonian Labour Force Survey Data:

$$(4)\ \ln(W_i) = \beta_0 + \beta_1 AGE_i + \sum_k \alpha_k \cdot OCC_{ik} + \sum_k \gamma_k \cdot OCC_{ik} \cdot AGE_i + u_i .$$

where $\ln(W_i)$ is the net log wage at main job, OCC_i is the vector of occupational dummy variables, and AGE_i is the age of the person. The returns to current occupations are then calculated as $RTC_i = \alpha_k + \gamma_k AGE_i$ and returns to alternative occupation as $RTA_i = \sum_k (\alpha_k + \gamma_k AGE_i) P_{kl}$ for $l \neq k$, where P_{kl} stands for the probability of a transition from job k to job l. Using earnings in the initial year corresponds to people making their mobility decisions based on past earnings (adaptive expectations hypothesis) and using future earnings (here at the last year) corresponds to people responding to future returns (rational expectations). Descriptive statistics for these and the other variables used in the analysis can be found in appendix 4.

The skills transferability index (STI) captures the lost returns to past occupational investments, and is thus expected to have a negative association with occupational mobility. It measures the match of qualifications (education) and occupations; qualification q has been calculated using the formula

$$(5)\ \ STI_q = 1 - \frac{\sum_{j=1}^{J} \left(N_{q,j} - \frac{N_q}{J} \right)^2}{N_q^2},$$

where J is the number of occupational categories (i.e. 9 in the case of 1-digit occupations), $N_{q,j}$ is the number of individuals with qualification j and occupation q, and N_q is the total number of individuals in occupation q ($N_q = \sum_j N_{q,j}$). The index is 1 for qualifications uniformly distributed across occupations and less than 1 in other cases (Campos and Dabušinskas 2009). As the calculated STI was missing due to missing educational data for many individuals, as in Sabirianova (2002) we replaced the missing values with average value of the STI index for these cases and included a dummy variable for observations with a missing STI index.

The cost of occupational mobility is captured by various individual variables. Tenure in current job measures firm-specific investment and is thus expected to have a negative effect on inter-firm occupational mobility (accounting for most of the mobility we saw) while it may enhance intra-firm mobility due to career development (Sicherman and Galor 1990). Concerning education, while people with more schooling (e.g. tertiary education) are expected to have more opportunities for upward mobility, higher education is expected to be more specific and have a higher occupation-specific component (Sabirianova 2002). The other control variables are gender, actual work experience, age and broad sector dummies (primary, secondary, tertiary sectors). In sum, the univariate probit model for occupational mobility (either general or upward/downward) for individual i at current occupation q would be as follows:

$$(6) \quad p_i^q = \beta_1 RTC_i^q + \beta_2 RTA_i^q + \beta_3 STI_i^q + \beta_4 COST_i + \varepsilon_i,$$

where $COST_i$ is the vector of the variable affecting the cost of mobility. In the equation for temporary migration similar control variables will mostly be used. For instance, the returns to different occupations could also be important for the migration decision; for example, differences between the relative income according to occupational groups in Estonia and destination countries favour the emigration of certain categories, such as low-skilled blue-collar workers (Randveer and Rõõm 2009). The reason for including a dummy for the majority population (Estonians) is that Estonia has a large minority population (mostly Russian speaking) that was not covered directly from the removal of the legal restrictions governing working in EU countries after EU enlargement in 2004 in countries like UK and Ireland (Hazans 2008). The variables for age and gender capture that men and young people are more likely to migrate. Sector dummies are also expected to be important given that individuals in certain private sector branches (e.g. construction) have had much higher propensities toward outward migration. In addition to our key research question of the linkages between migration and occupational mobility, these variables should present additional evidence of the determinants of migration from CEE countries.

5. Results of econometric estimations

We start the presentation of the results of econometric estimations with the univariate probit models on the determinants of the various kinds of occupational mobility (see Table 7). We looked at the determinants of the following occupational mobility indicators: 1) overall occupational mobility, 2) complex change, 3) downward and upward occupational mobility in the earnings ranking, 4) downward and upward mobility in the human capital ranking (the first two are not reported to save space). Aside from the career mobility dummies, we also look at the more general occupational mobility indicators in order to infer whether the expected determinants of mobility also hold in Estonian data.

Table 7 Determinants of occupational mobility and return migration: probit models (1 – presence of respective mobility or return migration)

Variable	Upward mobility, earnings ranking	Downward mobility, earnings ranking	Upward mobility, human capital ranking	Downward mobility, human capital ranking	Return migration	Return migration to Finland
Male	0.014	-0.042	-0.033	0.009	0.029	0.015
	(0.004)***	(0.003)***	(0.004)***	(0.003)***	(0.002)***	(0.001)***
Tertiary education	0.196	0.003	0.168	0.028	0.015	-0.007
	(0.006)***	(0.005)	(0.006)***	(0.005)***	(0.004)***	(0.002)***
Secondary education	0.088	0.023	0.082	0.030	0.015	0.000
	(0.004)***	(0.003)***	(0.004)***	(0.003)***	(0.002)***	(0.001)
Work experience	-0.004	-0.002	-0.005	-0.001	0.002	0.001
	(0.001)***	(0.001)***	(0.001)***	(0.001)*	(0.000)***	(0.000)***
Firm tenure	-0.005	-0.004	-0.002	-0.006	-0.007	-0.002
	(0.001)***	(0.001)***	(0.001)**	(0.001)***	(0.001)***	(0.000)***
Estonian language	0.061	0.018	0.066	0.016	0.013	0.018
	(0.004)***	(0.003)***	(0.004)***	(0.003)***	(0.002)***	(0.002)***
Age	-0.002	0.002	0.000	0.001	0.000	0.000
	(0.000)***	(0.000)***	(0.000)	(0.000)***	(0.000)***	(0.000)
Primary sector	0.027	-0.007	0.038	-0.016	-0.003	0.004
	(0.013)**	(0.011)	(0.013)***	(0.011)	(0.008)	(0.004)
Secondary sector	0.024	-0.006	0.066	-0.048	0.002	0.008
	(0.004)***	(0.003)**	(0.004)***	(0.003)***	(0.002)	(0.001)***
Returns to alternative occupation, beginning	0.880	-1.256	0.745	-1.203	-0.003	0.026
	(0.040)***	(0.028)***	(0.039)***	(0.031)***	(0.024)	(0.013)*
Returns to current occupation, beginning	-0.479	0.415	-0.274	0.256	-0.004	0.002
	(0.007)***	(0.005)***	(0.007)***	(0.006)***	(0.004)	(0.002)
Skills transferability index	0.197	0.111	0.209	0.100	-0.005	-0.005
	(0.013)***	(0.011)***	(0.013)***	(0.011)***	(0.007)	(0.004)
Employment change in industry	-0.072	-0.003	-0.071	-0.005	0.007	0.000
	(0.004)***	(0.003)	(0.004)***	(0.003)	(0.004)*	(0.002)
Return migration	0.108	0.053	0.113	0.050		
	(0.008)***	(0.006)***	(0.008)***	(0.006)***		

Variable	Upward mobility, earnings ranking	Downward mobility, earnings ranking	Upward mobility, human capital ranking	Downward mobility, human capital ranking	Return migration	Return migration to Finland
White-collar job abroad	-0.009 (0.011)	0.026 (0.009)***	-0.010 (0.011)	0.024 (0.009)**		
Return migration, at least 1 year abroad	-0.004 (0.016)	-0.001 (0.013)	0.018 (0.016)	-0.019 (0.013)		
Return migration, Finland	-0.011 (0.017)	-0.013 (0.013)	-0.018 (0.017)	-0.009 (0.014)		
Worked abroad before return migration					0.060 (0.004)***	0.016 (0.002)***
Number of obs.	63294	63294	63294	63294.	54346	54346
Log-likelihood	-32203.8	-23910.5	-33128.4	-26244.3	-11477.4	-4154.2
Pseudo R-squared	0.097	0.128	0.060	0.064	0.034	0.075

Note. * significant at 10%; ** significant at % ; *** significant at 1 %. The base categories for categorical variables are: female, primary education. Reported are marginal effects at mean values. The base categories for categorical variables are: female, without secondary education, tertiary sector.

Before turning to return migration, we look at our control variables. The coefficient of returns to current occupation has a negative sign in the equation for upward mobility: a decrease in returns to current occupation is associated with an increase in occupational mobility. The returns to alternative occupation (measuring outside options available to the worker), on the other hand, has a positive sign. By comparison, in the earlier study on Estonia, Campos and Dabušinskas (2009) found these had statistically significant and expected signs only in 1994, and not in early transition (perhaps switching occupations was not covered by the logic of the market economy at that time). When using returns based on the future instead of current wages (not reported to save space), the coefficients had the same signs, but were even stronger, offering some evidence in favour of rational expectations. For downward mobility, the correlation is the other way round: higher returns to current (alternative) occupation are associated with higher (lower) frequency of downward mobility. The associations are weaker in the case of earnings rankings. The latter could simply show that in the case of higher current earnings, possibilities for additional upward mobility in earnings rankings are more limited, while Sabirianova (2002) found the opposite result for downward mobility in Russia for 1994–1998. As expected, mobility decreases with longer labour market experience or firm tenure. People with higher education are also more mobile, especially in terms of upward job mobility. The dummy for majority population (Estonians) shows their higher mobility (especially in terms of upward career mobility). While the skill transferability index did not perform well in the earlier study on Estonia by Campos and Dabušinskas (2009), here it is strongly statistically significant and has the expected positive association with mobility.

Males have a higher probability of upward mobility in the earnings ranking but not in the human capital ranking; therefore, we did not detect robust evidence for the higher overall mobility of males (as Campos and Dabušinskas (2009) did for the first half of the 90s).

Concerning the return migration dummy as the key variable in our analysis, it is revealed that this indicator variable is not necessarily associated with overall occupational change. Yet, again there is some evidence of the positive association between return migration and downward occupational mobility. On the latter, we argue the kind of job held abroad may be of some importance, but in these estimations the dummy for white-collar abroad or the indicator for staying longer than a year are both insignificant. Although it seemed rather natural to look separately at return migration to Finland (arguably being a natural home labour market for Estonians and thus not a true abroad), there are no significant differences; only in the unreported regression for movements between white-collar and blue-collar jobs was a positive association with upward mobility found. The last two columns present the results of probit regressions for the dummy of return migration, first for all destination countries and then for Finland. As we can see, many variables (male dummy, education, tenure, dummy for Estonian, dummy for earlier temporary migration) have a much weaker association with temporary migration to Finland, showing the weaker selection of migrants to this destination (Hazans and Philips 2011).

We now continue with the bivariate probit models that model the presence of occupational mobility and return migration accounting for the endogeneity of the latter. In Table 8, the left hand side presents the results for occupational mobility education and the right hand side the return migration equations. As said, we also perform the estimates separately for males and females to account for the possibility that our instruments (family background) may be of different strengths for males and females. For rankings of occupations based on both wages and human capital, evidence can be found of the negative effects of return migration on occupational mobility, but only in the case of females. While our motivation for running the estimates separately on the basis of gender was driven by the consideration of selection to migration and the suitability of instruments, the evidence on the negative effects for females might be related to the generally weaker position of females in the home country (i.e. Estonian) labour market. In other words, after returning to the national labour market, it may be difficult for them to attain a job of equal quality, and stable employment could be especially valuable for females. Another explanation could be their higher risk aversion not

allowing females a longer job search period and the luxury of waiting for better job offers. But even for males, the lack of evidence of the positive effect of return migration might be potentially a warning signal. While several studies we have mentioned have a found positive impact from return migration on wages (e.g. Hazans 2008 for Latvia) or occupational mobility (Cobo et al. 2010, Carletto and Kilic 2011), in fact the lack of a positive or even negative effect of return migration has also been detected – negative wage premium for Albanian returnees (de Coulon and Piracha 2005), lower odds of getting employment among Finnish returnees due to lost contact with Finnish labour market (Saarela and Finnas 2009) and lower productivity of return migrants in Chinese venture capital industry (Sun 2013). Yet this evidence might be seen as consistent with the tendency for movers to work in jobs abroad that do not correspond to their level of education, shown for example, by our evidence presented in section 2 or Hazans and Philips (2011) who reported high rates of over-qualification for the educated high movers (6%), but also for return migrants (38% vs. 28 among stayers). The issue then could be about the lack of an accumulation of skills abroad or an inability to make these useful in the home country labour market.

Table 8 Bivariate probit models for the determinants of occupational mobility and return migration

Variables	Pr(Upward mobility=1)				Pr (Return migration=1)			
	Females, earnings ranking	Males, earnings ranking	Females, human capital ranking	Males, human, capital ranking	Females, earnings ranking	Males, earnings ranking	Females, human capital ranking	Males, human, capital ranking
Return migration (dummy)	-0.792 (0.178)***	-0.187 (0.212)	-0.873 (0.163)***	-0.217 (0.262)				
Returns to current occupation, beginning	-1.489 (0.037)***	-1.865 (0.043)***	-1.079 (0.035)***	-0.765 (0.039)***	-0.106 (0.058)*	-0.019 (0.051)	-0.102 (0.058)*	-0.018 (0.052)
Returns to alternative occupation, beginning	2.303 (0.169)***	3.764 (0.258)***	2.157 (0.165)***	2.464 (0.238)***	-0.073 (0.264)	-0.311 (0.310)	-0.068 (0.265)	-0.313 (0.313)
Skills transferability index	0.609 (0.063)***	0.701 (0.078)***	0.623 (0.062)***	0.766 (0.077)***	-0.028 (0.093)	-0.064 (0.091)	-0.020 (0.093)	-0.063 (0.091)
STI missing	-0.244 (0.017)***	-0.239 (0.020)***	-0.232 (0.017)***	-0.235 (0.020)***	-0.110 (0.028)***	-0.071 (0.026)***	-0.111 (0.028)***	-0.071 (0.026)***
Employment change in industry	0.300 (0.036)***	0.485 (0.053)***	0.289 (0.035)***	0.522 (0.053)***	0.018 (0.053)	0.139 (0.058)**	0.021 (0.054)	0.141 (0.059)**
Tertiary education	0.731 (0.028)***	0.586 (0.035)***	0.646 (0.027)***	0.511 (0.034)***	0.292 (0.045)***	-0.026 (0.049)	0.298 (0.045)***	-0.028 (0.049)
Secondary education	0.316 (0.018)***	0.285 (0.021)***	0.299 (0.018)***	0.272 (0.021)***	0.161 (0.031)***	0.141 (0.027)***	0.165 (0.031)***	0.141 (0.027)***
Work experience	-0.010 (0.003)***	-0.014 (0.004)***	-0.010 (0.003)***	-0.016 (0.004)***	0.009 (0.004)**	0.015 (0.004)***	0.009 (0.004)**	0.015 (0.004)***
Firm tenure	-0.018 (0.004)***	-0.023 (0.005)***	-0.010 (0.004)**	-0.015 (0.005)***	-0.053 (0.009)***	-0.066 (0.007)***	-0.052 (0.009)***	-0.066 (0.007)***
Age	-0.011 (0.001)***	-0.007 (0.001)***	-0.008 (0.001)***	0.000 (0.001)	0.003 (0.002)	0.003 (0.002)	0.003 (0.002)	0.003 (0.002)
Cohabitation					-0.189 (0.030)***	0.040 (0.037)	-0.192 (0.030)***	0.042 (0.036)
1-2 children					-0.220 (0.035)***	0.010 (0.035)	-0.220 (0.035)***	0.012 (0.034)
At least 3 children					-0.607	0.035	-0.607	0.035

	Pr(Upward mobility=1)				Pr(Return migration=1)			
Variables	Females, earnings ranking	Males, earnings ranking	Females, human capital ranking	Males, human, capital ranking	Females, earnings ranking	Males, earnings ranking	Females, human capital ranking	Males, human, capital ranking
Worked abroad before return migration					(0.119)***	(0.072)	(0.118)***	(0.072)
					0.499	0.567	0.496	0.566
					(0.055)***	(0.049)***	(0.054)***	(0.049)***
Estonian language	0.177	0.283	0.180	0.295	0.070	0.151	0.073	0.151
	(0.017)***	(0.021)***	(0.017)***	(0.021)***	(0.028)**	(0.027)***	(0.028)***	(0.027)***
Primary sector	0.147	-0.021	0.209	-0.024	-0.006	0.037	-0.022	0.037
	(0.066)**	(0.066)	(0.065)***	(0.068)	(0.109)	(0.089)	(0.109)	(0.089)
Secondary sector	0.144	0.001	0.349	0.071	-0.099	0.059	-0.093	0.060
	(0.021)***	(0.020)	(0.021)***	(0.019)***	(0.037)***	(0.026)**	(0.037)**	(0.025)**
Number of obs.	31953	24632	31953	24632	31953	24632	31953	24632
Log-likelihood	-22602.467	-17810.749	-23060.396	-18119.683	-22602.467	-17810.749	-23060.396	-18119.683

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%.

In the case of the instruments indicating return migration the signs are mostly as expected – cohabitation and the presence of children reduce return migration in the case of females but not males (i.e. these are not strong instruments for them). On the contrary, earlier migration is a strongly significant determinant of return migration for both males and females, indicating the importance of experience and overcoming psychological or other kinds of barriers or the importance of network effects. The somewhat weaker effect of earlier migration for females might indicate the importance of other factors in their case; for example, their migration decision being affected by that of their partners. Concerning other determinants of return migration, there have been clear differences in the propensity towards emigration on the basis of sectors (e.g. Randveer and Rõõm (2009) also found higher rates in the private sector compared to the public sector, manufacturing, construction, hotels and restaurants). Those with Estonian as a mother tongue are significantly more likely to be return migrants, either due to their higher propensity to migrate (although Randveer and Rõõm (2009) did not find any significant differences between Estonians and non-Estonians), but more likely the higher probability of Estonians to return. For instance, the survey among the firms showed that among employed immigrants, 32% were in fact Estonians returning to their home country (Randveer and Rõõm 2009). Concerning education, clear differences occur across genders – while secondary education is associated with migration among both sexes, tertiary education only among females. Consequently, the lower-than-average educational attainment of migrants (Randveer, Rõõm 2009; Hazans and Philips 2011) seems to be driven more by lower-educated males, while the emigration of higher educated females might bear some relation to the relatively lower wages in female-dominated occupations (Anspal et al. 2010) or their jobs in the home country do not correspond to their level of education; however, Hazans and Philips (2011) argue that the observed higher percentage (60% in Estonia) of over-qualified highly educated movers was quite likely caused by moving and there is no evidence of over-qualification before moving. The insignificant effect of age may be related to its close correlation with tenure (in Hazans and Philips 2011, returnees were not very different from all migrants), yet tenure's negative coefficient may be due accumulated firm-specific human capital that is lost as a result of migration.

Concerning other variables, some of the important determinants of occupational mobility, such as the skills transferability index and returns to current and alternative occupations, are mostly not significant for migration (although, for example, lower returns to current occupation or the higher transferability of skills might be expected to affect migration decisions if one can obtain a similar job abroad as in the home country). The results for occupational rankings based on wages and

human capital are rather similar, which is not surprising given their high correlation. The sign for firm tenure is significant and negative for both (the possibly accumulated firm-specific human capital reduces any kind of mobility – as we saw, most occupational mobility occurs across firms), while overall work experience has the opposite effect on both (negative on occupational mobility, positive on return migration). Education and previous sector of employment seem to be more important for mobility compared to migration. The net employment change in the industry of the initial employer shows positive correlation with both variables. While in Sabirianova (2002), the local job destruction rate enhanced mobility, the opposite sign here may either show that in conditions of positive employment change there are more opportunities for upward mobility due to new jobs. With return migration, on the other hand, we would rather expect a negative relationship (better job opportunities in the home country reducing migration), yet it may be that the relatively short time span of the sample does not allow us to correctly capture these effects (e.g. the years 2004–2007 showed both strong job creation and outward migration).

In addition to the estimates presented above, we undertook a number of additional estimations in line with the ideas presented earlier. In order to save space, Table 9 presents only the signs and statistical significance of the coefficients of temporary migration in the upward occupational mobility equation from these regressions. In most breakdowns, the effect of temporary migration remained negative, with the exception of that to Finland, where it was positive for males (but still negative for females). The negative effect also disappeared for return migration lasting for more than a year (though this could also be related to the much smaller number of such episodes). All in all, these results do not rule out the possibility that there are positive impacts for some segments of workers. While we argued that the observed association with downward mobility could be related to the kinds of jobs held abroad (requiring lower skills and possibly not corresponding to the skill level of the migrants), here a negative association was revealed even among those holding white-collar jobs abroad. When simply using the mobility between white-collar and blue-collar jobs instead of the 1-digit rankings, return migration did not have any effects on mobility. Finally, negative effects were also revealed when using linear probability models instead of bivariate probit models, with signs mostly the same as from bivariate probit models. When simply using the mobility between white-collar and blue-collar jobs instead of the 1-digit rankings, return migration did not have any effects on mobility. Instead of only modelling the dummy for upward mobility, we also tried modelling changes in the whole ranking of occupations using the probit model (as did Carletto and Kilic 2011) and the results were qualitatively similar.

Table 9 The results of additional estimations on the effect of return migration on occupational mobility

Return migration variable	Wage ranking			Human capital ranking		
	All	Females	Males	All	Females	Males
Bivariate probit model						
Return migration	-***	-***		-***	-***	
Age up to 24	-***	-***		-***	-***	
Age 25-49	-***	-***	-*	-***	-***	-*
Age 50-75	-**		-**	-***	-***	-***
Return migration to Finland	+**	-*	+***		-*	+**
Return migration to countries other than Finland	-***	-***	-***	-***	-***	-***
Return migration of at least 1 year						
White collar job abroad	-***	-**	-**	-***	-***	-***
Linear probability models						
Return migration	-***	-***		-***	-***	
Age up to 24	-*					
Age 25-49	-***			-***	-**	
Age 50-75			-**			-*
Return migration to Finland		-***	+**		-***	+***
Return migration to countries other than Finland	-***	-***	-***	-***	-***	-***
Return migration of at least 1 year					-*	
White collar job abroad	-***	-***	-*	-***	-***	-**

Note. * significant at 10%; ** significant at 5%; *** significant at 1%. Each cell of the table corresponds to one regression from which only one coefficient, that of the return migration in the occupational mobility equation, has been presented.

As one additional robustness check, we undertook to estimate the impact of return migration on the desired wages of return migrants. The descriptive evidence clearly showed higher wage expectations among returnees throughout the wage distribution and across different groups of jobseekers. To have a closer look at this, we conducted a propensity score matching exercise (see e.g. Caliendo and Kopeinig 2008), by which returnees were matched with similar stayers based on a number of characteristics affecting return migration in order to construct an appropriate control group for the returnees. The matching involved estimating a probit model for the return migration consisting of the following variables: gender, educational dummies, age and age squared, returns to occupations, family background (dummy for cohabitation and children) and previous migration. Despite trying various specifications, we did not find any evidence of the positive effects of return migration (results available upon request). While occupational mobility could be one form of wage mobility, this evidence did not oppose that on occupational mobility.

Unlike many earlier studies, we could not explore entry to self-employment. The results from earlier research is well documented suggesting that returned migrants tend to continue their labour market career as own account workers or entrepreneurs especially in less developed countries. Some evidence supporting this is available from the adult population survey by the Global Entrepreneurship Monitor (GEM) study that investigates the extent of entrepreneurship and its various determinants among the adult population in approximately 85 different countries (see e.g. Bosma et al. 2012). The first Estonian Global GEM survey included questions on people's migration experience (Arro et al. 2013). In sum, among early stage and nascent entrepreneurs there was a relatively higher share of people having lived abroad for at least 6 months in the last 3 years (respectively 14.8% and 12.6% compared to 6.1% among non-entrepreneurs); however, after controlling for other various personal and socio-economic characteristics, the variable for return (temporary) migration became insignificant.

6. Qualitative evidence on the effect of temporary migration on labour market performance at home

In order to complement the quantitative analysis we also conducted 75 structured interviews by phone to gather employer opinions and attitudes about selected characteristics of the candidates. We randomly selected representatives of organizations who had advertised vacancies on the job portal CV Keskus in the period from March 2012 till June 2012. Among other questions we also asked specifically how employers evaluate the presence of experience working abroad among job applicants. Organizations and occupations in the sample differ, and the description of the sample is given in Table 10. While the responses might be difficult to generalize, they should provide additional insights for interpreting our research results as well as for future research work.

Table 10 Description of the sample of interviewed employers

Variables		Percentage
Organizations (n=75)		
Sector	Private/Public	84/26
Field of activity	Production/Trade and service/Transport and communication/Public	28/49/9/13
Location	Tallinn and Harju county/Other	61/39
Size (number of employees)	Micro (1-10) / Small (11-49) /Medium (50-249) / Large (At least 250)	12/23/44/21
Occupations (n=75)		
Qualification	Blue-collar/White-collar	39/61
	Blue-collar high/low skilled (n=29)	72/28
	White-collar high/low skilled (n=46)	37/63

Approximately half (Table 11) of the interviewees estimated the presence of experience working abroad as a positive factor (positive and rather positive) and only twelve per cent of the respondents perceived it as a rather negative or negative factor in the candidate's resume. The estimations depended on the occupation. The proportion of negative attitudes was highest among interviewees who recruited high-skilled blue-collar workers – 38%. Comments show that this kind of evaluation could arise from two observations. Those who have worked abroad will be eager to do it again, and their reservation wage is too high. The interviewees also said that specialists could benefit from the presence of experience of working abroad only when the experience is connected to the field of activity the candidate is applying for employment in. Command of foreign languages was also mentioned as a positive aspect of working abroad.

Table 11. Effect of candidate's previous experience working abroad on personnel selection (hiring)

Occupation	Negative	Rather negative	Neutral/no effect	Rather positive	Positive
All (n=75)	1.3	10.7	40	32	16
White-collar high skilled(n=16)	0	0	37.5	37.5	25
White-collar low skilled (n=30)	0	0	43	47	10
Blue-collar high skilled (n=21)	5	33	33	10	19
Blue-collar low skilled (n=8)	0	12.5	50	25	12.5

Experience of working abroad is evaluated more highly in small organizations (64% of respondents estimated this as either positive or rather positive, while the same figure was only 44% for large firms). Although approximately half (48%) of the interviewees from medium-sized organizations value foreign experience positively, the polarization of opinions is greatest among interviewees from medium-sized organizations (perhaps because they formed the largest proportion in the sample). Among micro firms most (67%) are neutral.

Analysing employer opinions across field of activity shows that the largest number of negative estimations was given by interviewees from the secondary sector and the largest share of positive valuations by interviewees from the trade and service sectors. The negative attitude in the secondary sector is related to the occupations – most of the vacancies in this sector were high-skilled blue-collar positions. In the public sector, 7 out of 12 organizations estimate foreign experience rather positively or positively, and the rest are neutral. Opinions in private sector organizations vary much more.

The structured interviews mentioned above were complemented by 29 semi-structured face-to-face interviews with employers' representatives. While the interviews covered various labour market

issues (general view of the labour market, evaluation of the factors and consequences of labour mobility), they also gathered evaluations of the usefulness of foreign work experience and its possible impact on mobility across jobs and occupations. First, the interviews outlined similar selection effects, for instance, regarding migration to Finland: "people working abroad in Finland are not really like others working abroad, it is like they are working in another city" (38 year-old male from an international service business in Tallinn). In addition, the interviews confirmed that young people who are more capable and entrepreneurial are more ready to migrate (32 year-old male from energy sector). Yet the interviews also revealed that the benefits from working abroad can be quite varied. One 47 year-old female from a large international production enterprise said: "International work experience is of value, in the case of young people even selling books. Age is important for how the employer evaluates international work experience. If one has not been successful abroad then this nullifies the foreign experience. If you are an international enterprise, then the more international and wider your work experience, the better". Not all are successful in the home country labour market: "case by case, there are those who come back and get better jobs, and there are also those who come back and do not find a job for a long period. It depends both on the individual and the situation in the economy" (32 year-old male, energy sector). It was also revealed that there need not be any technological gap between Estonia and its destination countries – foreign experience may matter "in terms of horizon and personal development, also how the work culture is there, how work is organized. Not really in terms of professional qualifications, as we do more complicated things" (51 year-old male from small international service business). In addition, some negative effects were also outlined – people returning from abroad might be more uncertain when applying, they are more uncertain about adapting to the local labour market; for people with foreign work experience, it is also easier to go abroad again due to their positive experience and access to information (38 year-old male from an international service business in Tallinn). Another employer (52 year-old female from a small business) indicated: "I am curious about the returnees, as I do not know what their experience actually means".

In addition to the above interviews with employers, we also conducted some interviews with job seekers. While in the literature it is a common claim that migrants return with newly acquired specific experience or skills, Katseli et al. (2006) claimed that the applicability of the specific skills acquired in the foreign country may be limited due to a technological gap between the receiving and sending country. Our interviews indicated some cases where that might not be the case, for instance, one interviewee, a 52 year-old doctor (female), who works both in Estonia and Finland, said that more than 10 years ago there was a lot to learn in Finland, but not any more, as the medical

system in Estonia is now at the same level as in Finland. Another 52 year-old man who worked in Finland in construction indicated that while Estonia is even somewhat ahead in terms of work organization, in Finland there is some advantage in terms of technical working methods. In addition, many interviews revealed that the skills and knowledge acquired abroad are only useful when it is possible to apply these in the home country labour market (this is not necessarily always possible).

7. Conclusion

Migration from Eastern to Western Europe is an increasing phenomenon. Since much of it is of a temporary nature, it is important to look into its effect on the labour markets of the sending countries via the relative performance of the returnees. Generally, return or temporary migration is expected to have positive effects on labour market performance due to accumulated human capital and savings (allowing entry into entrepreneurship or a longer job search period) that could result in higher wages or entry into more highly paid activities and occupations. In this paper we undertook an empirical estimation of the effect of return migration on upward occupational mobility in the ladder of occupations determined by wages or required human capital using a unique dataset from the leading Estonian online job search portal. Such a novel data source allows us to identify an almost unprecedentedly high number of return migrants (7,500). The literature on the home country labour market effects of return migration is not very extensive, and in particular, the effect of return migration on occupational mobility has been explored in only a small number of studies.

In general, when comparing the occupations of returnees in the home country (Estonia) before and after temporary migration we failed to find any evidence on the positive effect of return migration on the returnee's career mobility or upward movement along the occupational ladder, as has been found in some earlier studies (Carletto and Kilic 2011, Cobo et al. 2010). In fact, there was a negative effect on upward mobility in the case of females. A similar result was also found after robustness checks for different durations of migration, destination country (Finland as the closest major destination country versus others) and definitions of the occupational ladder (constructed using required human capital versus returns in terms of earnings). These results may relate to both the functioning of the home country labour and the kind of return migration; for example, the jobs held abroad and the destination countries. Considering the latter, while the sending and recipient countries in the studies mentioned earlier usually had rather large income and technological gaps (respectively Albania versus Italy and Greece, and Latin America versus the USA), the gap is understandably somewhat smaller in the case of outward migration from Estonia, therefore as also

slightly indicated by the additional interviews conducted with employers and job seekers, the knowledge transfer and skill accumulation effect might be of less importance in this context. Also in line with earlier studies on East-West migration, returnees predominantly work abroad in lower-skilled occupations that may not correspond to their qualifications, which may explain the limited human capital accumulation. When looking at the desired wages of the job seekers (which naturally could differ from reservation wages or actual wages), returnees had significantly higher wage claims, yet after controlling for differences between returnees and stayers within various personal and socio-economic characteristics, no significant difference remained. This might be consistent with the evidence on occupational mobility, given that the latter could be one channel for securing higher wages. The negative effect of temporary migration in the case of females may be related to their discrimination in the labour market – as occurs on their return to the labour market after maternity leave. Another explanation for the lack of positive effects is the rapid development of the Estonian economy during the period studied – on returning previously held jobs might not be available anymore. Concerning remittances, while according to Hazans and Philips (2011) the remittances from migrants to Estonia were high enough to improve the financial situation of households with migrants, remittances in the case of temporary migration might be too limited in size to significantly change the labour market behaviour of the returnees.

Concerning the other findings on the determinants of temporary migration and occupational mobility, we found that across different destination countries of migration there are no large differences in spells or durations of working abroad. Evidence from our qualitative survey indicated that according to the opinion of entrepreneurs the experience of working abroad is more valuable in the service sector than in manufacturing, and also more valuable in small firms than in large firms. On the negative side, respondents indicated that people who have already worked abroad are more likely to go back if there new opportunities exist. Regarding the determinants of occupational mobility (returns to current and alternative occupations, transferability of skills, costs of mobility), the effects were mostly according to expectations; these results confirm those in Campos and Dabušinskas (2009) that after the early transition period the determinants of occupational mobility have been in accordance with market mechanisms.

Finally, the results of the study in our opinion suggest the need for further study of the occupational choices of returnees in other CEE countries as the benefits of return migration should not be taken for granted. In terms of possible policy implications, we need to keep in mind that most of the migration in this context takes place within the EU where the right to the free mobility of labour

exists, while Estonia's policy towards migration from outside the EU has been rather restrictive. The lack of evidence supporting the positive effects of temporary migration in our paper need not rule out arguments promoting programmes to attract returnees back home, such as the Estonian initiative "Talendid koju" (in English: *Talents come home*), as the benefits of outward migration may still be there in the case of some categories of individuals or through other mechanisms (e.g. alleviating labour shortages in certain fields); therefore, it is important to consider the characteristics of the returnees carefully. Another policy mentioned in response to labour shortages in some occupations has been to attract migrants from non-EU countries like Russia and Ukraine. A further study of the welfare effects of return migration and immigrants, including their occupational choices, would be helpful in designing appropriate policies.

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Appendix 1. Overview of the studies on the occupational mobility of return migrants

Author(s)	Data (country and period)	Measurement of occupation	Occupational ranking	Methods	Main results
Cobo et al. (2010)	Costa-Rica, Guatemala , Mexico, Puerto Rico; ; Latin American Migration Project and Mexican Migration Project surveys	Occupational mobility between age 25 and 45, upward and downward mobility based on 5 categories (non-manual annual high qualification, non-manual low qualification, manual high qualification, manual low qualification, unemployed)	Ranked based on own judgement, i.e. no formal statistical derivation	Multinomial logit models for upward mobility, downward mobility and undetermined	Migration to United States enhances upward mobility especially at young age; education improves upward mobility upon return
Reinhold and Thom (2009)	Mexican Migrant Project, male household heads surveyed during 1987-2007	Occupations based on sectors (agriculture, manufacturing etc.);	None	Transition rates for migrants vs. non-migrants	Migrants are more likely to change occupation from "other" to either skilled manufacturing or agriculture; migrants starting in manufacturing are more likely to transition into agriculture
Kupets (2011)	Ukraine, modular migration survey 2008, 48,000 persons; target populations was households with migrants	Employment in agriculture, formal non-farm employment, informal non-farm employment, non-employment	None	Multinomial logit for choice between employment categories	Return migrants are found more often to be employed in non-farm informal sector or to be unemployed
Carletto and Kilic (2011)	Albania, Albanian 2005 Living Standards Measurement Survey	6 categories (not working, agriculture, low-skilled blue-collar, high-skilled blue collar, low-skilled white collar, high-skilled white collar)	Individuals sums of weighted levels of schooling, labour market experience prior to entry to the occupation and their squared terms, weighted using the coefficients from wage regressions	Ordered probit model, dependent variable the degree of occupational mobility (change in the ranking between two dates), return migration instrumented with the knowledge of Italian or Greek language and the presence of children	Positive impact of past migration experience on upward occupational migration driven by past migration experience in Italy
Ilahi (1999)	ILO-ARTEP survey of Pakistani return migrants (restricted to migrants only)	Occupational choice of return migrants between wage employment, self-employment in agricultural activities, self-employment in non-agricultural activities	None	Binomial logit models for the occupational choice of return migrants	Return migrants have higher tendency for self-employment over wage employment

Appendix 2. The mean duration of working spells according to the country the work is performed in

Country	Length of spell, in months				Spells	
	Mean	Standard dev.	10% percentile	90% percentile	Number	Share of foreign spells
Estonia	28.6	40.9	1	72	603858	
Finland	14.4	21.2	1	36	9330	28.4%
UK	10.6	15.8	1	25	5328	16.2%
USA	14.6	20.5	1	38	2965	9.0%
Ireland	13.1	18.1	1	33	2609	8.0%
Russia	30.7	38.6	1	75	2154	6.6%
Norway	12.0	18.6	1	29	2133	6.5%
Sweden	16.9	26.2	1	42	1634	5.0%
Germany	16.0	25.7	1	39	1202	3.7%
Other country	22.3	33.8	1	54	718	2.2%
Spain	11.2	15.3	1	28	575	1.8%
Denmark	15.0	19.6	1	37	500	1.5%
Australia	7.6	15.3	0	17	487	1.5%
Latvia	26.7	32.3	2	64	486	1.5%
Italy	14.4	18.4	2	36	413	1.3%
Cyprus	9.9	18.1	1	22.5	404	1.2%
Netherlands	17.5	28.4	1	45	374	1.1%
France	14.0	24.4	0	39	315	1.0%
Ukraine	33.8	43.0	0	88	292	0.9%
Greece	6.7	14.0	1	14	271	0.8%
Lithuania	23.7	37.8	0	58	199	0.6%
Egypt	17.7	25.4	2	41	155	0.5%
Canada	30.0	46.6	0	89	146	0.4%
Belgium	13.0	13.5	1	32	126	0.4%
All foreign countries	15.4	24.4	1	38	33813	

Appendix 3. Occupational mobility in the sample period

Level of occupational code, in digits	Period	Gross flow	Net flow	Share of net flows	Share of complex switches	Number of people working
1	1993-1995	4.7%	0.8%	18.4%		21027
1	1995-1999	5.3%	0.7%	15.0%		34359
1	2000-2004	4.7%	0.9%	20.7%	89.7%	75421
1	2005	9.9%	1.3%	13.3%	90.6%	43501
1	2006	11.8%	1.6%	13.8%	91.1%	43312
1	2007	13.7%	1.8%	12.9%	91.4%	43952
1	2008	6.3%	1.6%	25.6%	91.4%	87140
1	2009	5.7%	0.8%	14.6%	92.4%	56645
2	1993-1995	4.9%	1.3%	33.1%		21954
2	1995-1999	5.0%	0.9%	21.7%		38580
2	2000-2004	5.2%	1.0%	20.5%	89.8%	75394
2	2005	9.8%	1.5%	15.6%	90.8%	48006
2	2006	5.9%	2.1%	35.2%	91.2%	95884
2	2007	6.9%	2.3%	34.0%	91.5%	96055
2	2008	14.6%	1.9%	12.7%	91.8%	41625
2	2009	11.2%	1.1%	9.9%	92.4%	31903
3	1993-1995	7.3%	1.8%	23.3%		15208
3	1995-1999	5.7%	1.2%	23.8%		37749
3	2000-2004	8.4%	1.3%	15.8%	89.7%	45133
3	2005	5.4%	1.9%	34.9%	90.8%	92974
3	2006	12.0%	2.2%	18.5%	91.3%	49486
3	2007	14.1%	2.6%	18.5%	91.5%	49542
3	2008	7.4%	2.1%	28.7%	91.9%	87140
3	2009	11.9%	1.5%	12.3%	92.4%	31903
4	1993-1995	3.5%	2.6%	74.3%		30682
4	1995-1999	5.7%	1.6%	33.3%		37287
4	2000-2004	9.2%	1.7%	18.6%	89.9%	43058
4	2005	10.9%	2.2%	20.6%	90.8%	48006
4	2006	12.6%	2.6%	20.3%	91.5%	49486
4	2007	14.7%	2.9%	19.7%	91.7%	49542
4	2008	16.3%	2.4%	14.8%	92.0%	41625
4	2009	13.9%	1.9%	13.8%	92.6%	28719

Note. Gross mobility is calculated as the number of employees with different occupation in the January of the respective year than the January of the last year, divided by the number of employees in the last year. Net flows are computed by summing the absolute values in the changes of occupational shares, and the result is divided by two. Complex changes are the ones where occupational change also meant the change of the sector.

Appendix 4. Definitions and descriptive statistics of variables used in the analysis

Variable	Definition	Mean	Standard deviation	Minimum	Maximum
Return migration (dummy)	Dummy, 1 if has been temporarily working abroad	0.027	0.162	0.000	1.000
Occupational mobility (dummy)	Dummy, 1 if change in 1-digit ISCO88 occupation	0.412	0.492	0.000	1.000
Upward occupational mobility in human capital ranking	Dummy, 1 if at higher position in human capital ranking at the last compared to previous job	0.246	0.431	0.000	1.000
Upward occupational mobility in earnings' ranking	Dummy, 1 if at higher position in earnings' ranking at the last compared to previous job	0.249	0.432	0.000	1.000
Returns to current occupation, beginning of period	Estimated from wage regressions, see text	-0.280	0.275	-0.888	0.498
Returns to alternative occupation, beginning of period	Estimated from wage regressions, see text	-0.059	0.056	-0.231	0.046
Returns to current occupation, end of period	Estimated from wage regressions, see text	-0.052	0.052	-0.226	0.038
Returns to alternative occupation, end of period	Estimated from wage regressions, see text	-0.254	0.268	-0.875	0.377
Skills transferability index	See formula in the text	0.844	0.185	0.111	0.979
STI missing	Skills transferability index missing	0.557	0.497	0.000	1.000
Employment change in industry	Annual change in the number of employees at NACE Rev 2 2-digit industry	0.012	0.593	-11.639	2.559
Tertiary education	Dummy, 1 if tertiary education	0.167	0.373	0.000	1.000
Secondary education	Dummy,1 if at least lower secondary education	0.548	0.498	0.000	1.000
Less than secondary education	Dummy,1 if less than secondary education	0.285	0.451	0.000	1.000
Work experience	Work experience in years	2.991	4.558	0.000	63.250
Firm tenure	Years in same firm	1.686	2.960	0.000	43.250
Age	Age in years	31.237	10.054	10.000	98.000
Cohabitation	Dummy, 1 if in cohabitation	0.486	0.500	0.000	1.000
1-2 children	Dummy, 1 if 1-2 children	0.334	0.472	0.000	1.000
At least 3 children	Dummy, 1 if at least 3 children	0.041	0.199	0.000	1.000
Worked abroad before return migration	Dummy, 1 if had job abroad before temporary migration	0.014	0.118	0.000	1.000
White-collar job abroad	Dummy, 1 if white-collar job in abroad	0.008	0.089	0.000	1.000
Estonian language	Dummy, 1 if mother tongue is Estonian	0.608	0.488	0.000	1.000
Male	Dummy, 1 if male	0.444	0.497	0.000	1.000
Primary sector	Dummy, 1 if 2-digit NACE Rev 2 code between 1 and 4	0.020	0.141	0.000	1.000
Secondary sector	Dummy, 1 if 2-digit NACE Rev 2 code between 5 and 43	0.251	0.433	0.000	1.000

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