

Tverdostup, Maryna; Masso, Jaan

Article

The labour market performance of young return migrants after the crisis in CEE countries: the case of Estonia

Baltic Journal of Economics

Provided in Cooperation with:

Baltic International Centre for Economic Policy Studies (BICEPS), Riga

Suggested Citation: Tverdostup, Maryna; Masso, Jaan (2016) : The labour market performance of young return migrants after the crisis in CEE countries: the case of Estonia, Baltic Journal of Economics, ISSN 2334-4385, Taylor & Francis, London, Vol. 16, Iss. 2, pp. 192-220, <https://doi.org/10.1080/1406099X.2016.1233729>

This Version is available at:

<https://hdl.handle.net/10419/180096>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

The labour market performance of young return migrants after the crisis in CEE countries: the case of Estonia

Maryna Tverdostup & Jaan Masso

To cite this article: Maryna Tverdostup & Jaan Masso (2016) The labour market performance of young return migrants after the crisis in CEE countries: the case of Estonia, *Baltic Journal of Economics*, 16:2, 192-220, DOI: [10.1080/1406099X.2016.1233729](https://doi.org/10.1080/1406099X.2016.1233729)

To link to this article: <https://doi.org/10.1080/1406099X.2016.1233729>



© 2016 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 03 Oct 2016.



Submit your article to this journal [↗](#)



Article views: 505



View related articles [↗](#)



View Crossmark data [↗](#)

The labour market performance of young return migrants after the crisis in CEE countries: the case of Estonia

Maryna Tverdostup and Jaan Masso

Faculty of Economics and Business Administration, University of Tartu, Tartu, Estonia

ABSTRACT

This paper extends the earlier literature on the effects of return migration by studying selection and labour market performance in terms of the wages of young returnees in particular. The topic is motivated by various labour market issues for young people and their high exposure to the consequences of the recent financial crisis. We use Estonian Labour Force Survey data and Estonian Population and Housing Census 2011 data in combination with Estonian Tax and Customs Office data on individual payroll taxes. The econometric analysis focuses on the selection to temporary migration and the estimation of wage premium to return, along with the decomposition of the returnee-stayer wage gap using the Oaxaca-Blinder approach and an investigation of wage premium dynamics over time after return. The results generally show higher returns from temporary labour migration for young people relative to older people, and among youth, the share of the unexplained fraction of the wage premium is also higher. These results imply a stronger role of experience gained abroad on earnings for youth.

ARTICLE HISTORY

Received 21 December 2015
Accepted 5 September 2016

KEYWORDS



Return migration; labour market outcomes; Central and Eastern Europe

JEL CODES

F22; J31; J61

1. Introduction and motivation

The recent EU eastward enlargement resulted in substantial East-West migration flows, especially among young and highly educated people from CEE countries (Kahanec & Zimmermann, 2010). As a large share of migration processes is temporary by nature, return labour migration is particularly relevant in this context. Existing studies on return migrants have conducted various and wide-ranging analyses of the impact of foreign work experience on the earnings of returning migrants (Barcevičius, Iglicka, Repečkaitė, & Žvalionytė, 2012; Barrett & O'Connell, 2001; Co, Gang, & Yun, 2000; Galgóczi, Leschke, & Watt, 2012; Hazans, 2008; Lang et al., 2012; Radu & Martin, 2012; White, 2014; Zaiceva & Zimmermann, 2012). However, there is still relatively little known about the selection to return and post-return labour market outcomes in the context of young people (Iara, 2010 is a rare exception). Focusing the research on young returnees is motivated by the recent enlargement of the scope of labour market issues faced by youth in Europe. Those

CONTACT Jaan Masso  jaan.mass@ut.ee  Faculty of Economics and Business Administration, University of Tartu, Narva Road 4 – A110, Tartu 51009, Estonia

© 2016 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group
This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

include high unemployment rates, specific characteristics of labour market transitions experienced by young people, in particular labour market mobility both within and between economies (for an overview of the recent issues of youth in European labour markets, see O'Reilly et al., 2015). Recent economic shocks enforced a higher magnitude of labour market issues among youth, and young migrants were exposed to the effect of economic slowdown to a greater extent (Kahanec & Fabo, 2013).

Therefore, this study focuses on return migration, specifically among youth (temporary migrants aged 15–35 years¹) in Estonia. The case of Estonia is particularly relevant in terms of return migration studies, as the estimated rate of temporary migration is among the highest in Europe (Zaiceva & Zimmermann, 2012). Few studies have focused specifically on Estonian return migration processes. In particular, Hazans and Philips (2011) presented evidence on the characteristics of return migrants in the three Baltic States using Labour Force Survey data. Masso, Eamets, and Mõtsmees (2014) analysed the effect of return migration on occupational choices and did not find any positive effects of foreign work experience on upward occupational mobility. Kauhanen and Kangasniemi (2013) specifically investigated the wage premium on temporary migration from Estonia to Finland and found that Estonian return migrants earn on average 14% more than stayers.

The purpose of this paper is to provide a thorough investigation of the youth return migration issue, and contribute to existing literature in two areas. First, we analyse the determinant characteristics of young returnees. Second, we conduct an in-depth examination of returnee performance after re-entering the domestic labour market through an investigation of the wage premium to return, and its composition and dynamics over time after the return. The econometric analysis focuses on selection to temporary migration and the estimation of the wage premium to return. In order to determine the specific characteristics of the post-return earning profiles of young returnees from different perspectives, we both investigate the nature and composition of the returnee-stayer wage gap applying an Oaxaca-Blinder decomposition and evaluate of the wage premium dynamics after re-entering the home labour market.

The analysis relies on two data sources: Estonian Labour Force Survey (EE-LFS) panel data for 2007–2013 and data of Estonian Population and Housing Census (EPHC) conducted in 2011. Within the EE-LFS, return migrants are identified using the rotating panel nature of the data. The second more novel data from the EPHC enables us to identify a much larger number of return migrants. Linking the EPHC return migrant data with the Estonian Tax and Customs Office database on individual payroll taxes allows us to trace the dynamics of the wage premium to return migration over time.

To identify young returnees we apply an age definition of 15–35 years, which is different from previous studies. The wider age brackets are used to ensure a reasonable sample size of both returnees and permanent migrants. However, we acknowledge possible heterogeneity within a wide age category. Therefore, to verify the consistency of our findings, we further split the total young group into two sub-groups of 'younger youth' (15–24 years) and 'older youth' (25–35 years).

Our EE-LFS-based results show that young Estonian returnees are different from both peer-stayers and older returnees in terms of their characteristics and labour market returns. Analysis of the selection to return revealed that young returnees are predominantly males and more often have a higher education compared to stayers, this being consistent with previous findings. However, the employment profile of young returnees is

worse, relative to peer-stayers, while much better relative to peer-migrants. Coupled with the evidence on educational selection, this is in line with previous studies on migrant occupational downgrading and occupation–qualification mismatch on the foreign labour market. Wage premium analysis, however, shows that young return migrants in Estonia earn a higher wage premium relative to older returnees. Moreover, the fraction of unexplained wage surplus, capturing the unobservable effect of foreign labour market experience, is also higher for youth. EPHC-based evidence suggests a significant difference in post-return wage premium dynamics across young and older returnees. While for the older cohort the positive effect is the highest immediately after return and disappears after four years, for youth the highest surplus appears only after three years and grows in subsequent years.

The rest of the paper is structured as follows. Section 2 discusses the two data sets used within the analysis (Labour Force Survey and EPHC), outlining the differences in the scope of population coverage, information on foreign labour market experience and sample selection. Section 3 presents the econometric methodology applied, including the selection to return equations, Mincerian type wage regression and return migration wage premium decomposition using the Oaxaca-Blinder approach. Section 4 presents the findings and the final part outlines the main conclusions and suggests possible policy implications from the analysis results.

2. Data

The empirical analysis within this paper is performed based on two sources of data: the EE-LFS panel data set for 2007–2013 and the EPHC conducted in 2011. In terms of sample definition, while the more common definition identifies young people using the age group 18–24 years (used among others by ILO, OECD, Eurostat), we employ a wider age category by including those aged 15–35 years. This approach is partly related to ensuring a reasonable sample size of young returnees or temporary migrants working after return. For instance, the average rate of unemployment for returnees is approximately three times higher than that for the total population (Radu & Martin, 2012). A similarly wide age bracket has also been used in earlier studies of youth labour market performance; for example, in a study of youth entrepreneurship (Kew, Herrington, Litovsky, & Gale, 2013).

However, we admit the possible heterogeneity of the respondents within the loose age group, as ‘younger’ youth at the earliest stages of labour market entry are expected to differ from ‘older’ youth both in terms of individual profile characteristics and labour market outcomes. To ensure the robustness of estimates based on a broad age definition, and to possibly detect the variation of results within the sample, we applied the same empirical strategy to the group aged 15–35 and separately to the age subgroups 15–24 and 25–35 years, referred to as ‘younger youth’ and ‘older youth’. The use of different age brackets in different contexts is justified by the theoretical approaches that consider youth transition to labour market as a process, rather than a single step at some age (Arnett, 2006; Arnett & Hughes, 2012).

The LFS data set has been previously relied on in international migration studies, including Radu and Martin (2012). A number of return migration studies refer to the survey as the key source of data. Namely Dustmann and Weiss (2007) studied temporary labour mobility in Great Britain based on the UK-LFS. Hazans and Philips (2011) investigated the return

migrants on the Estonian, Latvian and Lithuanian labour markets using LFS data. Nevertheless, given the specific focus of this paper on the return migration of young people, the wide range of data available in the EE-LFS will shed more light on the key determinants of the young returnees and enable us to identify new aspects of temporary migration processes.

In order to derive a proxy for returnees, we apply the panel data approach, similar to Hazans and Philips (2011), and the narrow definition of return migrant, implying that the person has worked abroad for at least one quarter over the last two years (the latter is the period for which the person's labour market history is available). Foreign work experience was the main returnee identification variable, hence the temporary migration process in the context of EE-LFS data is by nature associated with employment; that is, returnees have necessarily worked in a foreign country. This approach does not allow us to disentangle long-term migration from short-term mobility (commuting, circular migration). Moreover, long-term migration may be underestimated, as EE-LFS data covers two-year employment history only. However, taking into account data constraints and possibilities, our returnee definition remains consistent with the literature (SOPEMI, 2008, p. 164) and allows to use all available information on past labour market performance in order to ensure a reasonable sample of return migrants.

The EE-LFS is undertaken as a rotating panel, where each individual is surveyed for two consecutive quarters, and then after a two-quarter break again surveyed for two quarters. The survey also includes information about the labour market status and country of employment one year before (Pettai & Lelumees, 2013). Merging the EE-LFS data sets from seven consecutive years has allowed us to enlarge the total sample of return migrants to 1425 observations, including 582 young respondents aged 15–35 years (247 individuals aged 15–24 and 335 aged 25–35).

The EPHC statistics is an original source of data in terms of return migration studies. It was recently referred to in the analysis of migration and related labour market phenomena (e.g. Tammaru & Kontuly, 2011; Tammaru & Kulu, 2003), although the current study is the first in Estonia using EPHC to study return migration. Since the original census data set does not include the variable of level of earnings among respondents, the baseline data was merged with the Estonian Tax and Customs Office statistics on individual payroll taxes for 2006–2011. In the analysis we will refer to those respondents with wage level recorded. Compared to the classical data used in return migration studies, the compound data set is innovative in terms of both sample selection and analysis possibilities. Covering the entire population of Estonia, the EPHC data captures all Estonians who were exposed to temporary labour mobility.

The definition of a returnee, applied in the context of the census data, is significantly broader compared to the EE-LFS approach, and identifies returnees as those who have returned from a foreign country within the last five years. However, since the EPHC questionnaire does not specify explicitly the reasons for living abroad, the returnee sample includes those staying in a foreign country due to reasons other than work (e.g. studies). Therefore, temporary migration is not only associated with employment. Zaiceva and Zimmermann (2012) found that among return migrants, the proportion of students studying abroad a year ago and re-migrating after graduation is substantial. Since our research focuses on a youth sample, we may expect a considerable share of returnees to experience non-employment temporary migration, unless we limit the

definition of returnees to purely work experience abroad. Similar to EE-LFS data, the EPHC definition does not detach long- and short-term mobility, since duration of foreign stay cannot be derived using the data available.

The completeness of the census data set along with its broader definition of return migrants in respect to time and the motivation for the mobility allowed us to detect a much higher number of returnees – 9398 respondents in the young age group and 5882 among those older than 36 years. Since the EPHC data contains the length of a person's stay in Estonia after return, a set of dummy variables representing the number of years since re-entering the domestic labour market was derived, allowing us to trace returnee performance over time. This provides considerable benefit for the analysis through identifying the dynamics of young returnees' earnings over five years following re-entering the domestic labour market. The analysis will show whether the benefits of return migration have a certain time-dependent pattern. A summary of the key features of the given databases is presented in [Table 1](#).

The combination of the EE-LFS and EPHC data sources facilitates the analysis of returnees from several perspectives. Applying different definitions of return migrants also allows us to investigate the focus group from various perspectives. However, due to the considerably different scope and nature of how returnees are described when working with different data sets, a comparison of EE-LFS and EPHC returnee profiles should be undertaken in order to justify the conjunction of the results obtained based on different data sources and the coherence of the final conclusions.

[Table A1](#) in the appendix presents the basic descriptive characteristics of younger and older return migrants estimated using both EE-LFS and EPHC data. Considering the significant distinction in the definition of returnees, it is expected that the descriptive statistics differ in terms of values across age groups. We additionally present the corresponding set of descriptive statistics for those respondents that, according to our data, never experienced foreign migration (referred to as stayers). This enables us to both compare the latter with returnees and relate the characteristics of the stayers based on LFS and

Table 1. The main characteristics of the EE-LFS and EPHC data sets.

Data source	Definition of a returnee	Number of returnees	Application
Estonian Labour Force Survey (EE-LFS) panel 2007–2013	<ul style="list-style-type: none"> – 'Narrow' approach: person who has worked abroad for at least one quarter over the last two years. – Purely associated with employment in a foreign labour market. 	Total sample – 1425 observations Young respondents: 15–35 years – 582 observations, including: 15–24 years – 247 25–35 years – 335	Returnee selection, wage premium to return and its composition.
Estonian Population and Housing Census (EPHC) 2011 (merged with the Estonian Tax and Customs Office data on individual payroll taxes)	<ul style="list-style-type: none"> – 'Broader' definition: returnees are those who have returned from a foreign country within the last five years. – Temporary migration is not only associated with employment (e.g. also studies, other reasons for foreign labour market stays are included as well). 	Total sample – 15,280 respondents Young respondents (15–35 years) – 9398 observations, including: 15–24 years – 2554 25–35 years – 6844	Analysis of wage premium dynamics over time after return.

Census data sets, as they are expected to be comparable. We also enclose the descriptive estimates for non-return (permanent) migrants based on EE-LFS data. We refer to permanent migrants as those who, according to EE-LFS data, are currently working abroad. Although EPHC data allows us to detect respondents living abroad, the record of their individual socio-demographic and employment characteristics is missing.

As shown in [Table A1](#), returnee sample characteristics differ across the two databases. On average, return migrants are nine years younger in the EPHC sample (32 years compared to 41), as with stayers, who are eight years younger on average in the census data set (37 years relative to 45 in LFS). While capturing the entire population, the EPHC samples of returnees and stayers include under and postgraduate students, and therefore, the average age of respondents in this data set is younger. This assumption is in line with [Zaiceva and Zimmermann \(2012\)](#), concluding that obtaining education abroad and later entering the domestic labour market is a common practice.

Along with average age, a set of other variations in the sample may result from the broader selection of respondents including a significantly higher share of young people in the EPHC sample. More specifically, returnees aged 15–35 more frequently have a higher education (44.1% compared to 13.9% in the EE-LFS data set), as a significant proportion of young return migrants studied abroad and entered the domestic labour market after graduation. Young return migrants from the EE-LFS sample are more frequently married (39.0% compared to 28.8% in EPHC data). The latter observation is quite natural, as the LFS sample captures those working, and therefore, those whose migration decisions are also relatively more affected by family-related variables.

Moreover, since the EPHC sample includes those who returned during the last five years, it makes it possible to capture respondents who experienced temporary migration once along with those engaging in migration on a regular basis. The more narrow time spell implied by EE-LFS does not allow us to examine one-time temporary mobility to such an extent. Therefore, the lower proportion of young men in the census returnee sample (46.14% compared to 71.82% in the EE-LFS data set) could result from capturing those respondents who worked abroad non-regularly (one-time mobility), being more common for women, while temporary male migrants commonly experience regular (seasonal, cyclical) mobility².

Consistent with previous results from [Vadean and Piracha \(2009\)](#), [Zaiceva and Zimmermann \(2012\)](#), [Smoliner, Förschner, Hochgerner, and Nová \(2012\)](#), [Radu and Martin \(2012\)](#), returnees are more likely to be unemployed compared to those without foreign work experience. This statement is supported by estimates from both data sets. However, the share of unemployed young and older returnees in the LFS sample is considerably higher relative to the EPHC estimates (for young people respectively 25.8 and 10.0%), while the share of inactive respondents in the latter is greater (22.3 and 29.8%)³. This could result from the broader definition of returnees applied in the census data, capturing not only temporary migration for employment reasons, but also non-employment related motives.

Higher unemployment rates among return migrants are given several rationales in the literature. The foreign stay might result in a lack of social ties and networks in the home-country labour market, as argued by [Lang et al. \(2012\)](#). This, eventually, makes a job search more difficult, particularly among the young with relatively little labour market experience. The latter statement is supported by our empirical evidence: the highest unemployment rate is observed among returnees aged 15–35 years. Moreover, foreign labour market

experience may not be decently valued by employers if they perceived the decision to return as evidence of failed foreign labour market employment (Hazans, 2008). An alternative explanation of returnee higher unemployment rate was developed by Hazans (2008), Zaiceva and Zimmermann (2012). They argue that due to income earned and saved while abroad return migrants can afford longer job-search periods once back in the home country, and therefore, larger unemployment spells are possible compared to stayers.

The further division of the young returnee group into two age subgroups revealed a remarkable difference in returnee-stayer educational attainments across age cohorts both in the EE-LFS and EPHC samples. More specifically, younger returnees have a better educational profile. The LFS-based estimated fraction of those with lower education among younger returnees is 16 percentage points lower than among stayers of the same age category, while for the older returnee-stayer, the difference is only 6 percentage points. According to the EPHC data the differences are 15 and 10 percentage points, respectively. However, in the group aged 25–35, superior educational attainments among returnees compared to stayers are visible only in the EPHC sample. The share of higher education degree holders among return migrants is 19 percentage points higher, while the LFS data showed a lower proportion of university degree holders among returnees aged 25–35 (by 7 percentage points compared to stayers).

All in all, the empirical evidence from the sample, which includes students, supports the idea that the educational attainments of those experiencing temporary migration due to various reasons are better compared to stayers among both the younger and older youth. Hence, while temporary labour mobility at the youngest age in the LFS sample might have been disadvantageous for the educational profile in older years, the EPHC sample clearly showed that return migrants in the loose definition are positively selected in terms of education in all age categories compared to stayers.

3. Empirical strategy

The paper aims to fulfil a double task. The first part of the analysis will focus on identifying the key determinants of young return migrants and the selection to return patterns. The main question in this is who the young Estonian returnees are, and how they differ from permanent migrants and stayers. The question of selectivity to return is of major importance in the context of the wage assimilation of returnees. A number of empirical studies, including Kahanec and Zimmermann (2010), Pungas, Toomet, Tammaru, and Anniste (2012), Kahanec and Kureková (2014), and White (2014) have been devoted to the analysis of selection to return patterns and their interrelation with post-return integration outcomes.

The descriptive statistics estimates presented in the previous section, in line with earlier empirical studies, have proved that young returnees are different from stayers in terms of socio-demographic characteristics. In order to investigate the patterns of selection to return, the binary choice (logistic) model was employed. Here we will consider three selection patterns: who are the migrants coming back (returnee-migrant selection), who are the permanent migrants (migrant-stayer selection) and who are the returnees compared to stayers (returnee-stayer selection). The models will be estimated based on the EE-LFS data.

The functional form of the returnee-stayer, migrant-stayer and returnee-migrant selection models are as follows:

$$\begin{aligned} P\{y_i = 1|X_i\} &= \alpha_0 + \beta X'_i + \varepsilon_i, \\ P\{m_i = 1|X_i\} &= \alpha_0 + \beta X'_i + v_i, \quad \text{and} \\ P\{z_i = 1|X_i\} &= \alpha_0 + \beta X'_i + u_i, \end{aligned} \quad (1)$$

where y_i is a realization of random variable Y_i taking the value 1 if the respondent is a return migrant and 0 if a stayer; m_i is a realization of random variable M_i being 1 if the respondent is a permanent migrant and 0 if a stayer, while z_i is a realization of random variable Z_i taking the value 1 if the respondent is a returnee and 0 if a permanent migrant. X_i is the vector of control variables including socio-demographic, educational and employment characteristics of respondents, β is a vector of corresponding point estimates, and ε_i , v_i , and u_i are residual terms. Since our research captures only a set of the individual characteristics recorded in the EE-LFS data, the findings may be affected by migrant and returnee self-selection in unobservable characteristics (Borjas, 1987).

The second research task includes a number of relevant dimensions, namely: the identification of the effect of return migration on the wages of young people, the nature and composition of the identified wage premium and the wage premium dynamics over time after returning. An investigation of the wage premium to return is performed through the classical Mincerian type wage regression (Mincer, 1974) using a logarithm of average monthly wage as a dependent variable. The model controls for a set of individual socio-demographic, educational and employment characteristics, expected to affect earnings:

$$\log W_i = \alpha_0 + \beta_1 \text{RET}_i + \beta_2 \text{MIGR}_i + \beta_3 \text{age}_i + \beta_4 \text{age}_i^2 + \gamma X'_i + \varepsilon_i, \quad (2)$$

where RET is a return migrant dummy variable, MIGR is a binary variable for current migrants (non-returnees), age and age² are basic controls from the classic Mincerian model, X is a vector of other covariates considered in the model and their respective coefficient vector γ , and ε_i represents an error term. The OLS estimates will be produced based on EE-LFS data.

The nature and composition of the wage gap, identified in the OLS regression, is addressed in the paper using Oaxaca-Blinder decomposition methodology. The method will allow us to differentiate the wage gap that arises from personal characteristics and employment decisions taken by return migrants and stayers from the wage difference that cannot be explained by these factors. The Oaxaca-Blinder decomposition technique is widely applied in the study of wage gaps between various groups. However, only a few of them have used the method to study the potential premium wage from return migration (Hazans, 2008 being one exception). We refer to the classical decomposition methodology introduced by Oaxaca (1973) in order to explicitly examine the contribution of separate factors to the overall wage gap. Therefore, our baseline wage decomposition equation is as follows:

$$\overline{\log W_r} - \overline{\log W_s} = \beta_s (\overline{X_r} - \overline{X_s})' + \overline{X_r}' (\beta_r - \beta_s), \quad (3)$$

where $\overline{\log W_r}$ and $\overline{\log W_s}$ are the means of the logarithm of the returnee's and stayer's earnings, respectively; $\overline{X_r}$ and $\overline{X_s}$ are the vectors of the mean values of the explanatory variables and β_r and β_s are the vectors of the corresponding coefficients of covariates of returnees and stayers, respectively. The first term on the right hand side refers to the explained

difference in wage, resulting from the different characteristics observed for returnees and stayers. The second term indicates the unexplained earnings gap, emerging from the difference in the yields of returnees and stayers.

The third dimension of the wage premium investigation aims to identify the time dependency of benefits to return migration among young returnees. The question is addressed through controlling the wage level for return migrants for five consecutive years after re-entering the domestic labour market. The wage dynamics study is based on the EPHC database completed with a wage variable derived on the basis of the payments of individual payroll taxes from Estonian Tax Office data.

Our wage dynamics model, like the OLS regression (2), relies on the Mincer wage equation and controls for the same set of factors as model (2), but is also conditional on a set of interaction terms in order to track wage changes after return in groups of young and older people⁴. More specifically, we add interaction terms between the years after return and a younger or older returnee dummy variable when estimating wage premium dynamics on samples of individuals aged 15–35 and more than 36 years, respectively. A similar approach was applied by Hirsch, Oberfichtner, and Schnabel, 2014 to analyse wage assimilation among ethnic German immigrants to Germany.

The functional form of returnee wage premium regression is the following:

$$\log W_i = \alpha_0 + \beta_1 \text{age}_i + \beta_2 \text{age}_i^2 + \gamma_i X'_i + \delta_{ji} \text{RET}_i \times \text{YFR}'_{ji} + \varepsilon_i, \quad (4)$$

where the logarithm of monthly wage W_i is a predicted variable, YFR'_{ji} denotes the vector of years from re-migration dummies ($j = 0, 1 \dots 5$ corresponds to number of years elapsed from re-entering the domestic labour market), δ_{ji} is the vector of OLS coefficients capturing the wage premium dynamics over the years since return and ε_i is a residual term.

Given the definition of return migrants applied for the EPHC data, the base category in regression (4) along with stayers includes returnees who came back more than five years ago. Naturally, it can bias wage dynamics estimates and decrease the reliability of the final conclusions. Therefore, we conduct a set of robustness checks to trace the wage dynamics of returnees after return. Namely, relying on the sample of return migrants solely, we first look at the returnees wage changes over the years $j = 1 \dots 5$, with those return migrants who just came back as a base category. We estimate the wage regression similar to (4) in the overall age group, and young and older sub-samples. Secondly, we compare the wage dynamics of younger and older returnees, relying on the sample of return migrants only. The group of young returnees, just after coming to Estonia, are taken then as a base category. Therefore, the wage dynamics model has the following formulation:

$$\log W_i = \alpha_0 + \beta_1 \text{age}_i + \beta_2 \text{age}_i^2 + \gamma_i X'_i + \delta_{ji} \text{RET}_i^{\text{young}} \times \text{YFR}'_{ji} + \theta_{ji} \text{RET}_i^{\text{older}} \times \text{YFR}'_{ji} + u_i, \quad (5)$$

where δ_{ji} and θ_{ji} are vectors of OLS coefficients identifying the time effect on the returnee wage in younger and older groups, respectively, and u_i is a residual term.

4. Results

4.1. Young returnee selection

In the analysis of the labour market performance of young return migrants it is essential to clarify their determinant characteristics. Returnee selection patterns may differ

significantly depending on the framework considered: apparently, young returnees are selected from stayers differently than from migrants. As described in the previous section, selection to return is analysed by applying a logit model in two cohorts: youth (15–35 years)⁵ and total sample (15–75 years). We perform a comparison using the total sample to determine the likelihood of experiencing temporary migration across age groups, and therefore, capture the young cohort in the context of the total population of returnees.

Table 2 (full specification enclosed in Table A2) presents estimations of selection models (1). To better understand who the return migrants are, we first analyse the characteristics of those respondents deciding to migrate, both permanently and temporarily. Estimates of the migrant-stayer selection revealed that males are more likely to migrate both in young and total age cohort (3 and 2.7 percentage points higher likelihood relative to females). Young non-Estonian nationals have 2.9 percentage points lower odds to migrate, relative to native Estonians. In terms of educational profile, young migrants are

Table 2. Logit model for selection to migration return from stayers and current migrants.

Independent variables	Returnee-stayer		Migrant-stayer		Returnee-migrant	
	All sample	Youth 15–35	All sample	Youth 15–35	All sample	Youth 15–35
Male	0.007 (7.25)***	0.015 (4.85)***	0.027 (11.94)***	0.03 (7.57)***	−0.050 (−2.43)**	−0.182 (−5.37)***
<i>Single (base)</i>						
Married	−0.003 (−2.71)***	−0.001 (−0.36)	−0.002 (−0.86)	−0.005 (−2.12)**	−0.021 (−1.00)	−0.069 (−2.47)**
Widowed	−0.001 (−0.60)	−0.002 (−0.17)	−0.01 (−2.42)	0.01 (1.12)	0.082 (2.14)**	−0.339 (−2.52)**
<i>Ethnic Estonian (base)</i>						
Non-Estonian citizen	0.001 (0.93)	−0.000 (−0.12)	0.002 (−0.78)	0.006 (−1.51)	0.018 (0.64)	0.003 (0.11)
Other non-Estonians	0.001 (0.92)	−0.003 (−0.67)	−0.018 (−6.27)***	−0.029 (−4.64)***	0.114 (4.11)***	0.063 (2.25)**
<i>Primary education (base)</i>						
Secondary education	0.000 (0.05)	0.003 (0.94)	0.004 (2.21)**	0.002 (0.77)	−0.062 (−3.36)***	−0.046 (−1.51)
Higher education	−0.001 (−0.47)	0.008 (1.78)*	0.001 (0.47)	0.012 (2.08)**	0.082 (3.06)***	0.040 (0.88)
<i>Qualification match (base)</i>						
Undereducated	−0.001 (−0.59)	−0.007 (−0.99)	−0.002 (−0.46)	−0.003 (−0.5)	−0.112 (−2.06)**	−0.215 (−2.28)**
Overeducated	0.005 (4.49)***	0.001 (0.28)	0.006 (2.55)**	0.007 (1.77)*	−0.094 (−3.36)***	−0.294 (−5.18)***
<i>Low level occupation (base)</i>						
Medium level occupation	0.000 (0.04)	−0.006 (−1.73)*	−0.019 (−6.86)***	−0.024 (−5.23)***	0.092 (3.82)***	0.119 (2.83)***
High level occupation	−0.002 (−1.43)	−0.006 (−1.88)*	−0.036 (−13.9)***	−0.059 (−10.28)***	0.172 (7.98)***	0.227 (5.89)***
Self-employed	−0.002 (−1.25)	0.001 (0.11)	−0.036 (−9.27)***	−0.043 (−4.66)***	0.149 (4.18)***	0.211 (2.94)***
Number of obs.	72,832	13,920	57,364	22,278	2916	1017
Pseudo R-squared	0.062	0.069	0.238	0.231	0.161	0.154

Notes: All regression models additionally control for current place of residence, widowed marital status, non-Estonian nationality with Estonian citizenship, industry of employment and year. Marginal effects are reported. Estimated based on EE-LFS panel data for years 2007–2013. The two variables on qualification match – undereducated and overeducated – are calculated based on self-assessed occupation–qualification match of EE-LFS respondents.

*Results significant at the 10% level.

**Results significant at the 5% level.

***Results significant at the 1% level.

positively selected: those with higher education degree have 1.2 percentage points higher likelihood of emigrating. In the overall sample, no statistically significant selection on higher education was found. However, despite positive selection on education, migrants aged 15–35 are more likely to occupy low level positions. More specifically, the probability of being employed in a medium level occupation is 2.4 percentage points smaller than in a low level position. While holding a high level occupation by migrant relative to stayer is 5.9 percentage points less likely. Eventually, migrants are more prone to experience skill-occupation mismatch (over-education) compared to stayers.

We next look at the characteristics of returnees relative to their peers currently working abroad and peer-stayers. The returnee-stayer selection framework revealed that younger age groups are more likely to experience temporary migration. For ‘younger youth’ aged 15–24, ‘older youth’ aged 25–34 and the 35–45 age group, the probability of being classified as a returnee is 0.6 percentage points higher than for the elderly group 55–64 years. On the other hand, in the second selection framework, the age effect is the opposite. This implies that before retirement migrants are more likely to return home, while at a younger age they are still using the opportunity of working abroad. Several earlier studies, including Smoliner et al. (2012), concluded that return migration is reversely related to the age of the labour market participant, although in the Estonian context this statement applies only to returnee-stayer selection.

Concerning the role of gender in young returnee selection, we see that for men the likelihood of being a return migrant is approximately 1.5 percentage points higher. Hence, among those young people going to work abroad the proportion of men is higher. The latter is also supported by the descriptive estimates from Table A1. However, among current young migrants, men are 18.2 percentage points less likely to return to Estonia. Therefore, once abroad women are more likely to re-enter the home country labour market due to various reasons, including family ties. The same dependency is observed in the total sample, albeit with a slightly smaller marginal effect (0.7 percentage points). Hence, men experience temporary migration more widely in all age categories, which may arise from family reasons: women usually take care of children and are more tightly connected to home and family.

Among other explanatory factors within youth returnee-stayer selection, higher education has a positive effect on the likelihood of experiencing temporary labour migration. Young respondents with a bachelor’s or master’s degree more frequently go abroad and later return to the home country than those with primary nine-year school education⁶. This result is in line with previous studies by Hazans and Philips (2011), Zaiceva and Zimmermann (2012), Schroth (2013), Masso et al. (2014), revealing the positive selection of returnees with respect to education level. However, our analysis showed no statistically significant positive effect of education in the total sample. Hence, patterns discovered in earlier studies hold for the young sample only. In this respect, temporary migration may be driven by the desire to find a better use of the degree acquired on the foreign labour market offering higher wages. Moreover, relative to the permanent migrant, a bimodal selection pattern (positive selection on both lower and higher education) was found in the total sample solely. At the same time, we did not find the statistically significant selection of young returnees on education in the returnee-migrant framework.

We will next discuss the results with respect to the variables of individuals’ assessments of how well their qualifications corresponded with their occupation. In the case of

returnee-stayer selection no statistically significant effect was observed for young returnees. However, in the returnee-migrant framework, young return migrants are 21.5 percentage points less likely to be undereducated and 29.4 percentage points less likely to be overeducated than matched. This observation may result from the considerably worse average occupational profile of current migrants, reported in [Table A1](#). While the distribution of educational attainments among returnees and migrants are rather similar, the share of blue-collar workers among permanent migrants is higher.

The occupational variables revealed a statistically significant effect within young returnee profiles in both frameworks. When considering stayers as a base group, for high and medium level occupations (with 1-digit ISCO codes respectively 1–3 and 4–6), the likelihood of being a returnee is 0.6 percentage points lower than for low level occupations (those with 1-digit ISCO codes 7–9⁷). This stipulates that returnees compared to stayers are less likely to occupy medium and high level positions. At the same time, young return migrants in the returnee-migrant framework are positively selected with respect to occupational level. Hence, the occupational profiles of migrants are better in Estonia after return than while abroad. Similarly, returnees are more likely to be self-employed than migrants (in the young group the likelihood is 21.1 percentage points higher, in the total sample, 14.9 percentage points higher). These results are quite in line with evidence of occupational downshifting among CEE migrants; for example, individuals working in white-collar occupations in the home country take up blue-collar occupations in the host country (Masso et al., 2014).

These findings support evidence from previous studies on migrant underperformance in foreign labour markets, including Dahlstedt (2011), Nielsen (2011) and Joonas, Gupta, and Wadensjö (2014). In the total sample, the same pattern holds; however, the marginal effects are smaller (11.2 and 9.4 percentage points, respectively). This observation may result from a predominant mismatch of migrant skills and competencies and the positions occupied by them in foreign labour markets.

Hence, young return migrants significantly differ from both young non-migrants and non-return migrants. Within the returnee-stayer framework, the identified selection patterns of young Estonian return migrants are generally in line with earlier studies. Those include the findings of the ‘Re-Turn’ project presented by Schroth (2013), summarizing return migrants as mostly men, being well educated, predominantly employed in the service sector and relatively younger compared to non-migrants (the project involved six countries – Czech Republic, Germany, Hungary, Italy, Poland and Slovenia). Although this is not fully the case for returnee-migrant selection, as in this framework return migrants are more frequently women and generally older; however, young returnees are still better educated and mostly employed in the service sector than permanent migrants.

4.2. Evaluation of the wage premium for young return migrants

As outlined in Section 3, returns to temporary migration are evaluated in three areas. Our first research problem was to identify whether foreign labour market experience has an effect on the wage of young returnees in Estonia. In particular, we are interested in examining how the wage surplus of return migrants compared to stayers varies across age groups. [Table 3](#) presents the selected coefficients of the wage model (the full model is

Table 3. Wage premium to return migration (OLS regression of log of monthly wage).

Independent variables	All sample	15–35 years	Youth 15–24	Youth 25–35	36 years and more
Return migrant	0.072 (3.73)***	0.138 (4.65)***	0.154 (2.78)***	0.126 (3.63)***	0.039 (1.59)
Non-return migrant	0.774 (54.64)***	0.771 (35.24)***	0.856 (18.82)***	0.737 (29.53)***	0.771 (41.56)***
Gender (male = 1)	0.343 (70.30)***	0.335 (35.52)***	0.254 (12.05)***	0.355 (34.12)***	0.341 (60.02)***
Constant	4.260 (130.50)***	2.844 (15.02)***	0.096 (0.05)	3.407 (7.57)***	4.001 (48.08)***
Number of observations	48,569	13,046	3342	9704	35,523
R-squared adjusted	0.439	0.421	0.358	0.413	0.452

Notes: Dependent variable is logarithm of monthly wage. Regression model additionally controls for age, age squared, nationality, occupational and employment characteristics, education and time (years 2008–2013). Estimated based on EE-LFS panel data for years 2007–2013.

*Results significant at the 10% level.

**Results significant at the 5% level.

***Results significant at the 1% level.

presented in Table A3). In order to track the returnee wage premium with respect to age precisely, we report the results on both age groups 15–24, 25–35, and 36 years and above.

The results of the regression analysis based on the regular Mincer wage equation verified the existence of a positive wage premium for return migrants relative to stayers. Therefore, our results are in line with a set of previous empirical findings, including Hazans (2008), Iara (2010), and Radu and Martin (2012), revealing a positive wage premium to return in CEE countries. A statistically significant wage surplus was observed in the young group and the total sample. In particular, the estimate in the regression for the young group is twice greater than that for the total sample. Returnees aged 15–35 years are earning on average 13.8% more than stayers in the same age group, while in the full population of returnees (including both young and older cohorts) the premium is 7.2%. Consequently, the results suggest that for youth, return migration provides a higher wage premium after re-entering the domestic labour market than for the older age category. This implies that foreign work experience generates more added value for young returnees in Estonia. Further divisions of the youth cohort supported the previous conclusion and revealed a larger wage surplus in the youngest group (15.4%), while in the subsequent age interval (older youth) the estimated premium was almost 3 percentage points smaller.

Therefore, the wage benefit from solely employment-induced temporary mobility clearly decreases with the returnees' age: the youngest return migrants enjoy the highest wage premium. However, this result relates to the estimated educational profile of the returnees (see Table A1). Younger youth, when deciding to enter temporary work abroad, earn a higher salary compared to their peers who stayed in Estonia and were most likely enrolled in studies. However, already at the next age interval (25–34), the earlier wage benefit is partly offset, and that might possibly be related to the lower educational attainment in the older youth group. In other words, the young people's educational attainment might have been better if they had not worked temporarily abroad. A detailed study of that explanation would require more detailed data on young peoples' labour market trajectories.

Another notable result is a substantially larger return to migration than to return, as observed in Table 3. In the young cohort current migrants earn on average a 77.1%

higher wage than the average stayer from the same age group, while for the returnee the wage premium is only 13.8%. In the total sample, the gap in returns is even higher (77.4–7.2%). This finding is consistent with previous empirical evidence: return is driven by private and social reasons more than economic motives (Lang et al., 2012). The same line of argument is provided by Co et al. (2000) and Schmithals (2010), stressing that improvements in social life after return are accepted at a cost of income losses.

We next aim to analyse the detected positive wage premium to return through the factors that induce it in order to detect the pure effect of foreign labour market experience on the earning surplus. Therefore, the second line of analysis of the young returnees' wage premium provides an in-depth examination of the wage gap determinants. For that purpose we will apply the Oaxaca-Blinder decomposition of the earning gap between return migrants and stayers in two age categories (Oaxaca & Ransom, 1994). In order to profoundly analyse the wage gap determinants, we control for socio-demographic characteristics (age, gender, marital status, nationality and education) along with the effect of the characteristics of employment (occupation, industry of employment and employer's location). The reference group, represented by a constant term in our models, refers to ethnic Estonian single women with a basic level of education, occupying a low category position in small enterprises located in northern Estonia with the number of employees up to 10. Table 4 presents the results of the decomposition in two age cohorts (the full model, including estimates from separate equations for returnees and stayers, is available in appendix Table A4). Since the contribution of individual factors in explaining the wage premium varies across two subgroups of youth, Table A5 presents the results of the wage gap decomposition in three age cohorts.

The model shown in Table 4 reveals the higher unexplained wage differential in the total amount of the gap in the group of young returnees, compared to the older

Table 4. Oaxaca-Blinder decomposition of the wage gap between returnees and stayers in two age groups.

Factors	Returnees aged 15–35 years			Returnees aged 36 years and more		
	Gaps in ln(wage)			Gaps in ln(wage)		
	Explained	Unexplained	Total	Explained	Unexplained	Total
Age	–0.008	–0.0677	–0.0757	0.0284***	0.2621*	0.2905
Gender	0.0754***	–0.0779	–0.0025	0.0468***	0.0008	0.0476
Marital status	–0.0016	–0.0545	–0.0561	–0.0009	–0.1974**	–0.1983
Nationality	0.0009	0.0215	0.0224	–0.0095***	0.001	–0.0085
Education	–0.0005	–0.0836	–0.0841	–0.0060	0.0462	0.0402
Occupation	–0.0124	–0.0994**	–0.1118	–0.0252***	–0.0244	–0.0496
Industry	0.0128*	–0.004	0.0088	0.0092*	0.1134***	0.1226
Company's location	–0.0058*	–0.0112	–0.0170	–0.0001	0.0254	0.0253
Constant	0	0.4888**	0.4888	0	–0.251	–0.251
Total	0.06	0.11	0.17	0.04	–0.02	0.02

Notes: Decomposition was performed using grouped control variables. Marital status – married and widowed; nationality – non-Estonians with Estonian citizenship and non-Estonians without citizenship; education – secondary and higher; occupation – medium and high level occupations (ISCO categories from 6 to 4 and 1 to 3, respectively); industry of employment – construction, hotels, transport, education, other business services, public administration and health care sector; company's location – central, northeast, western and southern Estonia; company size – dummies for 11–19 employees, 50–199 employees, 200–499 employees and more than 500 employees. Estimated based on EE-LFS panel data for years 2007–2013.

*Results significant at the 10% level.

**Results significant at the 5% level.

***Results significant at the 1% level.

cohort, while the size of the overall wage gap is smaller for the latter cohort. This conclusion supports the results of the usual OLS regression reported in [Table 3](#). In particular, the young returnee wage gap constitutes 17% (6 points of the total 17% wage gap are explained), while in the older age group the earnings gap constitutes only 2%.

A detailed analysis showed that there are few statistically significant contributions from individual factors to explain the overall earning gap. The gap in gender and industry of employment favours young returnees (explains 7.5 and 1.3 points of the wage difference), which is quite natural, considering that return migrants are predominantly men (71.8% relative to 50.5% among stayers based on EE-LFS data, see [Table 2](#)). Taking into account that the average wage level of men is superior to that of women, they have a better earning profile compared to stayers of the same age cohort. This observation supports the conclusion of Barrett and O'Connell (2001) reporting a positive wage effect of return migration on men's wage, while for women little effect was found. However, this contradicts the case in Hungary and the findings of Co et al. (2000), who identified a positive wage premium only for female returnees.

The positive effect of employment industry in terms of explaining the wage gap may result from the fact observed from the raw data ([Table 2](#)). Returnees are more frequently employed in construction and other business services, while stayers have a higher frequency of employment in the public sector, mostly associated with lower wage rates.

In the older age cohort, the factor-wise contribution to the explained part of the earning gap is similar to the case of the young group, although more individual covariates are statistically significant. With respect to age, the explained part of the wage gap is enhanced by 2.8 points, favouring returnees. This finding is rather natural, as the average age of return migrants is lower than stayers ([Table 2](#)), and therefore, the earnings level is higher. Gender and industry contribute positively to the returnees' earnings level, as in the case of young returnees. However, factors like nationality and occupation disfavour returnees in terms of earnings within the older age group.

A more detailed look at the raw data reveals that in the older age category, the proportion of native Estonians experiencing temporary migration is smaller, compared to the respective group of stayers. Since higher salary rates are observed for ethnic Estonians (Leping & Toomet, 2008), the negative effect of the nationality variable is natural. The same conclusion applies to the effect of occupation: among stayers, the proportion of high-position employees is greater, resulting in superior wage rates as compared to returnees. Moreover, the occupational profiles may differ substantially across age groups. For young returnees, being more mobile, work abroad may be their first employment experience, while older temporary migrants may be driven by unsuccessful domestic labour market performance; that is, the decision to go abroad may arise due to unsuccessful employment in the home country.

The unexplained part of the wage gap dominates over the explained one for young return migrants, which is not the case for the older cohort. Apparently, the high share of unexplained returnee-stayer wage differential among youth, compared to the older age group, could result from an occupation-skill mismatch frequently faced by young people as the first workplace may not fully correspond to the individual's competencies. Given that the experience and competencies (so-called 'brain gain') accumulated or qualification loss ('brain drain') as a result of temporary labour migration cannot be explicitly measured, they are captured by the unexplained part of the wage differential. Therefore,

the larger unexplained wage premium fraction may imply a greater effect of unobservable factors related to individual competencies, skills acquired and/or developed while abroad on post-return earnings.

Hence, the results of the wage gap decomposition revealed that the effect of foreign work experience on the earnings level is not homogeneous with respect to returnee characteristics and differs significantly for young return migrants. As observed from the estimated model, the share of the unexplained wage difference among youth constitutes 65% of the total wage gap (6 percentage points of the overall 17% difference) after controlling for the major individual and employment characteristics. That considerably differs from the older cohort, which has a significantly smaller (2%) wage gap between return migrants and stayers. Therefore, decomposition estimates based on EE-LFS data revealed that in terms of earnings, returnees are gaining more from a foreign labour market experience at a young age. However, young stayers are favoured in terms of occupation compared to young returnees (unexplained gap with respect to occupation is -9.9 percentage points), implying that career mobility (occupational upgrading) may bring a higher reward for those young people who stayed on the Estonian labour market, supporting the conclusions of Masso et al. (2014).

The further separation of the youth group with respect to age (see [Table A5](#)) revealed a within-youth difference in the wage premium composition with respect to gender. In particular, the explained part of the wage differential showed that returnees are favoured with respect to age (0.08 out of a total 0.082 explained gap), while the unexplained fraction of the gap appeared with a negative sign (-0.131 from total 0.097 unexplained gap). A negative wage gap related to the gender variable implies that in the 25–35 age group, male return migrants, representing 78.2% of the total sample in the given age category (see [Table A1](#)), are disfavoured in terms of earnings compared to male stayers. Therefore, after re-entering the domestic labour market, male returnees have worse wage profiles compared to male stayers. This result could be interpreted in terms of the positive effect of temporary migration on reducing the wage disparity of young men and women, as for the latter, foreign labour market experience induces a higher wage level compared to female stayers. Return migration having smaller effects on men than women is particularly important in the Estonian context due to the remarkable gender pay gap, which at approximately 30%, is the highest at least among EU countries (see e.g. Anspal, 2015 for a recent overview and evidence on that issue).

The third line of the wage premium study aims to identify the dynamics of return to foreign labour market experience over time since re-migration. Our previous results have clearly shown a remarkable difference in young returnees in terms of individual characteristics, selection and wage profiles from the corresponding features of older-aged return migrants. Subsequently, the way positive return to re-migration appears and develops may vary across age. The model was estimated based on EPHC data with the wage variable derived from Estonian Tax Office data on individual payroll taxes (2006–2011). We analyse wage dynamics in two age groups separately (young and older age cohorts)⁸. The results are reported in [Table 5](#). The full model along with two supplementary robustness checks is available in [Table A6](#) in the appendix.

As can be seen from [Table 5](#), in the young cohort a positive statistically significant effect of temporary mobility appears after three years since return. While the wage coefficients in the first three years after returning are statistically insignificant, in the fourth year of

Table 5. Wage dynamics of young and older return migrants after return.

Time after return dummies	Sample aged 15–35	Sample aged 36 and more
Just returned	–0.054 (–1.35)	0.120 (2.53)**
Returned 1 year ago	0.015 (–0.62)	0.119 (3.15)***
Returned 2 years ago	0.002 (0.090)	0.075 (2.02)**
Returned 3 years ago	0.080 (3.46)***	0.071 (2.31)**
Returned 4 years ago	0.064 (2.80)***	0.011 (0.380)
Returned 5 years ago	0.083 (3.57)***	0.011 (0.40)
Number of observations	117,671	265,412
R-squared adjusted	0.235	0.240

Notes: Dependent variable is the logarithm of monthly wage. The model additionally controls for age, age squared, gender, nationality, education level, occupation and industry of employment. Estimated based on EPHC 2011 data with the wage variable derived from Estonian Tax Office data on individual payroll taxes.

*Results significant at the 10% level.

**Results significant at the 5% level.

***Results significant at the 1% level.

re-migration, the young returnee earns on average an 8% higher wage than a non-migrant of the same age group; furthermore, after five years the wage surplus is 8.3%. Remarkably, the wage dynamics pattern for older returnees differs considerably and displays negative dynamics over time. The wage premium of 12% immediately after return decreases after three years to almost half of the initial wage surplus (7.1%). Therefore, older returnees enjoy the highest return to re-migration straight after re-entering the domestic labour market, while for youth the benefit of foreign labour market experience develops with time.

Following the EPHC definition of return migrants, those returnees who came back more than five years ago are included in the stayers' population. Therefore, we provide additional robustness checks in order to verify that wage premium estimates are not affected by the loose reference category. The results of the wage rate dynamics based on the returnees' sample revealed that statistically significant wage growth could be seen only in sample of young individuals (see the first robustness check, [Table A6](#)). Namely, after five years since return, their wage rate is 17% higher compared to the wage level of returnees immediately after return.

The second robustness check ([Table A6](#)) revealed that wage rate changes are different across younger and older returnees within the return migrant sample. Older returnees command a higher wage rate (15.7%) immediately after return, compared to young returnees just after coming back. However, after two years since return there is no statistically significant wage gain for older returnees. Thus, the robustness checks verified that there are differences in wage premium dynamics for younger and older returnees, supporting the wage premium findings reported in [Table 5](#).

At first glance, it may seem surprising that the estimates of the young age influence on the return to the foreign market differ across the two data sets used in the analysis. However, if we consider that the sample of returnees based on the census data includes non-working migrants (students), it appears quite natural that in the older cohort the wage premium to return is higher. Students, who constitute a high proportion in the young age group, may have earning profiles lower than active labour market participants and

frequently experience their first employment with a non-correspondence of wage and actual competencies. In the older cohort the employed are usually better matched to their individual competencies in terms of earnings and occupations.

We admit that these estimates do not reflect the pure effect of temporary migration, as wage profiles with positive dynamics over time are quite natural for young people, due to their gradual integration into the labour market, and improving occupational choices. Moreover, considering that the broadly defined return migrant sample based on EPHC includes not only those working abroad but also respondents migrating for other reasons, it is more challenging to trace the wage dynamics induced solely by a foreign employment experience. Nevertheless, the model clearly shows that the benefit to return among youth develops differently, compared to the older age group, and therefore, domestic labour market performance and assimilation patterns among young returnees are considerably different from those detected among older adults.

5. Conclusions

As a topic of growing interest among researchers, temporary migration has been widely studied; however, it remains under-investigated in the context of young people. Labour market challenges and the particular nature of labour market integration for young people justify the necessity to explicitly analyse youth return migration. The paper aimed to fill this gap and investigate young return migrants on the Estonian labour market in terms of both their characteristics and post-migration performance. We specifically focused on the selection to return from non-migrants and current migrants and the wage benefit of foreign labour market experience.

Since the young returnee population is of major interest, it is studied in comparison with older return migrants at each stage of the research, in order to detect what characteristics are specific to youth relative to older returnees. Given the loose age definition of youth, we further split the broad age group into two subgroups and conduct the analysis separately for two age cohorts. By doing that we both ensure the robustness of the conclusions based on the joint age category and detect possible variations in estimates within the youth sample.

The selectivity to return analysis proves that young returnees are significantly different from both stayers and permanent migrants in the corresponding age group. Young return migrants are found to be mostly men with a higher education degree, predominantly employed in the service sector and relatively younger compared to those who have never worked abroad. However, the selection of returnees from current migrants shows different patterns with respect to various socio-economic characteristics. Namely, the effect of gender differs, implying that returnees are predominantly women and tend to re-enter the domestic labour market at an older age.

In terms of educational attainment, young returnees are more likely to hold a higher education degree than stayers. However, relative to permanent migrants, the significant effect of education and the bi-modal distribution pattern (positive selection on both lower and higher education) are only detected in total sample. The occupational profile of young returnees appeared to be generally worse compared to stayers, but much better relative to permanent migrants, coupled with evidence on educational selection,

this explains why young returnees less often report themselves as overeducated, compared to permanent migrants.

The analysis of the wage premium to return reveals a downward tendency over age, with the highest wage return found in the youngest subgroup (15–24 years). This result coupled with the evidence on educational profiles of returnees in different age cohorts may imply that the wage benefit in the youngest age group is later partly offset by losses in educational attainment relative to the returnees' peer-stayers.

The study of the wage premium from return migration is not limited to the estimation of its size. We also attempt to investigate its main determinants and dynamics after return. The results of an Oaxaca-Blinder decomposition reveal that the foreign labour market experience favours returnees unevenly across age groups. In terms of the overall wage differential, in the young group the fraction of the unexplained gap remains high. This reflects the considerable effect of factors not captured by our models, including the work experience and competencies gained while abroad. Therefore, the superior fraction of the unexplained wage gap may be evidence of the greater effect of unobserved foreign labour market experience among youth aged 15–35, while in the older cohort of returnees the role of the experience gained abroad is lower. The results on the divided youth category show that in the subgroup of men aged 25–35 years, returnees are disfavoured compared to stayers. This provides evidence of the positive effect of temporary migration on reducing the wage disparity of young men and women in the Estonian labour market.

Our results based on the EPHC data set reveal that the wage premium to return dynamics differ significantly across age groups. We find that a statistically significant positive premium for young returnees appears after three years since re-entering the domestic labour market. Moreover, the premium for foreign labour market experience grows during subsequent years. Whereas, older returnees enjoy the highest premium immediately after return and by the third year since return the premium is already approximately two times smaller and becomes statistically insignificant four years after returning. A set of additional robustness checks verify that wage premium dynamics indeed differ across young and older return migrants.

The results of the analysis based on the EE-LFS and EPHC data sets report different wage premium profiles for young returnees. Based on migration for purely employment reasons and the narrow definition applied under the EE-LFS data, young returnees earn a higher wage premium compared to the older age cohort, implying higher benefits from return migration in the young category. However, when using the broader employment-based definition of return migrants (based on the EPHC approach) instead of the narrow one (referred to in LFS data), the age effect on the wage premium differs. Therefore, when the returnee sample includes also those respondents staying abroad due to reasons other than employment, the return to these foreign stays will be lower for young people, relative to the older cohort.

These conclusions contribute to previous empirical findings regarding the post-return labour market performance of return migrants and reveal the main characteristics of labour market integration in the case of young returnees. Being an issue of increasing interest, return migration from the policy perspective should be addressed with respect to the major characteristics of returnees and their labour market assimilation profiles. Considering that young return migrants constitute a specific subgroup of the returnee population, they should be attracted to the host country economy due to significant potential

based on high education attainments accomplished with foreign market experience, mobility and employment flexibility.

The gender difference revealed in post-return labour market outcomes among 25–35 year old returnees can be of particular policy relevance, since it reveals the gender wage gap – a topical issue in the Estonian context – to be lowered as a result of temporary labour mobility. The benefit of return migration for the Estonian labour market in this respect is clear, as it reduces the scope of gender wage disparity particularly among youth. Therefore, facilitating the acceleration of the labour market integration of young returnees will enable them to fully realize their competencies, and therefore, provide benefit for the home country economy.

Notes

1. The terms ‘return migration’ and ‘temporary migration’ are used interchangeably in the paper.
2. However, the lower share of young males among the returnees in Census data could be due to the many individuals migrating due to non-employment reasons, like studies abroad. The latter includes mostly participants of higher education, and among higher education participants the share of females is rather high in Estonia (about two thirds in 2013 according to Statistics Estonia).
3. Additional EE-LFS based estimation of unemployment probability showed that young returnees have 7.8 percentage points higher unemployment likelihood compared to stayers from the same age cohort.
4. As an alternative to OLS regression, the wage premium analysis was done using propensity score matching. Additionally to basic set of covariates a proxy for an upper bound of labour market experience was included. The latter was approximated as a difference between observation and graduation years. Thus, we limit our sample to those respondents with graduation year recorded. We found similar results with OLS and propensity score matching procedures.
5. The model was estimated for 15–24 and 25–35 age subgroups separately. As similar selection patterns along age groups were identified, the results on the joint group are presented.
6. The share of returnees relative to stayers in 15–35 years age cohort is 1.1%. In the returnee-migrant sample share of returnees is 60.4%` in young cohort.
7. The 1-digit ISCO (International Classification for Occupations) codes are as follows: managers (1), professionals (2), technicians and associate professionals (3), clerical support workers (4), service and sales workers (5), skilled agricultural, forestry and fishery workers (6), craft and related trade workers (7), plant and machine operators and assemblers (8), elementary occupations (9).
8. The model was estimated in 15–24 and 25–35 years age subgroups separately. As similar selection patterns along age groups were identified the results on the joint youth group is presented.

Acknowledgements

The authors thank two anonymous reviewers for their useful comments and suggestions, Tiiu Paas for comments and suggestions on earlier drafts, Lucia Kurekova for guidance in the research and Mihails Hazans for information on the identification of return migrants in the labour force survey data. The authors also thank the participants of the 7th International Conference ‘Economic challenges in enlarged Europe’ in Tallinn, 14–16 June 2015, and the PhD summer school in Otepää, 3–6 August 2015, for their comments. The authors take sole responsibility for all errors and omissions.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by Eesti Teadusagentuur [grant number IUT20-49] and European Union Seventh Framework Programme [grant number 613256].

Notes on contributors

Jaan Masso works as Senior Research Fellow at the School of Economics and Business Administration of University of Tartu, Estonia. He received his Ph.D. from the University of Tartu in 2005. His main research areas are labour economics, international trade, foreign direct investments, innovation economics, and research policy.

Maryna Tverdostup is a Ph.D. student at the School of Economics and Business Administration of the University of Tartu since 2014. Her doctoral research covers issues of international labour migration and gender pay gap.

References

- Anspal, S. (2015). *Essay on gender wage inequality in the Estonian labour market* (PhD thesis in Economics). University of Tartu Press, University of Tartu, Dissertations Rerum Oeconomiarum Universitatis Tartuensium 55.
- Arnett, J. (2006). *Emerging adulthood: The winding road from the late teens through the twenties*. New York, NY: Oxford University Press.
- Arnett, J., & Hughes, M. (2012). *Adolescence and emerging adulthood: A cultural approach*. Harlow: Pearson.
- Barcevičius, E., Iglicka, K., Repečkaitė, D., & Žvalionytė, D. (2012). *Labour mobility within the EU: The impact of return migration*. EUROFOUND. Retrieved December 2, 2015, from <http://www.eurofound.europa.eu/publications/htmlfiles/ef1243.htm>
- Barrett, A., & O'Connell, P. (2001). Is there wage premium for returning Irish migrants? *The Economic and Social Review*, 32(1), 1–21.
- Borjas, G. (1987). Self-Selection and the earnings of immigrants. *American Economic Review*, 77, 531–553.
- Co, C. Y., Gang, I. N., & Yun, M.-S. (2000). Returns to returning. *Journal of Population Economics*, 13(1), 57–79.
- Dahlstedt, I. (2011). Occupational match. Over- and undereducation among immigrants in the Swedish labor market. *Journal of International Migration and Integration*, 12(3), 349–367.
- Dustmann, C., & Weiss, Y. (2007). Return migration: Theory and empirical evidence from the UK. *British Journal of Industrial Relations*, 45(2), 236–256.
- Galgóczy, B., Leschke, J., & Watt, A. (2012). *EU labour migration in troubled times: Skills mismatch, return and policy responses*. Aldershot: Ashgate Publishing.
- Hazans, M. (2008). *Post-enlargement return migrants' earnings premium: Evidence from Latvia*. University of Latvia. Retrieved December 2, 2015, from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1269728
- Hazans, M., & Philips, K. (2011). *The post-enlargement migration experience in the Baltic labor markets* (IZA Discussion Paper, No. 5878).
- Hirsch, B., Oberfichtner, M., & Schnabel, C. (2014). The levelling effect of product market competition on gender wage discrimination. *IZA Journal of Labor Economics*, 3(19), 14. doi:10.1186/s40172-014-0013-1
- Iara, A. (2010). Skill diffusion by temporary migration? returns to western european working experience in the EU accession countries. In R. E. B. Lucas, L. Squire, & T. N. Srinivasan (Eds.), *Global exchange and poverty: Trade, migration and investment*. Cheltenham: Edward Elgar.
- Joonas, P. A., Gupta, N. D., & Wadensjö, E. (2014). Overeducation among immigrants in Sweden: Incidence, wage effects and state dependence. *IZA Journal of Migration*, 3(9), 1–23.

- Kahanec, M., & Fabo, B. (2013). *Migration strategies of crisis-stricken youth in an enlarged European Union* (IZA Discussion Paper, No. 7285). Institute for the Study of Labor (IZA).
- Kahanec, M., & Kureková, L. M. (2014). *Did post-enlargement labor mobility help the EU to adjust during the great recession? The case of Slovakia* (IZA Discussion Paper, No. 8249). Institute for the Study of Labor (IZA).
- Kahanec, M., & Zimmermann, K. F. (2010). Migration in an enlarged EU: A challenging solution? *European Communities, Economic Papers* No. 363.
- Kauhanen, M., & Kangasniemi, M. (2013). Returns to return migration: Wage premium of Estonian return migrants from Finland. *Labour Institute for Economic Research* (Working Paper No. 290).
- Kew, J., Herrington, M., Litovsky, Y., & Gale, H. (2013). *GEM YBI youth report: The state of global youth entrepreneurship*. Retrieved June 6, 2014, from <http://www.gemconsortium.org/docs/download/2835>
- Lang, T., Hämmerling, A., Keil, J., Nadler, R., Schmidt, A., Haunstein, S., & Smoliner, S. (2012). *Re-turn migrant survey report: The migrants' potential and expectations*. Leibniz Institute for Regional Geography (IfL).
- Leping, K.-O., & Toomet, O. (2008). Emerging ethnic wage gap: Estonia during political and economic transition. *Journal of Comparative Economics*, 36(4), 599–619.
- Masso, J., Eamets, R., & Mõtsmees, P. (2014). Temporary migrants and occupational mobility: Evidence from the case of Estonia. *International Journal of Manpower*, 35(6), 753–775.
- Mincer, J. (1974). *Schooling, experience, and earnings*. New York, NY: National Bureau of Economic Research.
- Nielsen, C. P. (2011). Immigrant over-education: Evidence from Denmark. *Journal of Population Economics*, 24(2), 499–520.
- Oaxaca, R. L. (1973). Male-female wage differentials in urban labor markets. *International Economic Review*, 14(3), 693–709.
- Oaxaca, R. L., & Ransom, M. R. (1994). On discrimination and the decomposition of wage differentials. *Journal of Econometrics*, 61(1), 5–21.
- O'Reilly, J., Eichhorst, W., Gábos, A., Hadjivassiliou, K., Lain, D., Leschke, J., ... Villa, P. (2015). Five characteristics of youth unemployment in Europe. *SAGE Open*, 5(1), 1–19.
- Pettai, Ü, & Lelumees, E. (2013). *Estonian labour force survey. Methodology*. Statistics Estonia.
- Pungas, E., Toomet, O., Tammaru, T., & Anniste, K. (2012). *Are better educated migrants returning? Evidence from multi-dimensional education data* (Norface Migration Discussion paper No. 2012(18)).
- Radu, D., & Martin, R. (2012). Return migration: The experience of Eastern Europe. *International Migration*, 50(6), 109–128.
- Schmithals, J. (2010). Return migration to East Germany – motives and potentials for regional development. In T. Salzmann, B. Edmonston, & J. Raymer (Eds.), *Demographic aspects of migration* (pp. 281–301). Wiesbaden: VS-Verlag.
- Schroth, J. (2013). *Barriers for successful capitalization on returning migrants* (International Comparative Working Paper). Prague: IOM. Retrieved December 2, 2015, from http://www.iom.cz/files/331_International_Comparative_Working_Paper_on_Barriers_of_Return.PDF
- Smoliner, S., Förschner, M., Hochgerner, J., & Nová, J. (2012). Comparative report on re-migration trends in Central Europe. *Re-Turn, Centre for Social Innovation*, Vienna, 81. Retrieved December 2, 2015, from http://www.re-migrants.eu/download/311_Comparative_Report_on_Re_Migration_final_PP02.pdf
- SOPEMI. (2008). *International migration outlook 2008*. Paris: OECD.
- Tammaru, T., & Kontuly, T. (2011). Selectivity and destinations of ethnic minorities leaving the main gateway cities of Estonia. *Population, Space and Place*, 17(5), 674–688.
- Tammaru, T., & Kulu, H. (2003). The ethnic minorities of Estonia: Changing size, location, and composition. *Eurasian Geography and Economics*, 44(2), 105–120.
- Vadean, F., & Piracha, M. (2009). *Circular migration or permanent return: What determines different forms of migration?* (IZA Discussion Paper No. 4287).
- White, A. (2014). Polish return and double return migration. *Europe-Asia Studies*, 66(1), 25–49.
- Zaiceva, A., & Zimmermann, K. (2012). *Returning home at times of trouble? Return migration of EU enlargement migrants during the Crisis* (IZA Discussion Paper No. 7111).

Appendix

Table A1. Descriptive statistics of the Estonian Labour Force Survey data and Estonian Population and Housing Census data.

	Estonian Labour Force Survey (2007–2012 panel)											
	Return migrants				Stayers				Current migrants			
	15–35 years	15–24 years	25–35 years	>36 years	15–35 years	15–24 years	25–35 years	>36 years	15–35 years	15–24 years	25–35 years	>36 years
<i>Socio-demographic characteristics</i>												
Average age, years		41				45				39		
Gender (male = 1)		68.8	78.2	61.2	50.5	52.5	53.5	44.5	87.2	79.9	89.9	85.7
Nationality (Estonian = 1)	80	82.3	78.4	66.4	78.2	81.4	73.7	73	79.1	85.8	76.1	77.8
Citizenship (Estonian = 1)	92.3	95.4	90.3	79.7	91.5	94	87.9	84.3	94	97.2	92.6	88.2
Marrital status (married = 1)	39	16.7	56.7	77.5	30.8	10.3	63.7	75.4	48.9	20.1	59.8	81.1
Foreign language proficiency	93.6	97.3	93.3	87.5	91.3	93.3	89.9	85.2	96.8	96.6	96.9	95.2
<i>Education</i>												
Higher	13.9	5.2	21.5	18.9	14.2	5.2	28.5	21.9	10.3	3.9	13.4	8.4
Secondary	53.9	60.5	50.4	59.1	44.7	44.6	49.5	50.5	55.8	59.5	54.1	71.2
Lower	32.2	34.3	28.2	22	41.1	50.3	22	27.6	33.9	36.6	32.6	20.4
<i>Employment</i>												
Average wage, EUR	638.2	502.9	675.1	572.9	573.8	423.3	586.5	517.4	1251.8	1105	1323.1	1311.4
Employed	51.9	38.2	60.4	59.5	49.1	23.1	76.2	58.1	100	100	100	100
Unemployed	25.8	26.9	25.2	15.6	8.8	8.6	9	5	–	–	–	–
Inactive	22.3	35	14.4	24.9	42.1	68.3	14.9	36.9	–	–	–	–
<i>Occupation</i>												
White-collar	33.7	25.7	41	38.3	41.3	30.2	49	44.5	10.4	6.5	12.3	15
Blue-collar	66.4	74.3	59	61.7	58.7	69.8	51	55.6	89.6	93.5	87.7	85
Self-employed	3.1	–	5	5.3	3.1	0.6	5.6	5.2	1.5	0.9	1.7	3.7
No. of observations	582	247	335	843	29,770	15,189	14,581	106,009	794	219	575	1424

	Return migrants				Stayers			
	15–35 years	15–24 years	25–35 years	>36 years	15–35 years	15–24 years	25–35 years	>36 years
<i>Socio-demographic characteristics</i>								
Average age, years		32				37		
Gender (male = 1)	46.14	41.4	47.9	54.01	51.25	51.6	51	43.25
Nationality (Estonian = 1)	58.84	57.8	59.2	41.5	74.97	77.3	73	84.53
Citizenship (Estonian = 1)	64.38	66.7	67.6	49.71	91.04	93.2	89.2	93.33
Marrital status (married = 1)	28.79	9.8	35.9	49.51	16.62	3.1	28.2	48.68
Foreign language proficiency	93.73	93.9	93.7	79.92	85.6	88.4	83.1	76.01
<i>Education</i>								
Higher	44.08	21	52.7	41.79	21.24	7.4	33.2	22.47
Secondary	42.75	54.3	38.5	46.81	45.86	43.1	48.2	55.44
Lower	13.17	24.8	8.9	11.4	32.9	49.5	18.6	22.08
<i>Employment</i>								
Average wage, EUR	928.7	653.9	966.9	1082.4	781.6	546.9	841.8	777.9
Employed	60.12	39.2	67.9	55.27	54.15	31.9	73.3	55.78
Unemployed	9.99	10	10	7.75	8.77	8.7	8.8	5.14
Inactive	29.86	50.8	22	36.96	37.04	59.4	17.9	39.07
<i>Occupation</i>								
White-collar	51.93	32.2	59.3	43.39	37.41	20	52.4	37.3
Blue-collar	48.07	67.8	40.7	56.61	62.59	80	47.6	62.7
Self-employed	5.32	3.4	9.2	9.1	2.67	2.1	5.6	5.16
No. of observations	9398	2554	6844	5882	324,256	149,771	174,485	518,632

Table A2. Logit model for selection into migration, to return from stayers and current migrants.

Independent variables	Returnee stayer		Migrant stayer		Returnee migrant	
	All sample	Youth 15–35	All sample	Youth 15–35	All sample	Youth 15–35
Male	0.007 (7.25)***	0.015 (4.85)***	0.027 (11.94)***	0.03 (7.57)***	–0.050 (–2.43)**	–0.182 (–5.37)***
<i>Age 55–64 (base)</i>						
Age 15–24	0.006 (2.97)***	–	0.031 (8.93)***	–	–0.098 (–2.91)***	–
Age 15–25	0.006 (4.65)***	–	0.036 (12.4)***	–	–0.183 (–7.04)***	–
Age 15–26	0.006 (5.27)***	–	0.034 (11.91)***	–	–0.153 (–6.32)***	–
Age 15–27	0.004 (3.22)***	–	0.028 (9.66)***	–	–0.172 (–6.73)***	–
<i>Single (base)</i>						
Married	–0.003 (–2.71)***	–0.001 (–0.36)	–0.002 (–0.86)	–0.005 (–2.12)**	–0.021 (–1.00)	–0.069 (–2.47)**
Widowed	–0.001 (–0.60)	–0.002 (–0.17)	–0.01 (–2.42)	0.01 (1.12)	0.082 (2.14)**	–0.339 (–2.52)**
<i>Ethnic Estonian (base)</i>						
Non-Estonian citizen	0.001 (0.93)	–0.000 (–0.12)	0.002 (–0.78)	0.006 (–1.51)	0.018 (0.64)	0.003 (0.11)
Other non-Estonians	0.001 (0.92)	–0.003 (–0.67)	–0.018 (–6.27)***	–0.029 (–4.64)***	0.114 (4.11)***	0.063 (2.25)**
<i>Primary education (base)</i>						
Secondary education	0.000 (0.05)	0.003 (0.94)	0.004 (2.21)**	0.002 (0.77)	–0.062 (–3.36)***	–0.046 (–1.51)
Higher education	–0.001 (–0.47)	0.008 (1.78)*	0.001 (0.47)	0.012 (2.08)**	0.082 (3.06)***	0.040 (0.88)
<i>Qualification match (base)</i>						
Undereducated	–0.001 (–0.59)	–0.007 (–0.99)	–0.002 (–0.46)	–0.003 (–0.5)	–0.112 (–2.06)**	–0.215 (–2.28)**
Overeducated	0.005 (4.49)***	0.001 (0.28)	0.006 (2.55)**	0.007 (1.77)*	–0.094 (–3.36)***	–0.294 (–5.18)***
<i>Public services (base)</i>						
Construction	0.009 (8.61)***	0.016 (5.22)***	0.056 (30.11)***	0.07 (21.05)***	–0.167 (–9.07)***	–0.159 (–5.39)***
Energy	–0.004 (–0.94)	–	–0.033 (–2.37)**	0.02 (1.47)	0.051 (0.74)	–
Hotels	0.001 (0.41)	0.004 (0.72)	0.025 (5.42)***	0.039 (6.34)***	–0.137 (–2.96)***	–0.156 (–2.36)**
Transport	–0.002 (–1.29)	–0.010 (–1.83)*	0.034 (16.08)***	0.03 (6.4)***	–0.233 (–8.71)***	–0.247 (–4.34)***
Financial services	–0.008 (–1.46)	–	–0.011 (–0.79)	–0.047 (–1.35)	–0.109 (–0.80)	–
Education	0.003 (2.11)**	0.007 (1.25)	–0.009 (–1.47)	0.026 (2.67)***	0.076 (1.98)**	–0.055 (–0.80)
Other business services	–0.000 (–0.12)	0.009 (1.96)**	0.012 (3.03)***	0.002 (0.23)	–0.032 (–0.87)	0.139 (2.41)**
Public administration	0.000 (0.01)	0.009 (2.09)**	–0.029 (–4.13)***	–0.015 (–1.53)	0.159 (3.52)***	0.077 (1.23)
Health	0.002 (1.15)	0.014 (2.29)**	0.002 (0.34)	0.023 (2.11)**	–0.003 (–0.07)	–0.079 (–0.97)
<i>Low level occupation (base)</i>						
Medium level occupation	0.000 (0.04)	–0.006 (–1.73)*	–0.019 (–6.86)***	–0.024 (–5.23)***	0.092 (3.82)***	0.119 (2.83)***
High level occupation	–0.002 (–1.43)	–0.006 (–1.88)*	–0.036 (–13.9)***	–0.059 (–10.28)***	0.172 (7.98)***	0.227 (5.89)***
Self-employed	–0.002 (–1.25)	0.001 (0.11)	–0.036 (–9.27)***	–0.043 (–4.66)***	0.149 (4.18)***	0.211 (2.94)***
Number of obs.	72,832	13,920	57,364	22,278	2916	1017

(Continued)

Table A2. Continued.

Independent variables	Returnee stayer		Migrant stayer		Returnee migrant	
	All sample	Youth 15–35	All sample	Youth 15–35	All sample	Youth 15–35
Pseudo <i>R</i> -squared	0.062	0.069	0.238	0.231	0.161	0.154

Note: All regression models additionally control for current place of residence and year. Marginal effects are reported. Estimated based on EE-LFS panel data for years 2007–2013.

*Results significant at the 10% level.

**Results significant at the 5% level.

***Results significant at the 1% level.

Table A3. Wage premium to return migration (OLS regression of log of monthly wage).

Independent variables	All sample	15–35 years	Youth 15–24	Youth 25–35	36 years and more
Return migrant	0.072 (3.73)***	0.138 (4.65)***	0.154 (2.78)***	0.055 (2.41)**	0.039 –1.59
Non-return migrant	0.774 (54.64)***	0.771 (35.24)***	0.856 (18.82)***	0.785 (45.59)***	0.771 (41.56)***
Age	0.049 (40.02)***	0.126 (12.55)***	0.395 (4.07)***	0.082 (3.14)***	0.054 (17.20)***
Age squared	–0.001 (–44.04)***	–0.002 (–11.22)***	–0.008 (–3.56)***	–0.001 (–2.88)***	–0.001 (–21.03)***
Male	0.343 (70.30)***	0.335 (35.52)***	0.254 (12.05)***	0.336 (61.05)***	0.341 (60.02)***
<i>Ethnic Estonian (base)</i>					
Non-Estonian citizen	–0.098 (–13.70)***	–0.086 (–6.83)***	–0.005 (–0.23)	–0.095 (–11.63)***	–0.103 (–11.89)***
Other non-Estonians	–0.141 (–18.71)***	–0.096 (–5.99)***	–0.057 (–1.52)	–0.149 (–17.86)***	–0.156 (–18.22)***
Foreign owned company	0.139 (23.69)***	0.117 (11.19)***	0.076 (3.71)***	0.141 (21.04)***	0.15 (21.22)***
Permanent job contract	0.279 (16.04)***	0.225 (9.43)***	0.207 (5.75)***	0.292 (14.20)***	0.309 (12.41)***
Private owned company	0.038 (4.88)***	0.064 (3.23)***	0.072 (1.42)	0.037 (4.36)***	0.033 (3.85)***
<i>1–10 employees (base)</i>					
11–49 employees	0.145 (23.85)***	0.091 (7.78)***	0.059 (2.45)**	0.156 (22.94)***	0.167 (23.72)***
50–199 employees	0.231 (34.75)***	0.175 (13.61)***	0.177 (6.25)***	0.245 (32.74)***	0.253 (32.79)***
200–499 employees	0.281 (31.25)***	0.223 (13.31)***	0.177 (4.64)***	0.295 (28.69)***	0.303 (28.57)***
More than 500 employees	0.293 (29.08)***	0.251 (13.51)***	0.215 (5.43)***	0.304 (26.48)***	0.314 (26.16)***
Construction	0.173 (21.14)***	0.171 (11.98)***	0.156 (5.15)***	0.167 (17.63)***	0.166 (16.71)***
Energy	0.033 (2.18)**	0.081 (2.07)**	0.111 (1.11)	0.032 (1.99)**	0.028 (1.74)*
Hotels	–0.027 (–2.10)**	–0.034 (–1.69)*	–0.071 (–2.22)**	–0.02 (–1.37)	–0.008 (–0.46)
Transport	0.15 (19.91)***	0.108 (7.42)***	0.095 (2.82)***	0.161 (18.95)***	0.169 (19.18)***
Financial services	0.192 (9.95)***	0.166 (6.16)***	0.106 (1.32)	0.199 (7.82)***	0.212 (7.99)***
Education	–0.118 (–11.99)***	–0.203 (–7.71)***	–0.275 (–3.75)***	–0.113 (–10.62)***	–0.114 (–10.74)***
Other business services	–0.106 (–9.05)***	–0.029 (–1.41)	–0.139 (–3.40)***	–0.137 (–10.25)***	–0.133 (–9.44)***
Public administration	0.113 (10.45)***	0.163 (7.03)***	0.174 (2.55)**	0.101 (8.24)***	0.093 (7.51)***

(Continued)

Table A3. Continued.

Independent variables	All sample	15–35 years	Youth 15–24	Youth 25–35	36 years and more
Health	0.002 (0.21)	−0.115 (−4.22)***	−0.141 (−2.11)**	0.019 (1.68)*	0.023 (2.08)**
<i>Low level occupation (base)</i>					
Medium level occupation	0.035 (5.85)***	0.019 (1.65)*	0.027 (1.12)	0.038 (5.62)***	0.04 (5.71)***
High level occupation	0.321 (53.01)***	0.272 (21.39)***	0.243 (7.30)***	0.329 (48.47)***	0.333 (48.36)***
<i>Primary education</i>					
Secondary education	0.064 (11.11)***	0.068 (7.79)***	0.066 (4.39)***	0.058 (5.64)***	0.059 (9.91)***
Higher education	0.29 (36.87)***	0.274 (21.43)***	0.199 (7.32)***	0.264 (18.37)***	0.291 (36.20)***
Currently studying	−0.122 (−10.76)***	−0.116 (−8.55)***	−0.216 (−9.65)***	−0.153 (−10.42)***	−0.017 (−0.87)
Self-education	0.076 (14.31)***	0.029 (2.94)***	−0.012 (−0.57)	0.086 (14.11)***	0.095 (15.18)***
Constant	4.26 (130.50)***	2.844 (15.02)***	0.096 (−0.05)	4.167 (111.27)***	4.001 (48.08)***
Number of obs.	48,569	13,046	3,342	38,865	35,523
R-squared adjusted	0.439	0.421	0.358	0.44	0.452

Notes: Dependent variable is logarithm of monthly wage. Regression model includes additionally year dummies 2008–2013. Estimated based on EE-LFS panel data for years 2007–2013.

*Results significant at the 10% level.

**Results significant at the 5% level.

***Results significant at the 1% level.

Table A4. Oaxaca-Blinder decomposition of the wage gap between returnees and stayers in two age groups.

Have worked abroad	Age 15–35		Age more than 36	
	Yes	No	Yes	No
Age	0.0167**	0.0191***	−0.0084***	−0.0137***
Gender (male = 1)	0.2195**	0.3612***	0.3413***	0.3396***
Married	0.0186	0.1296***	−0.1277	0.0875***
Widowed	0.2666	0.0775***	−0.1366	0.0629***
Non-Estonian (citizen)	−0.0494	−0.0736***	0.0054	−0.0654***
Non-Estonian (non-citizen)	0.1424	−0.0923***	−0.1751**	−0.1216***
Secondary education	0.0929	0.1009***	0.1523**	0.0844***
Higher education	0.0264	0.3409***	0.3909***	0.3641***
Medium level occupation	−0.2288**	−0.0036	−0.0322	0.0112
High level occupation	0.1323	0.2561***	0.2913***	0.3318***
Industry				
Agriculture	−0.4076***	−0.0786***	0.2901***	−0.0228
Construction	0.0022	0.0836***	0.425***	0.0383***
Hotels	0.0568	−0.1192***	0.2216	−0.1125***
Transport	−0.1702	0.0966***	0.46***	0.1383***
Education	0.0971	−0.3172***	−0.0921	−0.1766***
Other business services	−0.0617	−0.1048***	−0.3907***	−0.264***
Public administration	0.2808**	0.1045***	0.036	0.0507***
Health care	−0.2701	−0.1303***	0.3029**	−0.004
Firm's location				
Central Estonia	−0.2064**	−0.0679***	0.06895	−0.0578***
North-East Estonia	−0.1393	−0.1129***	−0.1014	−0.0746***
Western Estonia	−0.1792*	−0.1058***	0.019	−0.0733***
Southern Estonia	−0.0219	−0.0837***	−0.0998	−0.0974***
Constant	5.7186***	5.2297***	6.1519***	6.4029***
Number of observations		10,803		29,308

(Continued)

Table A4. Continued.

Factors	Gaps in ln(wage)			Gaps in ln(wage)		
	Explained	Unexplained	Total	Explained	Unexplained	Total
Age	-0.008	-0.0677	-0.0757	0.0284***	0.2621*	0.2905
Gender	0.0754***	-0.0779	-0.0025	0.0468***	0.0008	0.0476
Marital status	-0.0016	-0.0545	-0.0561	-0.0009	-0.1974**	-0.1983
Nationality	0.0009	0.0215	0.0224	-0.0095***	0.001	-0.0085
Education	-0.0005	-0.0836	-0.0841	-0.0060	0.0462	0.0402
Occupation	-0.0124	-0.0994**	-0.1118	-0.0252***	-0.0244	-0.0496
Industry	0.0128*	-0.004	0.0088	0.0092*	0.1134***	0.1226
Company's location	-0.0058*	-0.0112	-0.0170	-0.0001	0.0254	0.0253
Constant	0	0.4888**	0.4888	0	-0.251	-0.251
Total	0.06	0.11	0.17	0.04	-0.02	0.02

Notes: Decomposition was performed by the grouped control variables. Marital status – married and widowed; nationality – non-Estonians with Estonian citizenship and non-Estonians without citizenship; education – secondary and higher; occupation – medium and high level occupations (ISCO categories from 6 to 4 and 1 to 3, respectively); industry of employment – construction, hotels, transport, education, other business services, public administration and health care sector; company's location – central, northeast, western and southern Estonia; company size – dummies for 11–19 employees, 50–199 employees, 200–499 employees and more than 500 employees. Estimated based on EE-LFS panel data for years 2007–2013.

*Results significant at the 10% level.

**Results significant at the 5% level.

***Results significant at the 1% level.

Table A5. Oaxaca-Blinder decomposition of the wage gap between returnees and stayers in three age groups.

Have worked abroad	Age 15–24		Age 25–35		Age more than 36	
	Yes	No	Yes	No	Yes	No
Age	0.084**	0.077***	-0.002***	0.008***	-0.0084***	-0.0137***
Gender (male = 1)	0.230	0.308**	0.186	0.355**	0.3413***	0.3396***
Married	-0.026	0.132**	-0.046*	0.118**	-0.1277	0.0875***
Widowed	0.127	0.774	0.441	0.060**	-0.1366	0.0629***
Non-Estonian (citizen)	-0.124	-0.016 **	-0.084	0.100**	0.0054	-0.0654***
Non-Estonian (non-citizen)	-0.048	-0.049**	0.191	-0.104**	-0.1751**	-0.1216***
Secondary education	0.055	0.087**	0.050*	0.079**	0.1523**	0.0844***
Higher education	-0.217	0.220**	0.063	0.305**	0.3909***	0.3641***
Medium level occupation	-0.041	-0.039**	-0.082	0.013**	-0.0322	0.0112
High level occupation	0.218	0.132**	0.063	0.288**	0.2913***	0.3318***
Industry						
Construction	0.191	0.064**	0.063*	0.101**	0.425***	0.0383***
Hotels	0.108	-0.144**	-	-0.073**	0.2216	-0.1125***
Transport	-0.130	0.010**	-0.102	0.106**	0.46***	0.1383***
Education	-0.058	-0.383*	0.262	-0.285**	-0.0921	-0.1766***
Other business services	-0.515	-0.199**	0.175	-0.061**	-0.3907***	-0.264***
Public administration	-0.150	0.112*	0.452	0.109**	0.036	0.0507***
Health care	-0.693	-0.065*	0.087	-0.150**	0.3029**	-0.004
Firm's location						
Central Estonia	-0.438	-0.027**	-0.118*	-0.093**	0.06895	-0.0578***
North-East Estonia	-0.389	-0.143**	-0.149	-0.109**	-0.1014	-0.0746***
Western Estonia	-0.349	-0.058**	-0.105	-0.123**	0.019	-0.0733***
Southern Estonia	0.0135	-0.069**	0.050*	-0.093**	-0.0998	-0.0974***
Constant	4.194	4.003	6.260	5.602	6.1519***	6.4029***
Number of observations	2923	7880	29,308			

(Continued)

Table A5. Continued.

Factors	Age 15–24			Age 25–35			Age more than 36		
	Gaps in ln(wage)			Gaps in ln(wage)			Gaps in ln(wage)		
	Explained	Unexplained	Total	Explained	Unexplained	Total	Explained	Unexplained	Total
Age	0.037***	0.152	0.189	–0.003	–0.274	–0.277	0.0284***	0.2621*	0.2905
Gender	0.053***	–0.056	–0.003	0.080***	–0.131**	–0.051	0.0468***	0.0008	0.0476
Marital status	0.013	–0.052	–0.039	–0.002	–0.096*	–0.098	–0.0009	–0.1974**	–0.1983
Nationality	0.003	–0.012	–0.009	–0.002	0.025	0.023	–0.0095***	0.001	–0.0085
Education	–0.001	–0.067	–0.068	0.003	–0.092	–0.089	–0.0060	0.0462	0.0402
Occupation	–0.010	0.012	0.002	–0.008	–0.112***	–0.120	–0.0252***	–0.0244	–0.0496
Industry	0.005	–0.011	–0.006	0.019	0.088*	0.107	0.0092*	0.1134***	0.1226
Company's location	–0.004	–0.092	–0.096	–0.004	0.031	0.027	–0.0001	0.0254	0.0253
Constant	0	0.191	0.191	0.000	0.658**	0.658	0	–0.251	–0.251
Total	0.096	0.065	0.161	0.082	0.097	0.179	0.04	–0.02	0.02

Notes: Decomposition was performed by the grouped control variables. Marital status – married and widowed; nationality – non-Estonians with Estonian citizenship and non-Estonians without citizenship; education – secondary and higher; occupation – medium and high level occupations (ISCO categories from 6 to 4 and 1 to 3, respectively); industry of employment – construction, hotels, transport, education, other business services, public administration and health care sector; company's location – central, northeast, western and southern Estonia; company size – dummies for 11–19 employees, 50–199 employees, 200–499 employees and more than 500 employees. Estimated based on EE-LFS panel data for years 2007–2013.

*Results significant at the 10% level.

**Results significant at the 5% level.

***Results significant at the 1% level.

Table A6. Wage dynamics of young and older return migrants after return.

Wage premium to return migration (sample of returnees and stayers)		
Time after return dummies	Sample aged 15–35	Sample aged 36 and more
Just returned	–0.054 (–1.35)	0.120 (2.53)**
Returned 1 year ago	0.015 (–0.62)	0.119 (3.15)***
Returned 2 years ago	0.002 (0.090)	0.075 (2.02)**
Returned 3 years ago	0.080 (3.46)***	0.071 (2.31)**
Returned 4 years ago	0.064 (2.80)***	0.011 (0.380)
Returned 5 years ago	0.083 (3.57)***	0.011 (0.40)
Number of observations	117,671	265,412
R-squared adjusted	0.235	0.240

Robustness check 1: returnees' wage dynamics with a time after return (sample of returnees solely)

Time after return dummies	Total sample	Sample aged 15–35	Sample aged 36 and more
Just after return (base)			
Returned 1 year ago	0.023 (0.53)	0.074 (1.40)	–0.038 (–0.48)
Returned 2 years ago	0.017 (0.38)	0.073 (1.37)	–0.075 (–0.95)
Returned 3 years ago	0.066 (1.55)	0.145 (2.77)***	–0.067 (–0.90)
Returned 4 years ago	0.054 (1.27)	0.141 (2.71)***	–0.104 (–1.40)
Returned 5 years ago	0.068 (1.58)	0.170 (3.22)***	–0.108 (–1.47)
Number of observations	4227	2683	1544
R-squared adjusted	0.216	0.201	0.251

(Continued)

Table A6. Continued.

Robustness check 2: comparison of wage dynamics after return across younger and older returnees (sample of returnees solely)		
Independent variables	Coefficient	<i>t</i> -statistics
Just returned # Young returnee (base)		
Returned 1 year ago # Young returnee	0.071	(1.27)
Returned 2 years ago # Young returnee	0.078	(1.38)
Returned 3 years ago # Young returnee	0.154	(2.79)***
Returned 4 years ago # Young returnee	0.156	(2.83)***
Returned 5 years ago # Young returnee	0.187	(3.36)***
Just returned # Older returnee	0.157	(1.92)**
Returned 1 year ago # Older returnee	0.137	(1.85)***
Returned 2 years ago # Older returnee	0.094	(1.28)
Returned 3 years ago # Older returnee	0.093	(1.34)
Returned 4 years ago # Older returnee	0.054	(0.78)
Returned 5 years ago # Older returnee	0.049	(0.73)
Number of observations	4227	
<i>R</i> -squared adjusted	0.219	

Notes: Dependent variable is logarithm of monthly wage. Estimated based on EPHC 2011 data with the wage variable derived from Estonian Tax Office data on individuals' payroll taxes. All models additionally control for age, age squared, gender, nationality, education, occupation and industry of employment variables.

*Results significant at the 10% level.

**Results significant at the 5% level.

***Results significant at the 1% level.