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## Article

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# Internal labour market mobility in 2005–2014 in Latvia: the micro data approach

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## ABSTRACT

Based on labour force survey micro data for 2005–2014 this research evaluates labour market internal mobility in Latvia comparing periods before, during and after the crisis. We also provide the comparison of Latvia's situation with other euro area countries, which is of particular interest since labour flow statistics for Latvia are not present in major reports on the European labour market. Labour flow estimates and the survival analysis indicate that labour market in Latvia is internally mobile; it accelerated economic recovery after the crisis and is enhancing Latvia's ability to adjust quickly to internal and external shocks. The flexibility of contract options and working hours, serve as a labour market mobility boosting mechanism. The survival analysis indicates that the flows from/to employment to/from unemployment in Latvia are determined by the characteristics of particular worker groups and the performance of particular sectors of the economy.

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Labour mobility; labour demand; unemployment; labour force survey

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## 1. Introduction

During the last decade, Latvia experienced a boom-bust cycle followed by economic recovery. Economic overheating based on fast income convergence since 2004 was further enhanced by pro-cyclical expansionary fiscal policy, inflows from the European Union (EU) structural funds and emigration (see Aslund & Dombrovskis, 2011). As the global financial crisis started, internal imbalances became increasingly visible, materializing as a bursting domestic housing bubble at the end of 2008; the slump of global demand, in turn, had deteriorated exporting opportunities. The mix of these factors has determined the depth of the economic slowdown: Latvia lost 20% of its GDP during 2008–2010, which was the biggest slowdown in the EU. By keeping the exchange rate peg, Latvia restored competitiveness through internal adjustments, that is, wage cuts and labour force restructuring. Restored competitiveness together with improved internal demand led to the recovery of economic growth within 4–5% per year in 2011–2013.

When evaluating labour market flexibility one should take into account both micro and macro level (Eamets, 2013; Eamets & Paas, 2007). At the macro level, flexibility is

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determined by institutional characteristics and the flexibility of wages; at the micro level, flexibility is indicated by mobility of labour across different labour market states, regions and professional statuses.<sup>1</sup>

In this paper we focus on internal mobility of labour, that is, changes affecting different labour force states (employed, unemployed or economically inactive, that is, those that were not employed or did not look for a job actively), types of job contracts, sectors and regions in Latvia. Therefore, the purpose of this research is to evaluate internal mobility of labour force and factors determining probability of losing or finding job in Latvia in 2005–2014.

Similar to other Baltic countries, the labour market in Latvia is rather flexible and characterized by swift changes in wages, employment rates and working hours during the crisis. According to Fadejeva and Krasnopjorovs (2015), one-third of firms reduced wages and altered the employment structure during 2008–2009.<sup>2</sup> This remarkable flexibility is enhanced by the low level of collective bargaining (e.g. the trade union density (16%) and collective bargaining rates (20%) in Latvia are among the lowest in the EU<sup>3</sup>) and an imperfect implementation of the quite rigid employment protection legislation (EPL) (Eamets & Masso, 2005; OECD, 2013). This research explores the second component of labour market flexibility in Latvia, that is, internal labour market mobility, comparing the situation before, during and after the economic crisis. It combines the labour flow analysis and the survival analysis to give an in-depth overview of determinants and changes in labour mobility in Latvia in 2005–2014. Mobility (both internal and external) of labour helps retrieve equilibrium in the economy without introducing changes in wages. A previously done research about labour market flexibility in Latvia (Zasova & Melihovs, 2005) concludes that the institutional environment in Latvia does not impose any significant burden on absorbing different economic shocks through the labour market and, in general, the labour market flexibility in Latvia is higher than in some other analysed EU member states. This topic was also explored by Hazans (2007) who used labour force survey (LFS) data of 2002–2005; the results suggest that during this period the labour market flexibility in Latvia improved significantly due to both an increase in external mobility (after joining the EU) and economic growth contributing to labour market changes.

There are research papers that specifically focus on labour mobility within the EU after its enlargement, (see e.g. Ester & Fouarge, 2007; Fic, Holland, Paluchowski, Rincon-Aznar, & Stokes, 2011). Paci, Tiongson, Walewski, and Liwinski (2010) explore internal labour mobility in central Europe and in the Baltic States using LFS data for 2004. Geographical labour force mobility in Latvia has been investigated by the Ministry of Welfare of the Republic of Latvia (2007a) focusing both on external and internal migration. The emigration problem has likewise been studied in great detail by Hazans and Philips (2011) and Hazans (2007).

Since the late 1980s, labour market research has increasingly focused on the dynamics of the labour market as opposed to stock characteristics (Artola & Bell, 1999). There is a relatively long tradition of the labour market flow research (e.g. Pissarides, Layard, & Hellwig, 1986; Blanchard & Diamond, 1992). An ideal data source for this type of research would be a special database on labour market flows like the experimental statistics on labour market flows developed by the UK Office for National Statistics based on work by Jenkins and Chandler (2010). Since such databases are not always available, researchers use LFS data as the source of information for household members' economic activity. For example, recent analyses for the euro area countries (EA) using LFS data are presented in

the reports of the European Central Bank (see ECB report, 2012, 2014, 2015), Masso and Krillo (2011), Eamets (2013) and Merikull (2011) for Estonia, Gomes (2012) for the United Kingdom, Casado, Fernandez-Vidaurreta, and Jimeno (2012) for 11 EU countries and Ward-Warmedinger and Macchiarelli (2013) for 23 EU countries. In the analysis herein, the Latvian LFS micro data, covering the period from 2005 to 2014, are used.

There are also labour mobility research papers using other data sources. Thus, for instance, in the analysis of the US labour and job flows Davis and Haltiwanger (1998) use administrative data on individual worker and employer histories maintained by unemployment insurance systems; Flek and Mysikova (2012) apply longitudinal monthly data of the EU statistics on income and living conditions (EU-SILC) database for comparative labour flow analysis in Central Europe. Another potential source of data is the EURES website, which collects job vacancies across the EU countries in a standardized platform. Its particular utility could potentially lie in enabling cross-country comparisons, which could inform policy-makers at the national and EU level (Kureková, Beblavý, Haita, & Thum, 2013).

The analysis of determinants of individual labour market transitions from/to employment, unemployment or inactivity is often carried out by means of survival analysis or logistic panel regression. Merikull (2011) investigated how the duration of unemployment and employment spells depends on personal characteristics in Estonia, applying a semi-parametric Cox proportional hazard model. Kuhlenkasper, Steinhard and Friedrich (2011) applied a dynamic hazard model in their research of the factors influencing the duration of unemployment in Germany. In the case of Latvia, using LFS data for 2002, Hazans (2005a) studied the main factors associated with the transition from jobs to unemployment and non-participation by applying a multinomial logistic regression model. In this research, we apply the survival analysis to LFS monthly data and study the probability of economic status change from/to employment and unemployment comparing periods before, during and after the crisis.

## 2. Data and labour flow constructing methodology

LFS data in Latvia are collected by the Central Statistical Bureau of Latvia. Similarly to other European countries, the rotating panel method is used. Data cover the period from 2005 to 2014 and are collected at the household level about people in the age group from 15 to 74 (the sample includes around 10,000 households prior 2007, around 30,000 per year afterwards). During 2005–2006, households were interviewed 3 times, with a 26 week interval. Starting with 2007, there are 4 interviews with the intervals of 13, 39 and 13 weeks.

The usual first step to obtain labour flow data from an LFS is the construction of longitudinal data by matching records of economic activity (e.g. employed, unemployed or inactive) for the same individual across a number of consecutive interviews. Usually, an LFS contains two blocks of questions, that is, about the current period and those providing retrospective information. Retrospective information tends to be concentrated in two distinct types of questions: those relating to the duration of employment or unemployment and those referring to an individual's labour market status one year ago. The most widespread approach to calculate labour market flows is to compare the current economic activity status (estimated by the interviewer) with the retrospective information about the status one year ago (provided by the interviewee), thus obtaining labour flow data

over a 12-month period (see, e.g. Eamets, 2013; Elsby, Smith, & Wadsworth, 2011; Hazans, 2005a; Merikull, 2011; Ward-Warmedinger & Macchiarelli, 2013).

There are several potential pitfalls with this approach, as was discussed in detail by Artola and Bell (1999). One of the most important problems is inconsistency in classification of the economic status of household members. For example, labour market status is typically self-reported by individuals in the retrospective part of the questionnaire; current labour market status, on the other hand, is assigned by the interviewer on the basis of the interviewee's responses to a series of questions regarding his/her labour market activity in the current period. As was shown in Artola and Bell (1999), since the retrospective part of questions contains no information with respect to the job search activity (both its quality and extent), it is very hard to evaluate the correctness of self-evaluation, and, therefore, estimated flow data are most probably biased.

Another disadvantage of yearly labour market flows is a long (12-month) gap between observations. By construction, changes in the economic activity of interviewee that happened within one year are excluded from the analysis. Therefore, the duration and frequency of flow changes can be undervalued. Also, for policy measure or economic shock transmission evaluation, it is preferable to use short-term labour flow changes in order to assess the immediate effect on the labour market.

Taking into account the problems above, we use labour market statuses assigned by the interviewer (as was done in ECB report (2012, 2014, 2015) and Gomes, 2012). Thus, labour flows are calculated from the panel data that include only economic activity statuses for the dates of interview (where they are automatically assigned on the basis of a set of questions and, therefore, are more plausible). All flow statistics are estimated using unconditional probabilities of status change between the interview dates.

Aggregation of obtained flow statistics is not straightforward. LFS data are provided together with quarterly and yearly weights, and this allows the aggregation of stock values, that is, to calculate the unemployment rate or the number of economically active people. In order to work with flows, it would be ideal to have specially estimated flow weights. Since in the case of Latvia flow weights are not available, we use stock weights from the first of the two observations that make a flow.

### 3. Labour flow analysis

The labour market can be characterized by allocation of jobs and workers between sectors, regions and types of employment. As discussed in Davis and Haltiwanger (1998), the concepts of job and worker flows are linked, but do not overlap directly. Job flows reflect the job creation and job destruction processes controlled by the employer, and, therefore, represent the demand for labour force. Whereas worker flows reflect changes in the economic activity (employment, unemployment and inactivity) and a change of employer (job-to-job movement), region, sector or type of work. Thus, a worker flow combines the effects of both demand (e.g. personnel reduction due to firm's bankruptcy or other reasons based on employer's choice) and supply (e.g. change of employer due to personal reasons) of labour force.

A discussion is going on in the literature about the main driver of recessions, whether it is hiring (job-finding) or separation (job loss) rates. The pioneering work on labour market flows in the US by Blanchard and Diamond (1992) states that recession is driven by

separation rates. A contradicting view is presented by Hall (2006) and Shimer (2012). Using the US data, they show that the job-finding probability is strongly pro-cyclical and thus unemployment rises because jobs become more difficult to find. In the next section, we will construct hiring and separation rates for Latvia and compare the obtained results with the existing literature about European countries.

### 3.1. Hiring and separation rates

Worker mobility can be characterized by several measures, separation and hiring rates among them. We follow the notation used in Haltiwanger and Vodopivec (2002) and Merikull (2011), and define the separation rate as a share of people employed one period ago ( $E_{t-1}$ ) who separated from their employer either by entering unemployment ( $E_{t-1}$ -to- $U_t$ ) or inactivity ( $E_{t-1}$ -to- $I_t$ ) or due to finding a new employer ( $E_{new,t}$ ).

$$\text{Separation rate} = (E_{t-1} \text{ to } U_t + E_{t-1} \text{ to } I_t + E_{new,t})/E_{t-1}. \quad (1)$$

The hiring rate is defined as the ratio of people who found a job and previously were either unemployed ( $U_{t-1}$ -to- $E_t$ ) or inactive ( $I_{t-1}$ -to- $E_t$ ), or worked with another employer ( $E_{new,t}$ ), to the number of people who were employed one period ago ( $E_{t-1}$ ).

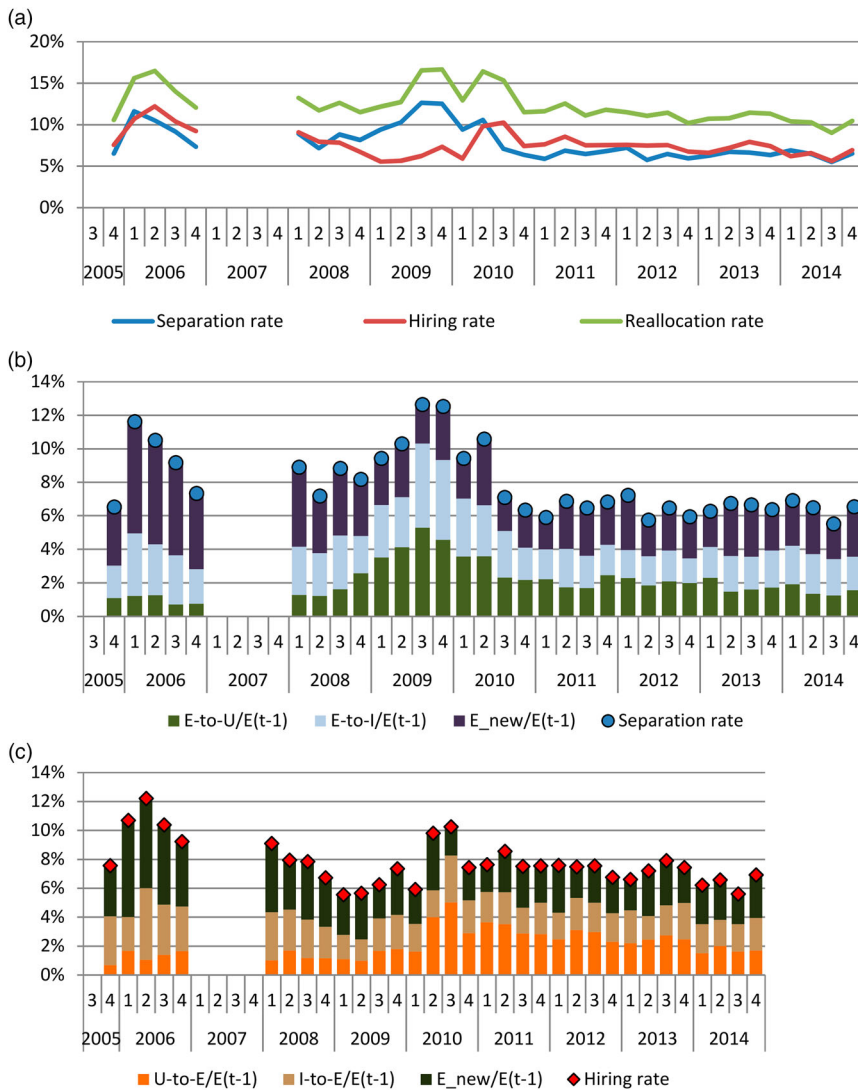
$$\text{Hiring rate} = (U_{t-1} \text{ to } E_t + I_{t-1} \text{ to } E_t + E_{new,t})/E_{t-1}. \quad (2)$$

The reallocation rate is defined as the ratio of people who moved from and to employment ( $E_{t-1}$ -to- $I_t$ ,  $E_{t-1}$ -to- $U_t$ ,  $U_{t-1}$ -to- $E_t$ ,  $I_{t-1}$ -to- $E_t$ ,  $E_{new,t}$ ), to the number of people who were employed one period ago ( $E_{t-1}$ ).

$$\text{Reallocation rate} = (E_{t-1} \text{ to } I_t + E_{t-1} \text{ to } U_t + U_{t-1} \text{ to } E_t + I_{t-1} \text{ to } E_t + E_{new,t})/E_{t-1}. \quad (3)$$

During 2005–2007, Latvia's economy was growing fast, the GDP annual growth exceeded 9%, and the demand for labour was high; all these developments determined a relatively low level of unemployment (9.6% in 2005 and 7.3–6.5% in 2006–2007). These conditions were favourable for those who wanted to change job or to seek better career opportunities by changing employer, which is indeed depicted by high reallocation rate during this period (see Figure 1). In 2006, the ratio of people who moved to and from employment was around 15% of the employed in the previous quarter. During the crisis and post-crisis years (2009 and 2010, respectively), the reallocation rate returned to 15% level (from 12% in 2007–2008). This happened due to increased flows into unemployment and inactivity in 2009 and due to recovery of employment opportunities and reallocation from unemployment to employment in 2010.

The quarterly separation rate during this period (2005–2007) was around 8% of previously employed. The structure of separation rate shows that more than 50% of these separations were due to job-to-job flows of employees. The hiring rate exceeded the separation rate by 1–2 percentage points indicating the economic growth. Interestingly, the structure of both separation and hiring rates shows that during the boom years the share of flows to/from the inactivity status was higher than after the crisis. This can be explained by two facts. First, the demand for labour was very high and, due to low level of immigration, employers were willing to hire also people whose skills did not exactly match the firm's employment criteria. Second, scarce labour resources pushed the wage



**Figure 1.** Quarterly separation, hiring and reallocation rates in Latvia during 2005Q4–2014Q4, (% of those employed in the previous quarter), (a) reallocation, separation and hiring rates, (b) separation rate structure and (c) hiring rate structure, Notes: In 2007, sample methodology for Latvian LFS data changed, and data contain a break: there are no interviews for the same households either in 2006 or 2007. Due to discontinuity of observations at the break point, the obtained flow statistics are right or left censored, therefore the result tables and graphs do not show quarterly flow data statistics for 2007. Source: Authors’ calculations based on LFS data.

level higher, which in turn, could have two rather opposite effects. On the one hand, some household members, due to a higher household income level, could afford not to work; on the other hand wages had reached the level of reservation wage and, therefore, motivated some so far inactive people to start working.

Later during the crisis years (2008–2009), the economic situation in Latvia changed drastically. In 2009, GDP declined by more than 17% annually, and unemployment level



amounted to over 18%. This was reflected in the separation and hiring rates. The quarterly separation rate rose to 12%, suggesting that around half of the previous year employed changed their employment status over the year (see [Figure 1](#)). In 2009, only a quarter of separations was covered by job-to-job flows, and almost 40% represented a change to unemployment. In the same year, the flow from employment to inactivity remained substantial in the separation rate structure (around 35%) due to the changes in the legal system, according to which pensioners were restricted to receive both pensions in full amounts and wages for work from July 2009 till January 2010<sup>4</sup>; as a result, many pensioners chose to leave jobs.

The hiring rate reacted simultaneously by decreasing sharply, and from the third quarter of 2008 it was below the separation rate. It is worth mentioning that the structure of hiring rate changed much slower than that of the separation rate. The share of job-to-job flow ( $E_{new,t}$ ) in the hiring structure was still around 50%, while the share of flow from unemployed to employed ( $U_{t-1}$ -to- $E_t$ ) increased slightly. This indicates that a part of those fired at the beginning of the crisis were able to find new jobs quickly, that is, without undergoing a long job search and drawing unemployment. As the crisis intensified, the aggregate number of unemployed increased, job search duration extended, and the share of the hired, who had previously been unemployed, increased. By the beginning of 2010, one-third of newly employed people were previously unemployed. The quite high share of the job-to-job flow in the structure of hiring rate in 2010 can be explained by fragility of new worker-firm matches, that is, a higher re-entry rate.

According to the estimates herein, the break point in the negative trends of hiring and separation rates occurred in the middle of 2009, which is in line with the general tendencies of Latvia's economic recovery. The hiring rate bounced back to the boom years' level, and in the second quarter of 2010, exceeded the separation rate. Until 2014, the hiring rate has outpaced the separation rate, indicating economic recovery. Another sign of economic recovery was the growth of the job-to-job flow's ( $E_{new,t}$ ) share in both separation and hiring rates. The share of flows from/to unemployment in 2014 reached the pre-crisis level; therefore, by the end of 2014, the labour market adjustment process had almost finished. The overall level of separation and hiring rates since 2011 is lower than before the crisis, mainly due to a lower job-to-job flow component, which can be explained by more balanced labour supply and demand in the country.

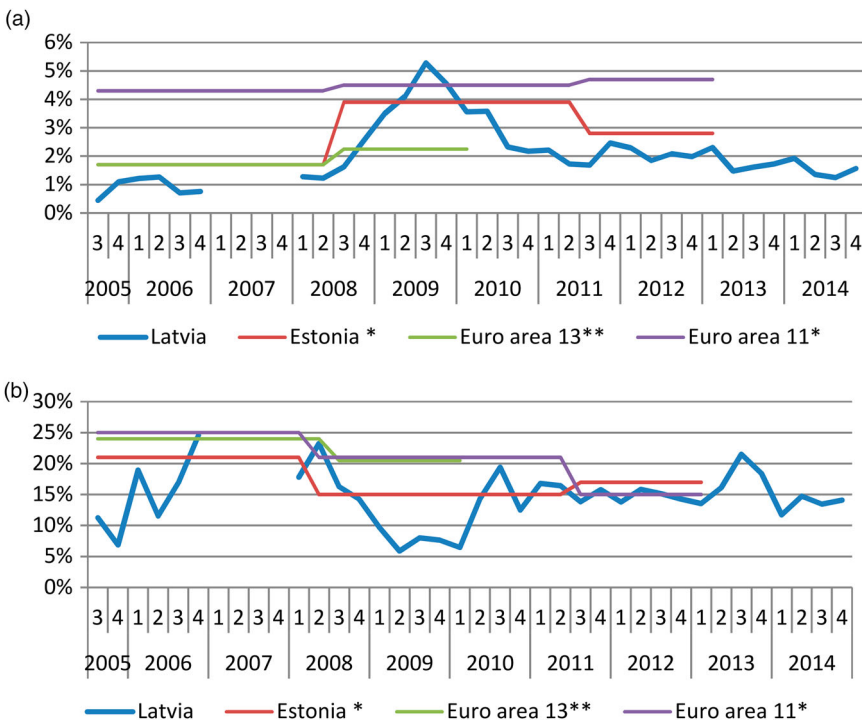
### **3.2. International comparison**

Next, we provide comparison of Latvia with other euro area countries. There are several comparative research papers on labour flows using LFS micro data written by researchers of the European System of Central Banks (ESCB). As the most recent example, we should mention the ECB reports ([2012](#), [2014](#), [2015](#)) on the euro area countries (Austria, Estonia, Spain, Finland, France, Greece, Ireland, Italy, the Netherlands, Slovenia and Slovakia) and a working paper of Spain's central bank written by Casado et al. ([2012](#)) about 11 EU countries (Austria, Belgium, Germany, Denmark, Spain, France, Greece, Italy, Portugal, Sweden and the United Kingdom). The former presents quarterly results of individual countries and the aggregate of 11 euro area countries for three intervals: the pre-crisis period (2005Q1–2008Q1), the crisis period (2008Q2–2011Q2) and the post-crisis period (2011Q3–2013Q1). The latter provides annual results of individual countries for three

periods: 2006–2008, 2009 and 2006–2009. Gomes (2012) provides estimates for the UK for the period 1995–2010. Speaking about the Baltic countries, estimates are available for Estonia in Merikull (2011) for 2001–2010, Masso and Krillo (2011) for 2008–2010 and Eamets (2013) for 2007–2010. For our best knowledge, there are no publicly available labour flow estimations for Lithuania and Latvia.

In the following section, we use the results provided in the ECB report (2014, 2015) due to longer coverage, quarterly representation of results, and similarities in the flow estimation approach. We chose to present our estimates of the economic status change in Latvia and the ECB report (2012, 2014, 2015) results for Estonia and the aggregates of the euro area countries; it is done by plotting the ratios of workers who changed their status vis-à-vis the corresponding number of employed one period ago (see Figure 2). The estimates for euro area countries are available until 2013Q1.

Wage increases and scarce labour resources both in Latvia and Estonia determined a relatively low flow to unemployment if previously employed during 2005Q1–2008Q1 as compared with the aggregate for 11 euro area countries (see Figure 2(a)). As shown in the ECB



**Figure 2.** Share of economic activity status change to unemployment or employment in Latvia, Estonia and the euro area countries, %, (a) flows from employment to unemployment (E-to-U/E(t-1)) as % of those employed in the previous quarter and (b) flows from unemployment to employment (U-to-E/U(t-1)) as % of those unemployed in the previous quarter. \* The quarterly aggregates for EA11 countries and Estonia are available in the ECB report (2015) Occasional Paper Series ‘Comparisons and contrasts of the impact of the crisis on euro area labour markets’, p. 41–42, euro area 11 (AT, EE, ES, FI, FR, GR, IE, IT, NL, SI, SK). \*\*Quarterly aggregates for 13 euro area countries are available in the ECB 2012 Structural Issues Report on ‘Euro area labour markets and the crisis’, p. 30–32, euro area 13 (AT, CY, EE, ES, FI, FR, GR, IE, IT, MT, NL, SI, SK). Sources: Authors’ calculations for Latvia based on LFS data.

report (2014, 2015), the flow to unemployment in Latvia and Estonia was comparable only with Greece and Slovakia during the corresponding period (in the other countries it was on average twice as high).

From 2008, after the crisis hit, things started to change. Due to a more pronounced GDP decline, the flow to unemployment increased sharply in the Baltic States and even overshoot the euro area aggregate in 2008–2009. However, since 2010, the flow to unemployment in Latvia has decreased below the pre-crisis average of 11 euro area countries. As the recovery process was continuing well into 2014, the share of people switching from employment to unemployment as percentage of those unemployed in the previous quarter was diminishing even further and in 2014 reached the level of 2006. Even taking out the effect of Spain and Portugal (countries with the highest flow to unemployment) the estimates for Latvia in 2012 are lower than the corresponding ones for the other euro area countries (levels for Greece, Slovakia and Estonia are similar). Comparing the speed of separation rate change in Latvia and Estonia (on average 2 percentage points) with the other euro area countries (ECB report (2014, 2015)), a similar sharp increase in the separation rate was observed in Ireland and Spain in 2008–2011 (1.5 percentage points).

The *flows to employment* (see Figure 2(b)) show that in 2005–2006 the estimates for Latvia and Estonia were on average lower than the aggregate for 11 euro area countries. During the period of fast real GDP growth and scarce labour force supply in 2007, the flow to employment in Latvia plummeted to 25% level and reached the average level of selected euro area countries. Before the crisis, the top three countries, ranked by flows to employment if previously unemployed according to the ECB report (2014, 2015), were Austria, Spain and Slovenia (on average above 25%). During the crisis, the overall chance to find job in 11 euro area countries decreased (Spain and Ireland lost approximately 15 percentage points of flows to employment; the drop in Latvia was of similar magnitude, and in Estonia it was 7 percentage points). In 2010–2011, the flow to employment if previously unemployed returned to the pre-crisis level in Latvia and Estonia and remained stable, at 15% level, until 2014, which is comparable to the average flow to employment in the euro area countries.

To sum up, in 2014 the flow from employment to unemployment in Latvia returned to the pre-crisis level and was lower than the aggregate for euro area countries. The flow from unemployment to employment also returned to the level of 2006 and is comparable to the average level of the euro area. The dynamics of labour flows in euro area as a whole (increased gap between flows to and from employment) points to considerable labour flow adjustment in the coming years, as the proportion of former unemployed among the employed should decline with the post-crisis economic recovery.

Comparing the dynamics of separation and hiring rates, we can conclude that on average in the euro area the change in the separation rate was less pronounced than the change in the hiring rate over the cycle (e.g. Spain and Ireland). In Latvia, recession was driven by both separation and hiring rates. In Estonia, on the other hand, the unemployment rate increased primarily due to higher separations (Masso & Krillo, 2011).

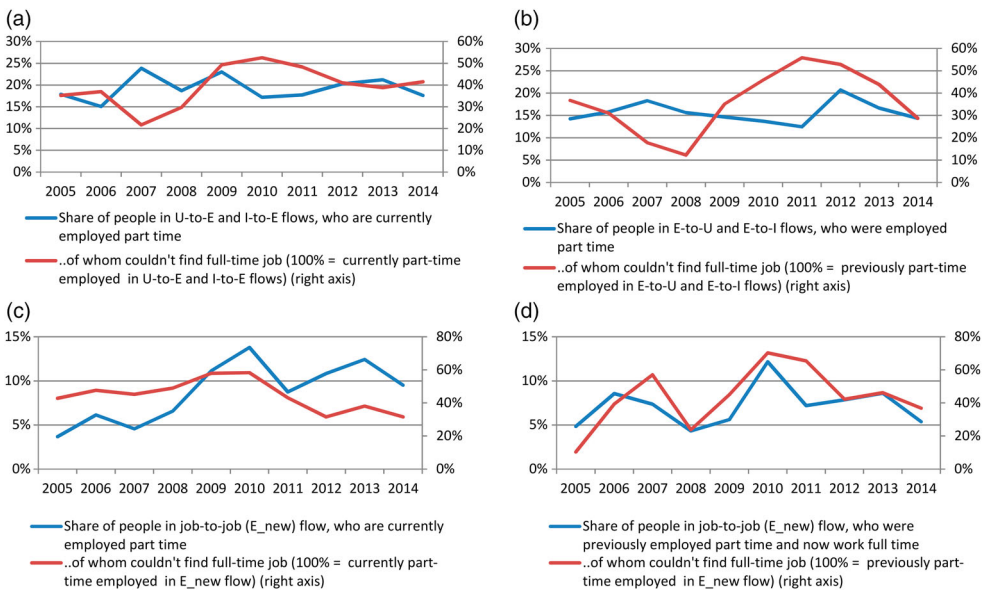
### **3.3. Detailed labour flow analysis**

In this section, we concentrate on two labour market instruments used extensively during the crisis in many euro area countries, that is, part-time employment and temporary contracts.

### 3.3.1. Part-time employment

According to the Eurostat, the part-time mechanism covers around 6.8% of employment in Latvia, which is lower than the aggregate euro area level of 19.6% in 2014.<sup>5</sup> Part-time employment could be an attractive option for people not (yet) wanting to start a full-time employment. Hazans (2005b) suggests that low part-time employment activity rates (especially for youth) might show that too few part-time jobs are offered. Part-time employment is also an important mechanism for labour market adjustment; it ensures labour market flexibility and helps the economy to absorb shocks. For example, during the time of economic crisis, the employer does not have to fire employees, if he can reduce the number of working hours. This, however, creates involuntary underemployment, meaning that employees would be willing to work more hours if possible (ECB report, 2015).

On average, 18% of people who were previously unemployed or inactive accept part-time positions (see Figure 3(a)). During the crisis, this number increased to 23% (similar to boom time in 2007), and, since 2010, it has returned to 17% level. The reason behind peaks in part-time employment during two very different economical circumstances can be explained by the share of underemployed workers. In 2007, the share of people willing to work full-time but unable to find a position, was only 10%. Thus, the majority of part-time employment was voluntary. In 2009, on the other hand, the share of underemployed workers skyrocketed to 50%, indicating an active use of the part-time mechanism in labour adjustment during the crisis. A similar tendency is observed in other euro area countries. Thus, the ratio of involuntary underemployed part-timers in the labour force rose by 0.9 percentage points between 2008 and 2013 (ECB report, 2015).



**Figure 3.** Share of part-time employment in flows from and to employment (accounting for the involuntary underemployment) in Latvia, %, (a) flow to employment, (b) flow from employment, (c) job-to-job (currently part-time) and (d) job-to-job flow (previously part-time). Source: Authors' calculations based on LFS data.

We also check whether the tendency to fire part-time employees was more pronounced during the crisis (see [Figure 3\(b\)](#)). This hypothesis is not confirmed, since the share of unemployed or inactive of all the people who were previously employed part-time was quite stable, at 15%, and did not mirror clearly cyclical behaviour. Therefore, we can conclude that employees working part-time or full-time were equally affected by job-cut policies during the crisis.

In 2005–2006 on average, 5% of job-to-job flows were flows to part-time employment (see [Figure 3\(c\)](#)). Since the beginning of the crisis, this number had increased, reaching 14% level in 2010. As the economy stabilized, so did the share of job-to-job flows to part-time employment. The fact that the part-time mechanism was partly used to adjust labour input during the crisis is confirmed by the rise in the share of workers who could not find full-time employment and, therefore, worked part-time (60% in 2009). Since 2010, the share of underemployed workers in part-time employment had decreased, reaching 30% in 2014. Therefore, in 2014, two thirds of people working part-time were doing so not due to the lack of full-time employment opportunities but on a voluntary basis. It is interesting that the share of underemployed people in the job-to-job flow who had been previously employed part-time and now were working full-time, is co-moving with the share of people in the job-to-job flow, who had been previously employed part-time and now were working full-time (see [Figure 3\(d\)](#)). This shows that people who were previously employed part-time but were willing to work full-time could eventually find job opportunities.

### **3.3.2. Temporary job contracts**

Another labour market mechanism that increases the capacity of shock absorption through adjustment in the labour market is temporary job contracts. It allows for higher flexibility in employment decisions of firms and decreases costs of firing people, especially in the case of stronger EPL. ECB report (2015) concludes that in the euro area the brunt of the adjustment after the crisis primarily fell on workers with fixed-term contacts. Exits from temporary employment accounted for 9% of total temporary employment per quarter in 11 euro area countries in 2009, and with the second wave of crisis their level rose to 12% in 2012. By contrast, the level of exits from permanent employment remained at around 1.3% (10 times smaller than the rate of exits from temporary employment).

The analysis of Latvian labour flows shows that after 2008 Latvian employers were more in favour of temporary contracts than before, that is, the temporary contract mechanism became more widespread. However, this reaction was short-lived, and the use of temporary contract mechanism in Latvia is quite different from the one observed in the euro area overall.

According to the Eurostat, in 2014 on average, only 3.3% of employees in Latvia were employed under temporary employment contracts, which is considerably less than 14.0% in the euro area. Before the crisis, the share of temporary employment in Latvia was decreasing (from 7.1% in 2006 to 3.4% in 2008), and after the crisis it rose to approximately 7% level in 2010–2011. However, with the improvement of economic situation, this share rebounded to around 4.1% in 2012–2014. A low share of temporary contracts in Latvia can be explained with high flexibility of wages in Latvia (see Fadejeva & Krasnopjorovs, 2015). Since it is not hard to change wages, employers might not seek extra flexibility in their employment practises by moving to temporary contract option.

Figure 4 presents the shares of temporary employment contracts in Latvia for three groups of people: those who were previously unemployed or inactive, those who became employed or inactive, and those who changed employer over a short period of time (job-to-job flow).

The flow from temporary employment to unemployment or inactivity (see Figure 4(a)) shows that in Latvia, contrary to the euro area experience, the share of temporary contracts did not increase in the flow from employment during the crisis. This can be explained by de facto less strict EPL compared with the euro area average and a smaller share of the corresponding type of employment. Therefore, in Latvia, employees with temporary and permanent employment contracts were affected similarly during the crisis. On the other hand, the temporary contract option became more popular among employers after 2008, as shown by the increased share of temporary contracts in the flows to employment. By 2011, around 40% of contracts signed when exiting unemployment or inactivity were temporary (with the economic recovery this share decreased to 25% in 2014).

The share of temporary contracts in the job-to-job flow (see Figure 4(b)) followed the above described pattern, that is, the share of people hired under temporary contracts increased after the crisis and declined after 2011. However, as compared with the flows

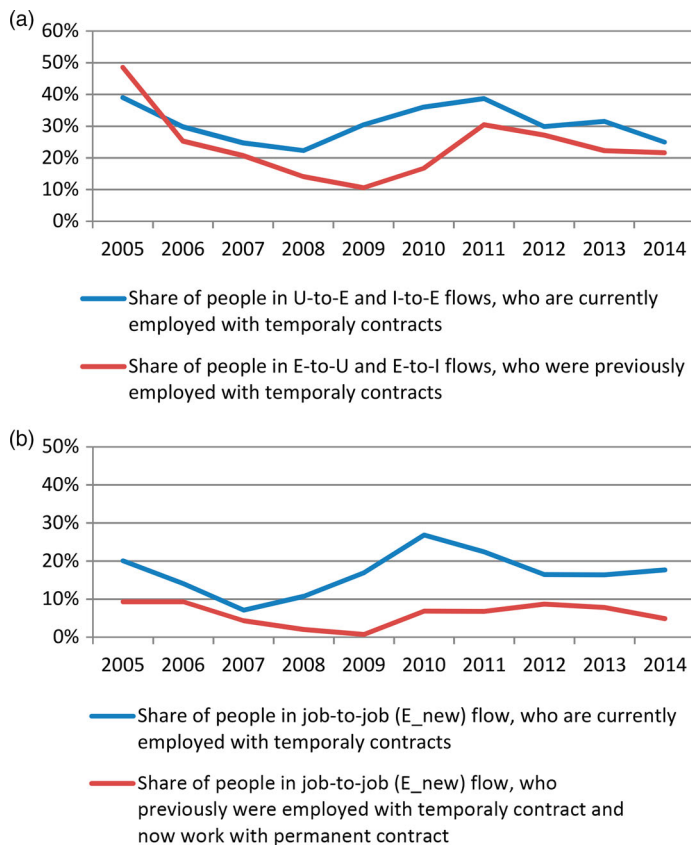


Figure 4. Share of temporary contracts in flows to and from employment in Latvia, % (a) flows to and from employment, (b) job-to-job flow. Source: Authors' calculations based on LFS data.

from unemployment or inactivity, the level is lower (e.g. only 25% of newly hired in the job-to-job flow had temporary contracts in 2010 and 18% in 2014). The switch from a temporary to permanent contract in the job-to-job flow covered 10% of the total job-to-job flow in 2005–2006. During the crisis, it was almost non-existent, and since 2012 returned to 10% level.<sup>6</sup>

To sum up, the use of part-time employment and temporary contracts, similarly to the aggregates of the euro area, increased during the crisis in Latvia. The part-time work option was used by people, who could not find full-time working positions, and thus the underutilization of labour force during the crisis was masked. The temporary contract option became more widespread directly after the crisis, as employers were cautious about the recovery; however, its popularity declined after 2010. Contrary to what was observed in the euro area, employees under both types of contracts were hit similarly during the crisis, which can be explained by a relatively lower level of bargaining power in Latvia.

#### 4. Survival analysis of labour market spells

To explore Latvia's labour market in more detail, we analyse the length of labour market spells, that is, average time to change the economic activity status from/to employment to/from unemployment, and determinants of such changes.

To explore what factors affect the probability of finding or losing job, and how they influence changes during and after the crisis, the Cox proportional hazard (Cox PH) model (1972) was used. It should be noted that the model does not calculate the probability that a person will leave the risk set, but the ratio at which the hazard to leave the risk set for this individual is higher or lower than for those who are in the control group of individuals. Thus, the hazard ratio shows how many times the hazard of leaving the risk set at a particular period is larger for individuals with parameter  $x_i$  than for other individuals. For the purpose of labour market analysis, the risk set will be either all employed or all unemployed, and the model will estimate the ratios of probabilities for individuals with different characteristics to change their labour force state. Since the dataset represents a sample, quarterly weights are used to aggregate estimates for the whole population.

We present the results for the full period (2005–2014) and shorter periods reflecting differences in various business cycle periods.<sup>7</sup> The full dataset is split into shorter periods in order to obtain estimates for different phases of the business cycle. This splitting was done on the basis of GDP growth data (from the Central Statistical Bureau of Latvia [CSB]), defining the beginning of the crisis as a period when GDP growth rates became negative year-on-year, but the end of the crisis as the time when they became positive. The respective periods are 2005Q1–2008Q2 (economic development), 2008Q3–2010Q2 (beginning of crisis, economic slowdown), and 2010Q3–2014Q4 (recovery from crisis, signals of growth. N.B. Latvia did not experience a harsh second dip of economic growth as some of the EU countries did during this period).

Partition into periods is not in contrast to labour market regulations, since there were not significant changes in employment protection during the analysed period in Latvia. In 2008, the duration of disbursement benefit of unemployment was reduced from nine months to four, six or nine months depending on the length of insurance (the duration of disbursement was restored to nine months in 2013). Another change was the adjustment of minimum wage (which increased by one-third in 2008, 12.5% in 2009, 11.1% in 2011 and 12.5% in

2014), which was mainly used to provide a minimum social security level to the employed during periods of big wage cuts and to fight the shadow economy. Although the ratio of minimum wage to average wage increased somewhat during recent years (from 33% in 2008 to 40% in 2013), it should not increase the hazard to become unemployed.<sup>8</sup>

Period-based partitioning of the dataset is a way to determine changes in labour mobility due to different phases of business cycles. In such a way we can identify if the probability of losing/finding job changes for individuals with different characteristics in various time periods, for example, which groups of employed are more vulnerable during the crisis or what characteristics are appraised by employers. The results could furnish policy-makers with better understanding of factors behind longer unemployment spells for different groups of people and, thus, provide a baseline for labour market policy formation.

#### **4.1. Determinants of employment-to-unemployment movement**

The dynamics of labour market is reflected by people changing jobs, losing them and finding new ones. In all times, especially during an economic crisis, it is necessary to understand which groups of people are more likely to become unemployed. Therefore, there is a need to reflect on social protection of these groups and possibilities to increase their qualification and compliance with the labour market. Some of such policies are already in place (e.g. protection of those on maternity leave or at pre-pension age, professional training, etc.).

In this section, we provide an overview of factors that determine the hazard of employed individuals to become unemployed. The results from the Cox PH model are given in [Appendix 1](#). It should be noted that the provided values are not probabilities themselves but the ratios of probabilities, meaning that if the number is above 1, the probability to lose job for a particular type of people is higher than for those in the control group. *Vice versa*, if the hazard ratio is below 1 and all other factors remain the same, the probability to lose job for a particular group of people is lower than for those in the control group. The hazard ratios show the comparison with the average control group in a particular subset, therefore, the hazard ratios of different periods (before, during and after the crisis) cannot be compared.

The results in this section are based on the sample of respondents who previously were employed and either remained employed or became unemployed. Therefore, the question about the time when a person left his/her previous job provides necessary information about the change of the employment status.

A change in the data collection methodology after 2006 is one of the reasons why during 2005–2006 the number of observations is modest and why the number of respondents changing their job status from employed to unemployed is relatively small in comparison with the number of observations for further years.

In [Appendix 1](#), we test whether such factors as gender, marital status, age, education, sector of employment, region of residence and length of employment can explain changes in the hazard of losing job. The first hypothesis tested is whether gender combined with person's marital status is significant in explaining the movement from employment to unemployment. The effect of marital status could be connected with the presence of children in the family or the necessity to take care of other household members; hence these factors could influence the decision to either leave the job (to spend more time with family) or, on the contrary, to try to preserve it due to higher risk aversion during the crisis



and the need to provide certain income level for the family. When the information about marital status is included in the model, the results are ambiguous. It cannot be stated, if in general these groups are more or less likely to enter unemployment, and the hazard ratios are not statistically significant. It seems, however, that married women, if compared to single men, were less likely to lose their jobs before the crisis, which can be explained by extra social protection for women with kids.

The age structure analysis suggests that the hazard of losing job varies for different age groups of workers. So, the probability to become unemployed is higher for younger people, while that for people at pre-retirement age is lower in comparison with the group of middle-aged (35–44) employees. This effect does not change during the crisis, capturing the effect of social protection mechanism for pre-pension age workers.

Another significant factor determining the movement from employment to unemployment is the level of education. First estimations showed that for people with higher education the hazard of becoming unemployed is lower. To get detailed information about which kind of higher education has the most positive effect, a model with both level of education and field of higher education was created. Two types of higher education were specially examined, and they are higher education in social sciences and business as well as education of lower and higher level in more technologically oriented fields (engineering, manufacturing, construction, mathematics, statistics and computing). Other specific higher education fields were not examined, and more detailed analysis was not carried out as the number of observations for each type of education is low.

On average, people with higher education in technologically oriented fields have a relatively lower probability to lose job in comparison with people with only secondary education (results for higher education in social sciences are not statistically significant). Other higher education fields cannot be specified due to very fragmented distribution, as insignificant number of people losing jobs were present in each of these higher education fields. Nevertheless, the results show that having higher education in those previously not specified fields (i.e. excluding people with higher education in social sciences and technology) is a favourable condition for workers and they are less likely to lose job. This can be explained by the demand for people specializing in some specific fields, that is, having higher education in not-too-widespread fields. It should be noted that during and after the crisis, the demand for people with professional and vocational training increased, and they were less likely to lose their jobs than those with just secondary education.

Quite comprehensive information was obtained analysing the impact of the sector of employment. We chose manufacturing as the baseline sector. In general, all other sectors exhibit a higher probability for workers to lose job than manufacturing. During the boom years (2005Q1–2008Q2), workers' mobility from employment to unemployment was strong in the wholesale and retail trade sector, even though this sector was flourishing. This tendency can be explained by overall high demand for labour in the sector at that time, and, hence, weaker resistance of employees to switch job or employer. The pre-crisis period shows that there was lesser probability for people working in public administration, education, health and jobs related to social activities to lose their jobs. Before the crisis, these sectors overall were viewed as offering safer and more stable jobs. Crisis changed this tendency sharply, as they underwent severe reductions in the number of employees in 2010.

During the crisis, the output decreased significantly in all sectors of the Latvian economy. Accordingly, this resulted in a higher probability to lose job. However, since

the hazard ratios capture relative increases in the probability to switch from employment to unemployment vis-à-vis the manufacturing sector and the crisis worsened the prospects to remain employed for all sectors, the effect of working in a particular sector remained similar to the pre-crisis level. The only difference is that the odds to switch from employment to unemployment in wholesale and retail trade became similar to the other sectors. After the crisis, as economy started to recover, the hazard of becoming unemployed in wholesale and retail trade diminished. During the crisis, one of the most affected sectors was construction.

We also check whether, keeping all the other factors constant, the probability to lose job differs between the capital city and other regions. To do so, we use the division into three regions – Riga (capital city), Pieriga (Riga suburbs) and the other regions (a more detailed split does not display significant differences between regions). In general, there is no evidence that the region of residence has any extra effect on the hazard of losing job.

Another significant determinant of job losing probability is the length of employment. The risk to become unemployed is higher during the first year of employment. It can be explained by two factors, that is, the probation time at a new job (in Latvia typically three months) and temporary or seasonal job contracts. Moreover, people with previous longer work experience have lower hazard of losing job and, in the case of necessity to lay off some workers, those with shorter job tenure are chosen more frequently. If a person has been employed longer than a year, the probability to lose his/her current job strongly diminishes.

To promote a more complete understanding of labour mobility tendencies over different time periods, a movement opposite to employment-to-unemployment flows and describing tendencies of finding job is presented in the next section.

#### **4.2. Determinants of unemployment-to-employment movement**

This section presents the results of Cox proportional hazard model for flows from unemployment to employment. The hazard ratios in [Appendix 2](#) show how the probability to find job differs for unemployed persons with different characteristics. Similar to the previous section, we check whether gender, marital status, education, region of residence and length of employment have any effect on the probability of finding job. Additionally, we check whether registration with the State Employment Agency can be seen as an indicator of better job-finding chances.

The effect of gender and marital status is the first to be explored. According to the findings in other research papers on labour mobility in Latvia, worker mobility does not significantly differ by gender (Hazans, 2005a; Ministry of Welfare, 2007b), but there is a gender wage gap in Latvia (Hazans, 2007). Our results show that both single and married women are less likely to find job, but if they are employed, they are more likely to retain this status, while men change jobs more often. It is true, however, that this difference is not statistically significant for some periods and is opposite for married men in the post-crisis period. It would explain why some of the previous studies mention gender as having an insignificant impact on worker mobility.

Age is another factor that could influence individual's choice to become employed (as well as employers' choice which employees to hire despite regulations that prohibit discrimination based on this factor). Economically active people aged 15–24 are more

likely to become employed, and it is in line with the theory that young people are more mobile. The results of hazard model show that during the post-crisis period there did not exist significant differences in probabilities to switch from unemployment to employment for different age categories. During the crisis years, younger people were more likely to find jobs than middle-aged employees despite the fact that the unemployment level in younger age groups was higher. According to the CSB data, in 2008Q3–2010Q2, the unemployment rate for people aged 15–24 fluctuated around 30%, while the average unemployment rate was two times lower. Possibly, a higher probability of employment for young people can be explained by their willingness to enter employment under job contracts with less favourable conditions and lower wage (see Fadejeva & Krasnopjorovs, 2015), which would most likely be refused by older people with job experience. Evidence about the age impact persists in all reviewed time periods, and we can see that as a person gets older, despite probable experience, on average it is harder for him/her to find job.

During the pre-crisis period (2005Q1–2008Q2) when the demand for labour was very high, the level of education did not have strong influence on the probability to find job. With the beginning of the crisis, the situation changed. As the number of job seekers increased, employers were more willing to employ workers with higher education. During the crisis period, higher education in social sciences was a significant advantage in the labour market. The results of the model suggest that after the crisis, the effect of higher education on the probability to find job continued to be significant and even increased, strengthening the positions of people with higher education in social sciences and technological fields. After 2010Q3, it was more difficult for people with only elementary or lower education to find job. As the economy experienced recovery, positions of better educated people strengthened and they found jobs more easily.

There are some regional differences in job-finding probabilities. Using information about the region of residence, we can conclude that the probability to find job is highest for people living in the capital city Riga. In Pierīga region (suburbs of Riga), the probability to find job is on average by 20% smaller than in Riga. Similarly in other regions, the probability to find job was lower than in the capital (a more detailed split by regions does not show significant difference). These effects remain similar in all periods explored.

Evaluating the effect of unemployment duration, we can say that the probability to find job decreases with unemployment length. After an unemployment spell of at least six months, the probability for a person to find job decreases by more than half in comparison with those who were unemployed for a shorter period (less than six months). After one year, the probability is only one fifth of that level. This can be explained by several factors. First of all, part of unemployment is on account of people who entered unemployment voluntarily, being sure of their possibilities to find job and of finding better options. Another reason is that best candidates are more likely to be selected for an open position faster, so their unemployment spell is shorter. Those who have been unemployed for more than six months are less likely to be appealing to prospective employers. Another factor that could motivate people to find job early is the system of decreasing unemployment benefits. Family financial situation can urge people to lower their standards for the job they are searching and to take available vacancies quite early; those who are able to afford longer unemployment periods could still be picky, and they need more incentives to finally accept some job and start working.

Registration with the State Employment Agency is a good indicator of a higher probability (and maybe also willingness) of an unemployed person to find job. For those who do not register with the Agency, the probability to find job is on average 0.89 times smaller than for persons who are registered. The comparison of flow results from employment to unemployment and from unemployment to employment leads to the conclusion that worker mobility is influenced by both economic situation in the country and specific characteristics of individual groups. That is why policies, aimed at protecting those with smaller employment probabilities and enhancing their job opportunities, are needed. As shown by the results above, the current legislation of social protection is already operating well for particular groups of employed (e.g. those on maternity leave, at pre-pension age or with longer job tenures), hence these groups of people are less likely to become unemployed. Nevertheless, more policy improvements are needed, especially with regard to providing better employment opportunities, as these groups of people are less likely to find employment (possibly due to both skills mismatch and some discrimination by employers).

## 5. Conclusions

Even if abstracting from external mobility and international labour flows, the labour market in Latvia has proved to be internally mobile. Labour force mobility accelerated economic recovery after the crisis and is generally enhancing Latvia's ability to adjust to asymmetric shocks not only through price channels (as shown in Benkovskis, Fadejeva, and Kalnberzina 2010, 2012 but also through labour market channels.

The results indicate that during 2005–2014, labour flows adjusted rapidly, reflecting flexibility of employment decisions in the dynamics of both separation and hiring rates. In 2014, the flow from employment to unemployment in Latvia returned to the pre-crisis level and at present is lower than the aggregate for euro area countries. The flow from unemployment to employment also returned to the level of 2006 and is comparable to the average level of the euro area.

Similar to the euro area the mechanism of part-time employment and temporary employment contracts was actively used in Latvia during the crisis. Part-time work options were used by people, who could not find full-time positions, and, consequently, underutilization of labour force during the crisis was masked. The temporary contract option became more widespread immediately after the crisis, as employers were cautious about recovery, but its popularity declined after 2010. Contrary to what has been observed in the euro area, employees under both types of contracts were hit similarly during the crisis, which can be explained by a relatively lower level of bargaining power in Latvia.

Detailed information on probability to lose or find job was gained from the survival analysis. The research indicates that flows from/to employment to/from unemployment are determined by characteristics of particular worker groups, performance of particular sectors of the economy and demand for particular level education or experience in specific fields. The probability to lose job is higher for those working with the current employer for less than one year and young people with lower education. Those working in the manufacturing sector or in the Riga region are less likely to enter unemployment.<sup>9</sup> People with unemployment spells of less than six months, younger people and people with higher education can terminate unemployment easier.

Contrary to some other EU countries, it is relatively easy for young people (aged up to 24) to find jobs in Latvia. Although they are also under high risk to lose their employment, employers are generally willing to hire young workers. Current social protection laws affecting particular groups of employees (e.g. those on maternity leave, at pre-pension age or with longer job tenure) seem to operate well, and the results show that these groups of people are less likely to become unemployed. Yet, if they happen to lose their jobs, they are also less likely to find a new employment (possibly because of both skills mismatch and some discrimination by employers).

Even if abstracting from external mobility and international labour flows, the labour market in Latvia has proved to be 'internally' mobile, with flexible contract options and working hours serving as a mobility boosting mechanism.

## Notes

1. Detailed results on labour mobility between regions and professions in Latvia can be found in Brauksa and Fadejeva (2013).
2. The Wage Dynamic Network Surveys for Estonia (Malk, 2015) and Lithuania (Pesliakaitė & Štaudvytis, 2015) show very similar results.
3. European Participation Index 2.0
4. See LR Likums 'Par valsts pensiju un valsts pabalstu izmaksu laika periodā no 2009.gada līdz 2014.gadam', the version of 2009 (Law on state benefits during the period from 2009 to 2014). <http://likumi.lv/doc.php?id=194076>
5. Before the crisis the share of part-time employment in Latvia was 5.7% (2006–2007).
6. The switch from permanent to temporary contract in job-to-job flows fluctuated around 10% over the analysed period, with the highest level of 14% in 2010.
7. See Ministry of Welfare (2007c) for survival analysis and determinants of employment to unemployment movement based on LFS data for 2002–2005.
8. The main channels of adjustment to an increase in minimum wage according to the results of the Wage Dynamic Network Survey in Latvia are an increase in prices, reduction of non-labour costs and productivity improvements. The reduction of the number of employed or reduction of hiring is relevant only for 3.4% and 6.5% of firms (see Fadejeva & Krasnopjorovs, 2015).
9. During the crisis, the output decreased significantly in all sectors of the Latvian economy. Despite the fact that the manufacturing industry was hit hard, it was not much harder than other sectors. And it could recover faster (already in the first quarter of 2010) mainly due to successful export recovery.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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## Appendix 1. Hazard ratios from Cox proportional hazard models for employment to unemployment flow.

Variable	Compared with	Years 2005– 2011	Pre-crisis (2005Q1– 2008Q2)	Crisis (2008Q3– 2010Q2)	Post-crisis (2010Q3– 2014Q4)
Men*married	Men*single	0.87**	0.97	0.95	0.80***
Women*married		0.94	0.80*	1.01	0.91
Women*single		0.95	0.87	1.03	0.92
Age					
15–24	35–44	1.57***	1.40*	1.85***	1.44***
25–34		1.47***	0.97	1.49***	1.74***
45–54		0.73***	0.76***	0.78***	0.73***
55–74		0.50***	0.43***	0.52***	0.53***
Education					
Elementary or lower	Secondary	0.97	1.02	0.91	1.03
Professional, vocational		0.87***	0.89	0.87**	0.84***
High.SOC [1]		0.94	1.26	0.87	0.93
High.TEH [2]		0.83**	0.72*	0.76**	0.92
High.OTHER [3]		0.72***	0.76**	0.75***	0.69***
Sector of employment (NACE2) [4]					
F Construction	C Manufacturing	1.26**	0.87	1.62**	1.34*
G Wholesale and retail		1.38***	1.16	1.55**	1.40**
K + L + M + N finance, real estate		1.04	0.85	1.41	0.98
A + B agriculture, mining		1.04	0.92	1.20	1.00
O + P + Q + R + S public admin, ed, health, social activities		0.96	0.73**	1.07	0.97
D + E + I + H + T + J + U Other		1.09	0.88	1.30	1.07
Region of residence					
Pieriga	Riga	1.06	1.19	1.00	1.02
Other regions		0.96	0.94	0.97	0.94
Length of employment					
1–3 years	Up to 1 year	0.14***	0.08***	0.09***	0.12***
3 years and more		0.01***	0.003***	0.003***	0.004***
Number of observations		5447	942	2487	3482

Source: Authors' calculations based on LFS data.

Note: Table reports hazard ratios of Cox proportional hazard models for employment to unemployment flows and their significance levels. [1] Higher education in social sciences, business and law; [2] Higher education in engineering, manufacturing, construction, mathematics, statistics and computing; [3] All other fields of higher education; [4] NACE 2 for years 2005–2006 evaluated approximately based on NACE1 values.

\*\*\*Statistical significance at 1% level.

\*\*Statistical significance at 5% level.

\*Statistical significance at 10% level.



## Appendix 2. Hazard ratios from Cox proportional hazard models for unemployment to employment flow.

Variable	Compared with	Years 2005–2014	Pre-crisis (2005Q1–2008Q2)	Crisis (2008Q3–2010Q2)	Post-crisis (2010Q3–2014Q4)
Men*married	Men*single	1.00	0.65***	1.03	1.23**
Women*married		0.76***	0.81	0.73***	0.77***
Women*single		0.94	0.69***	0.86	1.05
Age					
15–24	35–44	1.96***	1.00	2.26***	2.13***
25–34		1.39***	1.27*	1.50***	1.41***
45–54		0.74***	0.74**	0.76**	0.72***
55–74		0.68***	0.52***	0.50***	0.70***
Education					
Elementary or lower	Secondary	0.81***	0.92	0.87	0.79**
Professional, vocational		1.02	1.16	0.86	1.00
High.SOC		1.49**	2.58	1.79***	1.43**
High.TEH		1.33	1.32	0.81	1.40**
High.OTHER		1.04	1.10	0.79	1.10
Region of residence					
Pieriga	Riga	0.83*	0.96	1.00	0.81*
Other regions		0.79***	1.01	0.70***	0.73***
Length of unemployment					
6 months to 1 year	Up to 6 months	0.44***	0.18***	0.40***	0.35***
1 year and more		0.05***	0.02***	0.04***	0.03***
Not registered with State Employment Agency	Registered	0.89***	0.87	0.77***	0.91
Number of observations		1860	387	648	1276

Source: Authors' calculations based on LFS data.

Note: Table reports hazard ratios of Cox proportional hazard models for unemployment to employment flows and their significance levels.

\*\*\* Statistical significance at 1% level.

\*\* Statistical significance at 5% level.

\* Statistical significance at 10% level.