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**Article**

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IZA Journal of European Labor Studies

**Provided in Cooperation with:**

IZA – Institute of Labor Economics

*Suggested Citation:* Ward-Warmedinger, Melanie; Macchiarelli, Corrado (2014) : Transitions in labour market status in EU labour markets, IZA Journal of European Labor Studies, ISSN 2193-9012, Springer, Heidelberg, Vol. 3, Iss. 17, pp. 1-25, <https://doi.org/10.1186/2193-9012-3-17>

This Version is available at:

<https://hdl.handle.net/10419/125587>

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ORIGINAL ARTICLE

Open Access

# Transitions in labour market status in EU labour markets

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## Abstract

We discuss the ease with which individuals can move between employment, unemployment and inactivity over time in the EU. Transitions from unemployment and inactivity back into employment are relatively weak in Central Eastern, Mediterranean and Continental European labour markets compared to Nordic European countries. On the basis of a mobility index used in the paper (Shorrocks, *Econometrica*, 46:1013-1024, 1978), labour markets in Spain, Luxemburg, the Netherlands, Denmark and Sweden are the most mobile, with these results mainly reflecting mobility of people below the age of 29, highly educated and female workers. Looking at some “macro” explanatory factors, the results suggest a mixed picture.

**Jel codes:** J21, J60, J82, E24

**Keywords:** Transition probabilities; Labour market mobility; LFS micro data; EU countries

## 1 Introduction

This paper utilises the available microeconomic data behind the Eurostat’s Labour Force Survey (LFS) to present alternative measures of labour market mobility across EU countries over time, and in particular the ease of transition between the labour market statuses of unemployment, employment and out of the labour market (inactivity) over the period 1998–2008<sup>1</sup>. As well as identifying stylized facts, the aim of this paper is to shed some light on the functioning of the EU labour markets.

Until the onset of the crisis, the EU experienced a reduction in unemployment rate, essentially driven by a fall in long term unemployment and unemployment duration (Table 1)<sup>2</sup>. A quick look at the standardized unemployment (employment) rates by country confirms that most EU countries were successful in reducing (improving) unemployment (employment) before the crisis. However, across the EU, unemployment (employment) rates behaved very differently, with some countries displaying steadily declining (increasing) unemployment (employment) rates over time, while others exhibiting more marked unemployment (employment) fluctuations; i.e. with unemployment (employment) increasing (decreasing) after the 2001–02 global recession and – in many central eastern European EU countries – raising (waning) following the 1998 Russia crisis, before declining again (improving) in the light of EU membership (see also Epstein and Macchiarelli 2010; Macchiarelli 2013a, b).

Alongside the macroeconomic picture of a decrease in unemployment rate and duration, the use of micro data can help assess if such developments at the EU level

**Table 1 Unemployment and employment rates in the EU (1998–2008)**

EU (changing composition)	Unemployment rate (%)	Long-term unemployment (12 months or >) as a % of the total unemployment	Employment rate (%)	Average unemployment duration in months
1998	10.3	48.0	61.2	18.3
1999	9.5	46.1	62.2	17.7
2000	8.5	45.4	63.2	17.4
2001	7.4	44.0	63.9	16.0
2002	7.7	40.1	64.2	15.6
2003	8.1	41.3	64.4	16.1
2004	8.3	41.0	64.6	15.7
2005	9.1	45.5	64.0	15.7
2006	8.3	45.3	64.8	15.7
2007	7.2	42.7	65.4	14.8
2008	7.1	37.0	65.9	12.4

Sources: Eurostat and OECD statistics (last column).

reflected an increase in the number of people transitioning from unemployment to employment, or, on the contrary, an increase in the transitions from unemployment to inactivity. Similarly, microeconomic data can help highlight whether the increase in the employment rate resulted from an increase in employment persistence (more people remaining in employment), an increase in transitions from unemployment to employment, or an increase in transitions from inactivity to employment. Finally, the use of microeconomic data also allows for the construction of measures of the degree of labour market flexibility, and how this varied across countries and over time. The analysis of transitions into and out of unemployment thus offers significant advantages over an analysis of macroeconomic developments, allowing us to observe the directions of flows and levels of status mobility behind any particular change in the aggregate employment, unemployment or inactivity rate. Moreover, the proposed methodology allows quantitatively assessing the role played by labour market flows, by readily analysing how mobility measures evolved over time and across worker groups (gender, age and education).

The contribution of the paper can be gauged under two perspectives. First, we provide results for a large set of countries, by providing a systematic, unconditional approach to estimate labour market transitions in most EU countries. Secondly, we exploit cross country differences in the size and the speed with which labour market changes took place over time.

In our analysis, a number of stylized facts are documented. Drawing on the labour market classifications of Boeri (2002) and Sapir (2006), we find that the probability of remaining in the same labour market status between two consecutive periods is high for all country groupings. Nonetheless, transitions from unemployment and inactivity back into the labour market are relatively weak in Central Eastern, Mediterranean and Continental European countries compared to the Nordic European countries. Secondly, comparisons of transition probabilities over time suggest that – until the onset of the financial crisis – the probability of remaining in unemployment over two consecutive periods decreased in Nordic and Continental countries, while it increased in the average Central Eastern and Mediterranean countries. At the same time, however, successful labour market entries (from outside the labour market) increased in Central Eastern European countries and the Nordics.

Finally, on the basis of an index for labour markets turnover used in the paper (Shorrocks 1978), labour markets in Spain, Luxemburg, the Netherlands, Denmark and Sweden are the most mobile on average, with these results mainly reflecting higher mobility of people below the age of 29, highly educated and female workers. We also find that mobility of all worker groups has generally increased over time in Continental and Mediterranean countries, as well as in Denmark and Sweden.

In the last section, we look at the link between macroeconomic developments and changes in mobility indexes. The results suggest that countries who experienced an increase in mobility are also those which increased their percentage of time limited (e.g., temporary) contracts and part time work, and *viceversa*. However, looking at unemployment rates and some structure indicators the results provide a mixed picture, suggesting that the sense of mobility and its implications strongly vary across countries.

The remainder of the paper is organized as follows. Section 2 presents the methodology and our main results. Section 3 looks at some explanatory factors behind the observed labour market mobility in each country. Section 4 concludes.

## 2 Labour market transitions

### 2.1 Transitions in labour status in the EU

A number of papers have focused on establishing the persistence of both unemployment incidence and duration using longitudinal data with a relatively short time horizon (Boeri and Garibaldi 2009; Petrangolo and Pissarides 2008; Brandolini *et al.* 2006 for Europe; Kilponen and Vanhala 2009; Elsby *et al.* 2013 for OECD countries)<sup>3</sup>. These papers document an increase in status mobility during the last two decades, with differences in the extent of mobility across countries being attributed to institutional factors. Boeri and Garibaldi (2009) ask, for instance, why the decrease in unemployment does not show up as increased satisfaction in the labour market, a result they attribute to the increased risk of job loss that higher mobility implies. Elsby *et al.* (2013) instead question the validity of the assumption of a steady state decomposition for unemployment which forms the basis of a number of theoretical models. Petrangolo and Pissarides (2008) identify the relative role of inflow and outflow rate from unemployment in explaining labour market dynamics and conclude that the relative contribution of each depends on labour market institutions. In the same vein, Kilponen and Vanhala (2009) argues that European countries generally have low unemployment inflow and outflows rates which contribute to high rates and unemployment persistence. Brandolini *et al.* (2006) emphasise the need to acknowledge the group of non-participants (or *potentially* unemployed) when looking at labour market dynamics; accordingly the distinction provided for by the ILO definition of unemployment is only “artificial” and indeed non-participants and unemployed do not differ substantially in their job search activity.

We use gross data flows from the Eurostat’s Labour Force Survey (LFS) microdata for 23 countries. The UK, Germany (DE), Malta (MT) and Ireland (IE) are excluded from the analysis owing to a lack of data<sup>4</sup>. The remaining countries are grouped as follows:

- *Nordics*, including The Netherlands (NL), Finland (FI), Denmark (DK) and Sweden (SE);
- *Continental*, including Belgium (BE), France (FR), Luxemburg (LU) and Austria (AT);

- *Mediterranean*, including Greece (GR), Spain (ES), Italy (IT), Cyprus (CY) and Portugal (PT);
- *Central Eastern*, including Czech Republic (CZ), Estonia (EE), Latvia (LV), Lithuania (LT), Hungary (HU), Poland (PL), Romania (RO), Slovakia (SK) and Slovenia (SI).

The grouping above clusters countries according to social policy models, drawing on the definition of Boeri (2002) and Sapir (2006)<sup>5</sup>.

We use a relatively comprehensive sample which focuses on the period between 1998 and 2008. Stopping the sample in 2008 is motivated by the idea that EU labour markets sensitively lagged the slack in the real activity, showing a worsening of unemployment figures mainly starting from 2009 (see European Commission 2010). Hence, with the purpose of identifying stylized labour market facts, the crisis and ensuing labour adjustments are for now excluded.

Eurostat Labour Force Survey Statistics are available in yearly frequencies and are constructed from a rotating panel reporting information based on *anonymous* interviews. The LFS microdata dataset provides the longest time series of comparable and consistently defined individual level data that is available for the EU, and our sample consists of individuals between the ages of 16 and 64.

Year-on-year transitions are obtained based on the subjective assessment of the respondent's current and past working situation<sup>6</sup>. In this way, the labour market status in the initial (t-1) and the final period (t) is the subjective assessment of the respondent's current and past working status, reported at the time of the survey (t).

Using data from subjective classifications prompt several methodological questions. First, whether subjective classifications capture actual levels of labour market turnovers, or they capture, in fact, the behaviour of individuals *potentially* moving across labour market statuses (see Brandolini *et al.* 2006)<sup>3</sup>. Secondly, retrospective data can go wrong as people can forget, make mistakes or simply do not respond, naturally giving rise to spurious changes in statuses. Third, period-censoring (or, collecting answers referring to the survey year and the year before) does not allow capturing flows between survey dates<sup>7</sup>.

The anonymous nature of the LFS data does not allow tracking individuals over time. This breaks down any form of serial correlation between classification errors in our sample. In other words, reporting errors at a given survey date are independent of errors in previous LFS waves. Furthermore, we rule out the possibility that non-responses are captured as spurious changes in status, by necessarily excluding the number of individuals for which labour market classifications are not reported for the survey year and, retrospectively, for the year before. Finally, by construction of transition probabilities (i.e. the labour market status in the initial and the final period is the *subjective* assessment of the respondent's current and past working situation, reported at the time of the survey), any subjective bias between the "official" labour market status (i.e. as defined by the ILO) and its "reported" counterpart naturally simplifies out under the, likely, assumption that each individual's subjective bias is constant over time.

From the LFS, we construct raw probabilities of moving or remaining in any labour market status, together with an index of mobility (Shorrocks 1978). Particularly, we consider nine possible transition probabilities across the statuses of employment,

unemployment and out of the labour market (inactivity). The (*ex post*) probability of remaining in any particular labour market status is defined on the basis of the number of individuals being in that particular status  $i$  in both year  $t$  and  $t-1$ , as a percentage of individuals in the same status  $i$  in year  $t-1$ . Conversely, the probability of moving from one labour market status to another is defined as the ratio of the probability of remaining in any labour market status  $i$ , as defined previously, over the probability of an individual in status  $k$  in period  $(t-1)$  turning to status  $i$  in period  $t$ .

For each country ( $j$ ) the probability of moving across  $n$  labour market statuses between year  $t-1$  and year  $t$  is thus a  $(n \times n)$  matrix  $(P_{i,k}^{jt})$  in which each individual element  $p_{i,k}^{jt} = \Pr\{S_t = i \mid S_{t-1} = k\}$  records the transition probability, with  $i, k =$  employment ( $e$ ), unemployment ( $u$ ), out of the labour market or inactivity ( $na$ ).

The measure of mobility used is the Shorrocks' (1978) mobility index, defined as:

$$M^{jt} = [n - \text{trace}(P_{i,k}^{jt})] / (n-1) \quad (1)$$

By definition, the mobility index is bounded between  $[0,1]$ , where, a value of zero implies no probability of leaving any labour market status, and a value of one implies full mobility.

At this stage, it should be noted that flows from and into the labour market are very different among them. In fact, people moving from inactivity to unemployment are different from people moving from inactivity to employment, as the former re-enter the labour market but do not find a job immediately. In this vein, distinguishing between flows into and out of inactivity can be retained in the probability of *successfully* re-entering the labour market (Marston 1976; Theeuwes *et al.* 1990). The latter is defined as:

$$SL^{jt} = p_{na,e}^{jt} / (p_{na,e}^{jt} + p_{na,u}^{jt}), \quad (2)$$

which is the percentage of people *successfully* entering the labour market ( $p_{na,e}$ ) as a percentage of the number of people entering the labour market as a whole.

Analogously, people leaving unemployment to get back into employment are different from those who, once separated from their job, stop searching for a new one (i.e. they move from unemployment into inactivity). Thus, *unsuccessful* labour market outcomes are computed as:

$$FL^{jt} = p_{u,na}^{jt} / (p_{u,na}^{jt} + p_{u,e}^{jt}), \quad (3)$$

which is the percentage of people withdrawing from the labour market, as a percentage of people generally leaving unemployment (moving either back into employment or inactivity). It should be noted, however, that *unsuccessful* labour market outcomes may not represent labour market withdrawals *per se*, as flows into inactivity also capture shifts into retirement or education. For this reason, when computing (un)successful labour market outcomes we control for the statuses of retirement and education. A discussion is warranted in the next section.

## 2.2 Results

Table 2 provides a snapshot of average transition probabilities, over time and across countries, between different labour market statuses during the period 1998–2008 for all country groupings. The table shows that the average probability of being employed in

**Table 2 Transition probabilities (full period, 1998 – 2008)**

		Labour market status year t												
		Central Eastern			Nordics			Continental			Mediterranean			
Labour market status	Year t-1	1998-2008	E	U	NA	E	U	NA	E	U	NA	E	U	NA
		E	<b>93.980</b>	3.134	3.486	<b>91.210</b>	2.717	6.229	<b>93.082</b>	3.496	3.601	<b>94.969</b>	2.688	2.450
		U	28.325	<b>61.117</b>	14.506	38.242	<b>45.929</b>	18.384	32.215	<b>55.515</b>	18.434	28.215	<b>67.464</b>	5.161
		NA	7.250	3.876	<b>86.198</b>	16.175	5.120	<b>79.102</b>	8.831	3.548	<b>88.012</b>	4.574	3.562	<b>92.192</b>
		1998-2003	E	U	NA	E	U	NA	E	U	NA	E	U	NA
		E	<b>92.505</b>	4.373	4.291	<b>91.252</b>	2.883	5.981	<b>92.775</b>	3.921	3.100	<b>94.910</b>	2.386	2.786
		U	28.151	<b>57.547</b>	15.788	33.852	<b>49.789</b>	19.009	30.334	<b>60.619</b>	9.512	31.676	<b>63.235</b>	5.750
		NA	8.851	4.949	<b>87.711</b>	16.892	5.032	<b>78.893</b>	9.058	3.608	<b>88.898</b>	5.623	3.270	<b>91.282</b>
		2004-2008	E	U	NA	E	U	NA	E	U	NA	E	U	NA
		E	<b>94.261</b>	2.723	2.985	<b>91.267</b>	2.595	6.227	<b>93.217</b>	2.936	3.844	<b>94.987</b>	2.771	2.290
		U	28.371	<b>61.654</b>	13.742	39.739	<b>43.673</b>	18.343	33.140	<b>44.936</b>	21.960	26.487	<b>68.914</b>	4.925
		NA	6.545	3.455	<b>86.181</b>	16.028	4.991	<b>79.104</b>	9.430	3.651	<b>86.877</b>	3.805	3.657	<b>92.601</b>

Note: E = employed; U = unemployed; NA = inactive so that EE = remains in employment between one year and the next; UU = remains in unemployment, NANA = remains in inactivity. Observations are weighted according to the labour force share (15–64) in each country over the aggregate. Elements showing a probability of remaining in the same labour market state (employment, unemployment and inactivity) are in bold. Sources: LFS microdata, authors' computations.

year  $t-1$  and year  $t$ , i.e. the probability of *remaining* employed for two consecutive periods, is 94% on average in Central Eastern and Mediterranean countries and around 93% in Continental countries. The same probability is around 92% in Nordic countries. The probability of remaining unemployed is around 61% in Central Eastern European countries, about 45% in the Nordic countries, and 55% in Continental countries<sup>8</sup>. The probability of remaining inactive is between 86-92% in the Central Eastern, Continental and Mediterranean countries, but below 80% in the Nordic countries. Clearly, the probability of moving from employment to inactivity or the probability of moving from unemployment to inactivity is strongly associated with retirement flows and/or flows into the status of education. Controlling for education and retirement flows – setting up a 5-dimensional transition matrix including the statuses of  $e$  = employment,  $u$  = unemployment,  $nan$  = inactivity (this time, excluding education and retirement), plus  $ie$  = education and  $re$  = retirement – shows that the likelihood of remaining inactive (excluding retirement and education) for two consecutive periods falls to about 74% in the Nordic countries. The same probability is about 77% in Central Eastern countries, 82% in Continental Europe and about 87% in Mediterranean countries<sup>9</sup>.

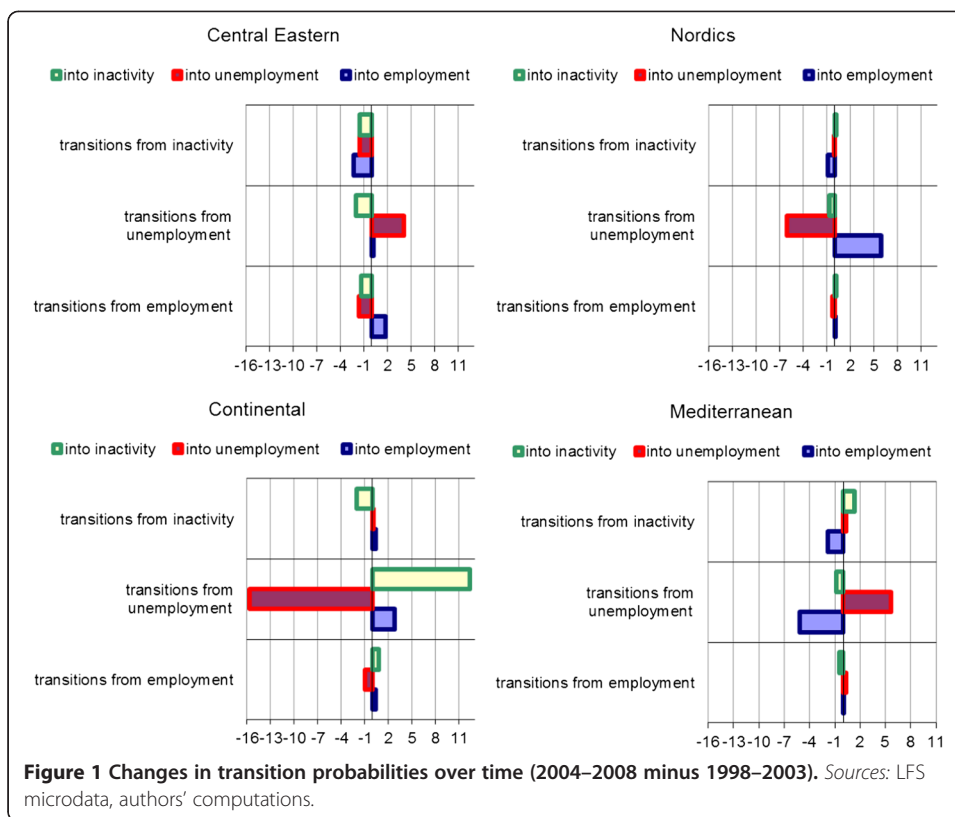
From Table 2, in the Mediterranean and Central Eastern European countries the probability of moving from unemployment to employment is just below 29%, whereas it is above 32% in Continental countries and over 38% in the Nordic countries. In the Central Eastern, Mediterranean and Continental countries this probability is much lower than the probability of remaining in unemployment, compared to Nordic countries. In the case of Nordic EU countries, the picture is consistent with relatively fast hiring and firing dynamics, compared to other EU social models.

Comparisons of labour transition probabilities over time shows that in the Central Eastern and Mediterranean countries the number of people remaining in unemployment has increased over the last decade, whereas it decreased in Nordic and Continental countries (Figure 1)<sup>10</sup>. For Continental countries, of those individuals unemployed in period  $t-1$ , the percentage remaining unemployed in period  $t$  decreased from 64% to 45%. For Nordic countries this number decreased from 42% to 39% and for Sweden from 50% to 44%. For Central Eastern countries the same number increased instead from 53% to 62%, possibly as the result of economic growth after 1998 not being very employment intensive, as evidenced by the number of people remaining in employment during the period 1998–2003, compared to the period 2004–2008<sup>11</sup>. The same number increased in the Mediterranean countries, from 63% to 69%.

By contrast, the probability of remaining inactive slightly fell over time in the Central Eastern and Continental EU countries, while it remained broadly stable in Mediterranean and Nordic countries. Finally, the probability of remaining in employment increased strongly in the Central Eastern countries as well as – but to a smaller degree – in Continental European countries. In Nordic and Mediterranean countries, the number of people remaining in employment remained broadly stable over the last decade.

Turning to transitions between different labour market statuses, unemployment-to-employment flows have increased by about 6 percentage points over the last decade in Nordic European and Continental countries (see Figure 1), while they remained constant in Central Eastern countries and even declined in Mediterranean countries<sup>12</sup>. Flows in the opposite direction (i.e. employment to unemployment) have decreased overall in Central Eastern countries, but also in Continental Europe, and, to a lesser extent, in Nordic and Mediterranean countries.





The figures also shows that changes from unemployment to inactivity have overall fallen in the Central Eastern, Mediterranean and Nordic countries, whereas they strongly increased in Continental European countries<sup>13</sup>. In the latter case, a change in definition for France also explains such high rates of transition out of the labour market<sup>14</sup>. The figure also suggests that transitions from inactivity into employment have decreased by about 2–3 percentage points in Central Eastern and Mediterranean countries, while they remained broadly constant in Nordic and Continental countries.

Looking at the percentage of people entering successfully the labour market (*successful labour market entries, SL*), we find that this percentage has increased in Central Eastern countries (from 59% to 60%), the Nordics (from 66% to 72%), while it has decreased in the Continental and Mediterranean countries (from 66% to 61% and from 59% to 48%, respectively) over the period 1998–2008, controlling for education and retirement flows (i.e. in fact, the notation  $p_{nan..}^{jt}$  in (2) refers to the number of people moving from inactivity (excluding retirement and education) into another state, and analogously for the formula in (3); see Table 3). Alternatively, the percentage of *unsuccessful labour market outcomes (UL)* has decreased in Central Eastern countries (from 33% to 31%) and Nordic countries (from 20% to 16%). *UL* have increased only in Continental European countries (from 17% to 35%), net of transitions out of the labour market driven by education and retirement decisions, while they remained broadly stable in Mediterranean countries<sup>15</sup>.

Turning to changes in labour market inflows and outflows by worker group (Figure 2), the reduction in people leaving the labour market in Central Eastern European countries over the last decade was mainly driven by females, the highly educated and the 55

**Table 3 Successful and unsuccessful labour market outcomes**

	Central Eastern	Nordics	Continental	Mediterranean
<i>Successful labour market outcome</i>				
1998-2003	59.489	66.142	66.291	<b>59.439</b>
2004-08	<b>59.997</b>	<b>71.673</b>	<b>61.696</b>	48.285
<i>Unsuccessful labour market outcome</i>				
1998-2003	<b>33.255</b>	<b>19.710</b>	16.627	<b>12.334</b>
2004-08	31.003	15.878	<b>35.231</b>	12.121

Note: Results are based on a 5-dimensional transition probability matrix where statuses are defined as E = employed; U = unemployed; NAN = inactive (excluding education and retirement); RE = in retirement; IE = in education. Compared to the results where a 3-dimensional transition matrix is used (with E = employed; U = unemployed; NA = inactive), the results here holds in the light of NA = NAN + IE + RE. In other words, in computing successful and unsuccessful labour market outcomes we control for education and retirement flows when defining the status of inactivity. Following Theeuwes *et al.* (1990) a successful labour market entry is computed as the percentage of people *successfully* entering the labour market ( $p_{nan,e}$ ) as a percentage of the total number of people entering the labour market, i.e.  $SL^t = p_{nan,e}^t / (p_{nan,e}^t + p_{nan,u}^t)$ . Analogously, an unsuccessful labour market outcome is the percentage of people withdrawing from the labour market (but not moving to either retirement or education), as a percentage of people leaving unemployment, i.e.  $FL^t = p_{u,nan}^t / (p_{u,nan}^t + p_{u,e}^t)$ .

Sources: LFS microdata, authors' computations.

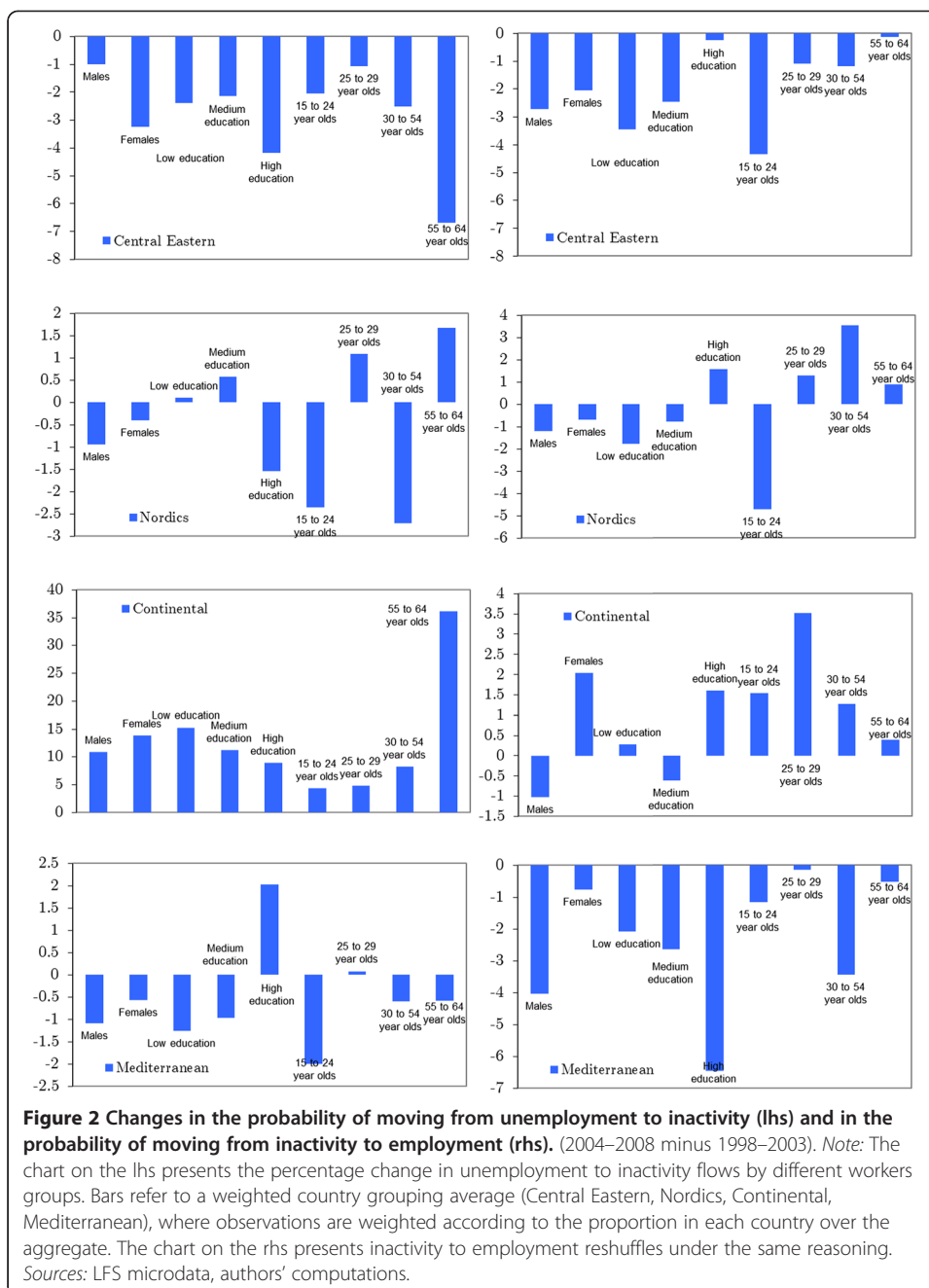
to 64 age group. At the same time, these countries experienced on average a reduction in people leaving inactivity and going back to the labour market, mainly driven by people between the ages of 15 and 24, males and low educated people<sup>16</sup>. In Nordic countries the fall in the unemployment to inactivity and, *viceversa* inactivity to employment flows, is mostly driven by people between the ages of 15 and 24. For continental countries, the number of people transitioning from unemployment to inactivity has overall increased (in 2004–2008 against the period 1998–2003) on average, mainly triggered by females and low educated workers and the 55–64 year olds<sup>17</sup>. The probability of moving from inactivity to employment in Continental countries increased overall, driven by females and the 25–29 year olds. Finally, for Mediterranean countries, the fall in the probability of transitioning from unemployment to inactivity is found to be mainly driven by males, low educated workers and the 15–24 year olds, whereas the decrease in flows in the opposite direction is mainly driven by males, high educated workers and the 30–54 year olds.

### 2.2.1 Labour mobility

Decomposing the results by worker group shows that the chance of unemployed youths finding a job is in all countries much higher than for older groups. Analogously, the probability to remain in unemployment is found to increase with age and is highest for individuals with lower educational attainment (Table 4).

Table 5 also provides a summary measure (the Shorrocks' index explained earlier) of labour market mobility<sup>18</sup>. Importantly, the index summarizes the extent of the transitions between different economic activity statuses (employment, unemployment and inactivity).

The mobility index reflects an increase in labour market churning over time in Nordic and Continental countries. On the contrary, the Shorrocks summary index for the periods 1998–2004 and 2004–2008 reveals a decrease in labour market mobility over time both in Mediterranean and the Central Eastern European countries. In the latter case, following the changes in the labour market structure for some Central Eastern European countries, a high mobility during the period 1998–2003 suggest



higher returns to job changes and a less stringent labour market segmentation in the allocation of job offers after the reforms, as reported e.g., in Boeri and Flinn (1999). Conversely, the observed decline of mobility after 2004 – to values “converging” to what observed for the average Mediterranean and Continental Countries (and the euro area, see Macchiarelli and Ward-Warmedinger 2013) – suggests a stabilization of labour markets in the region, but also a less efficient matching of individuals with jobs, as evidenced by the increase in the probability to remain in unemployment<sup>19</sup>. For Mediterranean countries, a lower mobility over time analogously reflects an increase in the likelihood to remain unemployed over time. In Nordic and Continental countries,

**Table 4 Transition probabilities by worker group**

		Labour market status year t											
		Central Eastern			Nordics			Continental			Mediterranean		
<i>Males</i>		E	U	NA	E	U	NA	E	U	NA	E	U	NA
1998-2003	E	<b>93.245</b>	4.705	3.130	<b>92.353</b>	2.938	4.878	<b>94.018</b>	3.641	2.425	<b>95.623</b>	2.144	2.317
	U	30.950	<b>58.559</b>	12.394	34.708	<b>51.257</b>	16.568	32.590	<b>61.282</b>	6.850	34.789	<b>61.845</b>	4.029
	NA	9.734	5.352	<b>86.706</b>	16.526	4.841	<b>79.731</b>	11.119	3.777	<b>87.441</b>	8.989	4.286	<b>87.018</b>
2004-2008	E	<b>95.328</b>	2.792	1.995	<b>92.891</b>	2.548	4.618	<b>94.094</b>	2.795	3.059	<b>95.896</b>	2.507	1.643
	U	30.147	<b>61.747</b>	11.399	40.153	<b>46.234</b>	15.623	34.496	<b>47.746</b>	17.764	29.169	<b>68.048</b>	2.952
	NA	7.028	3.608	<b>89.968</b>	15.327	4.825	<b>80.050</b>	10.097	3.540	<b>86.318</b>	4.949	4.162	<b>90.935</b>
<i>Females</i>		E	U	NA	E	U	NA	E	U	NA	E	U	NA
1998-2003	E	<b>91.604</b>	4.007	5.701	<b>89.993</b>	2.862	7.255	<b>91.220</b>	4.296	3.956	<b>93.787</b>	2.791	3.524
	U	25.193	<b>56.422</b>	19.740	33.206	<b>48.477</b>	21.387	28.484	<b>59.799</b>	12.138	28.395	<b>64.841</b>	7.535
	NA	8.287	4.690	<b>88.411</b>	17.279	5.211	<b>78.220</b>	6.940	3.443	<b>89.798</b>	3.999	2.786	<b>93.342</b>
2004-2008	E	<b>92.935</b>	2.661	4.212	<b>89.422</b>	2.673	8.077	<b>92.196</b>	3.103	4.758	<b>93.651</b>	3.165	3.246
	U	26.614	<b>61.687</b>	16.495	39.468	<b>41.124</b>	20.989	31.897	<b>42.174</b>	25.956	24.145	<b>69.553</b>	6.965
	NA	6.247	3.362	<b>84.196</b>	16.609	5.125	<b>78.349</b>	8.985	3.742	<b>87.244</b>	3.245	3.422	<b>93.429</b>
<i>Low education</i>		E	U	NA	E	U	NA	E	U	NA	E	U	NA
1998-2003	E	<b>88.732</b>	5.616	7.268	<b>86.591</b>	3.797	10.118	<b>90.184</b>	5.440	4.230	<b>93.662</b>	2.828	3.618
	U	21.069	<b>61.114</b>	20.158	27.572	<b>55.099</b>	20.989	24.580	<b>65.824</b>	10.283	29.013	<b>65.372</b>	6.167
	NA	6.430	1.908	<b>93.626</b>	10.149	3.228	<b>87.161</b>	4.374	2.933	<b>93.339</b>	3.985	2.122	<b>94.186</b>
2004-2008	E	<b>89.918</b>	4.722	5.206	<b>86.744</b>	4.001	9.406	<b>90.216</b>	4.154	5.636	<b>93.804</b>	3.389	2.865
	U	19.299	<b>68.509</b>	17.773	31.646	<b>49.062</b>	21.088	25.456	<b>49.311</b>	25.555	22.241	<b>73.148</b>	4.920
	NA	2.977	1.329	<b>91.580</b>	8.387	4.115	<b>87.456</b>	4.657	2.616	<b>92.691</b>	1.906	2.312	<b>95.836</b>

Labour market status year t-1

**Table 4 Transition probabilities by worker group (Continued)**

<i>Medium education</i>		E	U	NA	E	U	NA	E	U	NA	E	U	NA
1998-2003	E	<b>92.508</b>	4.774	3.877	<b>90.849</b>	3.238	5.979	<b>93.144</b>	3.838	2.834	<b>95.839</b>	2.175	2.036
	U	30.486	<b>56.390</b>	14.573	36.121	<b>47.854</b>	18.179	34.295	<b>57.085</b>	9.085	33.197	<b>61.578</b>	6.023
	NA	10.284	7.607	<b>83.601</b>	21.271	7.519	<b>72.734</b>	11.820	4.472	<b>86.162</b>	8.120	4.638	<b>87.529</b>
2004-2008	E	<b>94.218</b>	2.940	2.877	<b>91.180</b>	2.793	6.139	<b>93.232</b>	2.997	3.796	<b>95.565</b>	2.578	1.912
	U	31.040	<b>59.890</b>	12.426	40.892	<b>42.302</b>	18.749	36.922	<b>42.650</b>	20.287	29.975	<b>65.349</b>	5.058
	NA	7.814	4.751	<b>83.955</b>	20.497	6.239	<b>73.654</b>	11.206	4.413	<b>84.342</b>	5.495	4.461	<b>90.164</b>
<i>High education</i>		E	U	NA	E	U	NA	E	U	NA	E	U	NA
1998-2003	E	<b>96.393</b>	1.895	2.492	<b>95.176</b>	1.733	3.178	<b>95.147</b>	2.371	2.235	<b>97.359</b>	1.258	1.477
	U	40.909	<b>47.924</b>	14.882	41.378	<b>46.207</b>	16.006	43.082	<b>49.453</b>	8.209	44.938	<b>54.006</b>	3.181
	NA	21.510	9.129	<b>70.648</b>	29.188	7.025	<b>65.601</b>	20.603	4.986	<b>75.311</b>	21.654	13.906	<b>64.930</b>
2004-2008	E	<b>96.533</b>	1.192	2.337	<b>94.352</b>	1.605	4.138	<b>95.551</b>	1.929	2.521	<b>96.780</b>	1.666	1.604
	U	41.427	<b>51.792</b>	10.706	47.453	<b>40.204</b>	14.474	43.830	<b>39.251</b>	17.190	36.449	<b>58.907</b>	5.212
	NA	21.255	7.847	<b>70.319</b>	30.768	6.600	<b>63.201</b>	22.201	5.536	<b>72.251</b>	15.199	12.842	<b>72.289</b>
<i>15-24 year olds</i>		E	U	NA	E	U	NA	E	U	NA	E	U	NA
1998-2003	E	<b>86.184</b>	8.691	6.630	<b>67.533</b>	4.531	28.716	<b>84.492</b>	10.268	5.337	<b>90.498</b>	5.738	3.912
	U	32.528	<b>54.780</b>	15.116	39.723	<b>34.376</b>	29.650	42.075	<b>49.440</b>	9.132	29.849	<b>63.545</b>	6.929
	NA	10.818	5.799	<b>86.677</b>	20.864	3.693	<b>76.934</b>	11.905	3.699	<b>86.247</b>	6.135	4.804	<b>89.189</b>
2004-2008	E	<b>88.751</b>	6.141	5.073	<b>66.369</b>	5.141	28.857	<b>87.848</b>	7.218	5.352	<b>90.343</b>	6.784	3.041
	U	33.789	<b>55.491</b>	13.077	43.578	<b>30.444</b>	27.296	43.014	<b>43.881</b>	13.465	30.130	<b>65.238</b>	4.940
	NA	6.480	4.096	<b>88.579</b>	16.159	4.900	<b>79.125</b>	13.436	4.436	<b>82.053</b>	4.983	4.566	<b>90.485</b>
<i>25-29 year olds</i>		E	U	NA	E	U	NA	E	U	NA	E	U	NA
1998-2003	E	<b>91.749</b>	5.803	3.713	<b>88.882</b>	3.541	7.623	<b>91.195</b>	5.864	2.283	<b>94.765</b>	3.984	1.382
	U	33.423	<b>55.659</b>	13.002	44.203	<b>39.350</b>	18.187	40.310	<b>52.178</b>	8.416	32.251	<b>64.274</b>	4.169
	NA	18.507	10.566	<b>72.434</b>	32.669	8.984	<b>60.255</b>	24.474	10.159	<b>66.622</b>	12.257	8.505	<b>79.667</b>

**Table 4 Transition probabilities by worker group (Continued)**

2004-2008	E	<b>93.546</b>	3.536	2.968	<b>88.356</b>	3.174	8.723	<b>91.572</b>	4.721	3.687	<b>93.682</b>	4.600	1.770
	U	34.758	<b>57.259</b>	11.937	49.428	<b>34.088</b>	19.271	45.885	<b>41.096</b>	13.290	31.511	<b>64.551</b>	4.248
	NA	17.416	8.889	<b>65.291</b>	33.957	8.452	<b>58.421</b>	27.994	10.532	<b>61.306</b>	12.118	10.441	<b>77.671</b>
<i>30-54 year olds</i>		E	U	NA	E	U	NA	E	U	NA	E	U	NA
1998-2003	E	<b>94.452</b>	3.880	2.671	<b>95.307</b>	2.615	2.091	<b>95.131</b>	3.110	1.601	<b>96.645</b>	1.915	1.493
	U	26.174	<b>59.655</b>	15.657	36.844	<b>50.093</b>	16.101	30.190	<b>63.030</b>	7.269	33.519	<b>62.001</b>	5.464
	NA	9.097	6.570	<b>85.321</b>	19.224	10.580	<b>73.314</b>	8.285	5.296	<b>87.150</b>	7.483	3.051	<b>90.052</b>
2004-2008	E	<b>95.995</b>	2.407	1.566	<b>95.158</b>	2.239	2.702	<b>95.614</b>	2.499	1.876	<b>96.345</b>	2.387	1.303
	U	27.008	<b>64.579</b>	13.157	43.243	<b>45.134</b>	13.396	34.820	<b>49.809</b>	15.556	24.936	<b>70.709</b>	4.873
	NA	7.927	4.432	<b>78.998</b>	22.769	8.106	<b>69.964</b>	9.556	5.619	<b>84.807</b>	4.058	4.273	<b>91.920</b>
<i>55-64 year olds</i>		E	U	NA	E	U	NA	E	U	NA	E	U	NA
1998-2003	E	<b>85.043</b>	2.096	15.287	<b>89.532</b>	2.975	7.851	<b>81.747</b>	3.041	15.588	<b>86.903</b>	1.365	12.038
	U	16.774	<b>50.835</b>	36.484	17.948	<b>65.101</b>	21.694	5.518	<b>73.821</b>	21.538	28.008	<b>64.215</b>	9.896
	NA	3.498	0.957	<b>95.914</b>	1.808	2.797	<b>96.838</b>	0.734	1.275	<b>98.536</b>	1.063	0.814	<b>98.243</b>
2004-2008	E	<b>87.518</b>	1.532	11.259	<b>89.995</b>	2.730	7.442	<b>84.457</b>	1.409	14.206	<b>90.017</b>	1.571	8.586
	U	15.695	<b>63.970</b>	29.805	25.324	<b>55.813</b>	23.375	7.670	<b>33.260</b>	57.741	13.753	<b>77.843</b>	9.315
	NA	3.364	0.626	<b>94.626</b>	2.697	2.174	<b>96.027</b>	1.131	0.482	<b>98.397</b>	0.559	0.998	<b>98.518</b>

Note: E = employed; U = unemployed; NA = inactive so that EE = remains in employment between one year and the next; UU = remains in unemployment, NANA = remains in inactivity. Observations are weighted according to the labour force share (15–64) in each country over the aggregate. Elements showing a probability of remaining in the same labour market state (employment, unemployment and inactivity) are in bold.  
 Sources: LFS microdata, authors' computations.

**Table 5 Mobility index**

		Central Eastern	Nordics	Continental	Mediterranean
Total	1998-2003	<b>0.311</b>	0.400	0.289	<b>0.253</b>
	2004-2008	0.290	<b>0.430</b>	<b>0.375</b>	0.217
	<i>Total</i>	<i>0.310</i>	<i>0.419</i>	<i>0.317</i>	<i>0.227</i>
Males	1998-2003	<b>0.307</b>	0.383	0.286	<b>0.278</b>
	2004-2008	0.265	<b>0.404</b>	<b>0.359</b>	0.226
	<i>Total</i>	<i>0.275</i>	<i>0.396</i>	<i>0.313</i>	<i>0.240</i>
Females	1998-2003	<b>0.318</b>	0.417	0.296	<b>0.240</b>
	2004-2008	0.306	<b>0.456</b>	<b>0.392</b>	0.217
	<i>Total</i>	<i>0.332</i>	<i>0.441</i>	<i>0.323</i>	<i>0.222</i>
Low-education	1998-2003	<b>0.283</b>	0.356	0.253	<b>0.234</b>
	2004-2008	0.250	<b>0.384</b>	<b>0.339</b>	0.186
	<i>Total</i>	<i>0.275</i>	<i>0.371</i>	<i>0.277</i>	<i>0.199</i>
Medium-education	1998-2003	<b>0.338</b>	0.443	0.318	<b>0.275</b>
	2004-2008	0.310	<b>0.464</b>	<b>0.399</b>	0.245
	<i>Total</i>	<i>0.331</i>	<i>0.457</i>	<i>0.347</i>	<i>0.253</i>
High-education	1998-2003	<b>0.425</b>	0.465	0.400	<b>0.419</b>
	2004-2008	0.407	<b>0.511</b>	<b>0.465</b>	0.360
	<i>Total</i>	<i>0.411</i>	<i>0.499</i>	<i>0.426</i>	<i>0.372</i>
16-24 years olds	1998-2003	<b>0.362</b>	0.606	0.399	<b>0.284</b>
	2004-2008	0.336	<b>0.620</b>	<b>0.431</b>	0.270
	<i>Total</i>	<i>0.341</i>	<i>0.617</i>	<i>0.413</i>	<i>0.273</i>
25-29 years olds	1998-2003	0.401	0.558	0.450	0.306
	2004-2008	<b>0.420</b>	<b>0.596</b>	<b>0.530</b>	<b>0.320</b>
	<i>Total</i>	<i>0.425</i>	<i>0.582</i>	<i>0.478</i>	<i>0.315</i>
30-54 years olds	1998-2003	<b>0.303</b>	0.406	0.273	<b>0.255</b>
	2004-2008	0.302	<b>0.449</b>	<b>0.349</b>	0.207
	<i>Total</i>	<i>0.337</i>	<i>0.434</i>	<i>0.299</i>	<i>0.218</i>
55-64 years olds	1998-2003	<b>0.341</b>	0.243	0.229	<b>0.253</b>
	2004-2008	0.269	<b>0.291</b>	<b>0.419</b>	0.168
	<i>Total</i>	<i>0.303</i>	<i>0.271</i>	<i>0.259</i>	<i>0.186</i>

*Notes:* Measures are based on the Shorrocks' mobility index (mobility is higher the closer the index is to 1). Observations are weighted according to the labour force share (15–64) in each country over the aggregate.

Highest mobility indexes for each sub-category across the periods 1998–2003 and 2004–2008 are in bold.

*Sources:* LFS microdata, authors' computations.

mobility increased over the whole period 1998–2008, essentially as the result of a fall in the probability of remaining in unemployment.

The mobility index also confirms that, in Continental countries, mobility is particularly high for people between the ages of 25 and 29 and highly educated people, and has overall increased over time. Also, in the latter countries mobility has generally increased for females. In Continental European countries, women and young people exhibit higher mobility over time through a decreasing probability to remain in both unemployment and inactivity. Analogously, highly educated workers are more mobile through a decreased probability to remain in unemployment over time.

From Table 5, in Nordic countries people between the ages of 16–24 are the most mobile on average and their mobility has increased over time. Such behaviour is always driven by a lower probability of remaining in employment, unemployment and

inactivity compared to Continental and Mediterranean countries (see Table 4). In Nordic countries, highly educated individuals generally display both a higher probability of remaining in employment and a lower probability of remaining in unemployment and inactivity over time, while female workers display a lower probability of remaining in both employment and unemployment over time (Table 4).

In Central Eastern European countries mobility is higher for females, highly educated people and workers between the ages of 25 and 29, though this pattern has overall decreased over time. In these countries, the higher mobility of women is driven by a lower probability over time of remaining in employment and unemployment. Highly educated individuals in the CEE EU countries are more mobile through a lower probability over time of remaining in inactivity and employment.

Finally, for Mediterranean countries, mobility is higher for males, highly educated workers and the 25–29 year olds. While mobility of the former two groups has generally decreased over time, the mobility of the 25–29 year olds has increased, essentially reflecting a lower probability to remain both in employment and inactivity over time.

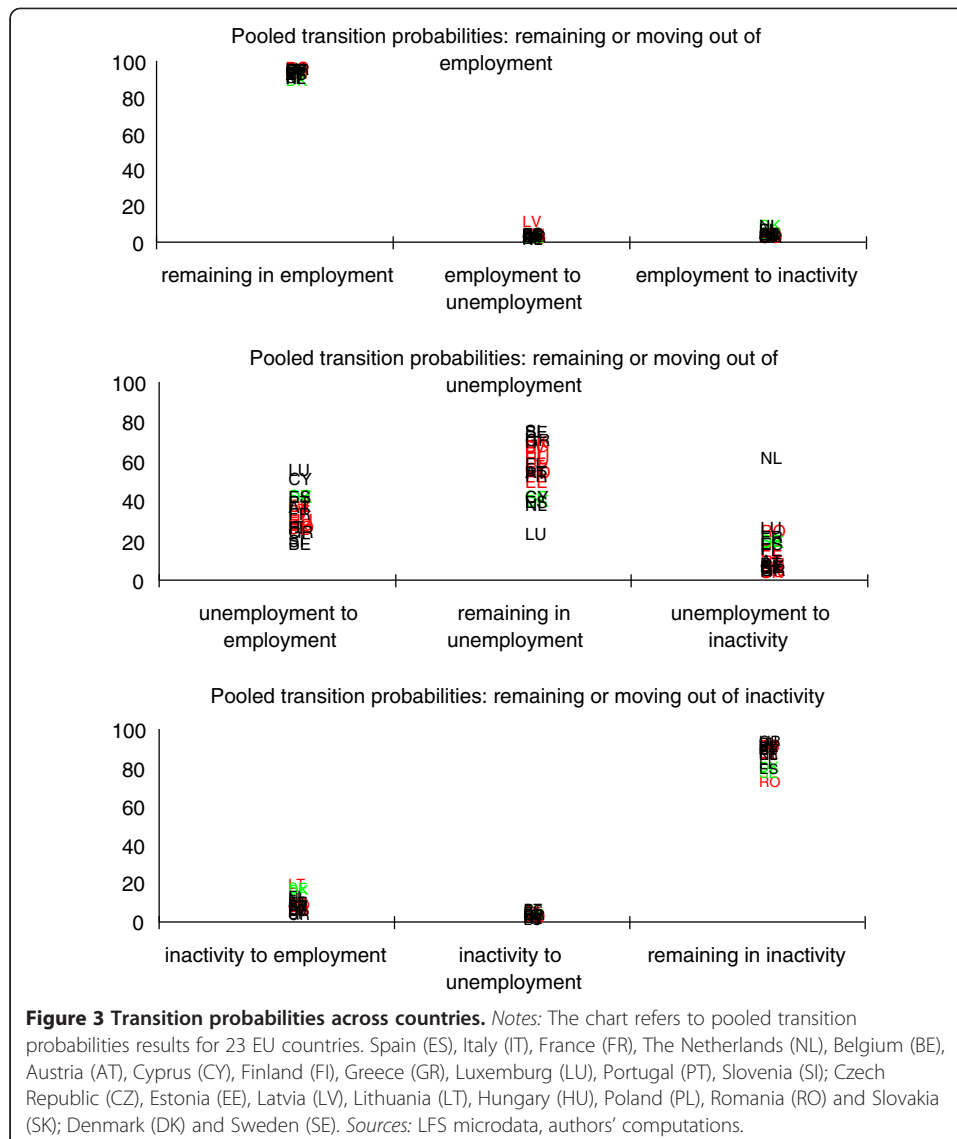
### **2.2.2 Pooling the results**

As well as over time, it is interesting to consider how labour market mobility and transitions varied across EU countries and workers groups. While some empirical patterns are observed in all countries (e.g. the probability of remaining unemployed is several times higher than the probability of an employed individual turning unemployed), cross-country differences in the degree of mobility among different labour market statuses do exist. Particularly, by pooling results, we find that the probability of remaining in employment and, to a lesser extent, inactivity over two periods ( $t-1$  and  $t$ ) is very similar across countries (Figure 3). The results also emphasises the very small variation across countries in the low probability of moving from employment into either unemployment or inactivity. Significant differences across countries are found in the probability of remaining unemployed over two consecutive periods, and in the transitions out of unemployment. Looking at cross-country differences, the probability of remaining unemployed is on average over 70% in Belgium, Greece and Slovenia, or slightly below in Italy, Bulgaria, Latvia and Slovakia. This probability is almost twice that of the probability in Denmark, Sweden, Spain, The Netherlands and Cyprus and more than two-thirds that of the probability in France, Austria, Portugal, Estonia and Romania. This probability is around 60% in Finland, Czech Republic, Lithuania, Hungary and Poland and about only 24% in Luxembourg.

Furthermore, while the probability of remaining in unemployment has increased over time in Italy, Portugal, Cyprus, Czech Republic, Hungary, Poland, Romania and Slovakia, it has fallen in Belgium, Greece, France, Austria, Slovenia, the Baltic countries (Estonia, Latvia and Lithuania), Denmark and Sweden (Additional file 1: Table S1).

Further, on the basis of the Shorrocks' mobility index, labour markets in some countries are characterised by more mobility than others (see Table 6). As expected, labour markets in Denmark and Sweden are more mobile on average, together with that of Spain, the Netherlands and Luxemburg. This is evidenced by a higher Shorrocks' mobility index, which is twice as high in these countries relative to Bulgaria, the Slovak Republic, Poland, Latvia, Hungary, Italy, Belgium, Greece and Slovenia. A group of countries reporting intermediate mobility is represented instead by the Czech Republic,





Estonia, Lithuania, Romania, Austria, Finland, Cyprus and Portugal. Table 6 also shows that on average highly educated individuals and people between the ages of 25–29 are the most mobile across labour market statuses. Moreover, while for Denmark, Sweden, the Continental and Mediterranean counties mobility of all worker groups has increased over the last decade (particularly for females) there is no clear pattern for the disaggregated Central Eastern European countries. The highest mobility groups overall are the 16 to 24 age group in Denmark and Sweden, the 25 to 29 year olds in Romania, people with high educational attainment in the Slovak Republic, the 25 to 29 age group in Spain and the 16–24 age group in Finland (Table 6).

### 3 What's behind mobility? A quick look

While the analysis carried out in earlier was aimed at providing a description of the degree of labour market turnover in the EU, in this section we complement this information by looking at macroeconomic trends in employment (both part-time and

**Table 6 Mobility index across country and worker group**

		Central Eastern										Nordics				Continental				Mediterranean				
		BG	CZ	EE	LV	LT	HU	PL	RO	SK	SI	NL	FI	DK	SE	BE	FR	LU	AT	GR	ES	IT	PT	CY
Total	1998-2003	-	<b>0.332</b>	0.345	0.149	<b>0.318</b>	0.279	<b>0.307</b>	0.366	<b>0.252</b>	0.147	-	0.348	0.447	0.403	0.189	0.304	0.406	0.301	<b>0.207</b>	-	<b>0.241</b>	<b>0.361</b>	<b>0.401</b>
	2004-2008	0.224	0.291	<b>0.364</b>	<b>0.300</b>	0.311	<b>0.262</b>	0.249	<b>0.388</b>	0.221	<b>0.222</b>	0.426	<b>0.359</b>	<b>0.453</b>	<b>0.458</b>	<b>0.204</b>	<b>0.412</b>	<b>0.444</b>	<b>0.320</b>	0.199	0.447	0.199	0.324	0.364
	<i>Total</i>	<i>0.224</i>	<i>0.303</i>	<i>0.349</i>	<i>0.250</i>	<i>0.301</i>	<i>0.266</i>	<i>0.260</i>	<i>0.384</i>	<i>0.226</i>	<i>0.204</i>	<i>0.426</i>	<i>0.352</i>	<i>0.449</i>	<i>0.440</i>	<i>0.199</i>	<i>0.337</i>	<i>0.436</i>	<i>0.317</i>	<i>0.201</i>	<i>0.447</i>	<i>0.211</i>	<i>0.330</i>	<i>0.371</i>
Males	1998-2003	-	<b>0.324</b>	0.337	0.143	<b>0.311</b>	<b>0.261</b>	<b>0.307</b>	<b>0.368</b>	<b>0.243</b>	0.147	-	0.312	0.429	0.398	0.198	0.303	0.393	0.272	<b>0.238</b>	-	<b>0.269</b>	<b>0.361</b>	<b>0.404</b>
	2004-2008	0.238	0.283	<b>0.341</b>	<b>0.282</b>	0.307	0.245	0.249	0.299	0.212	<b>0.213</b>	0.088	<b>0.321</b>	<b>0.436</b>	<b>0.434</b>	<b>0.211</b>	<b>0.392</b>	<b>0.446</b>	<b>0.308</b>	0.232	0.457	0.205	0.323	0.362
	<i>Total</i>	<i>0.238</i>	<i>0.295</i>	<i>0.332</i>	<i>0.235</i>	<i>0.296</i>	<i>0.249</i>	<i>0.260</i>	<i>0.306</i>	<i>0.217</i>	<i>0.196</i>	<i>0.088</i>	<i>0.315</i>	<i>0.433</i>	<i>0.422</i>	<i>0.207</i>	<i>0.333</i>	<i>0.433</i>	<i>0.303</i>	<i>0.233</i>	<i>0.457</i>	<i>0.224</i>	<i>0.330</i>	<i>0.371</i>
Females	1998-2003	-	<b>0.344</b>	0.360	0.158	<b>0.319</b>	<b>0.306</b>	<b>0.309</b>	0.367	<b>0.264</b>	0.150	-	0.384	0.464	0.407	0.186	0.307	0.414	<b>0.353</b>	<b>0.193</b>	-	<b>0.225</b>	<b>0.367</b>	<b>0.403</b>
	2004-2008	0.213	0.302	<b>0.387</b>	<b>0.322</b>	0.313	0.281	0.251	<b>0.433</b>	0.232	<b>0.234</b>	0.558	<b>0.397</b>	<b>0.468</b>	<b>0.482</b>	<b>0.201</b>	<b>0.433</b>	<b>0.439</b>	0.340	0.186	0.450	0.200	0.328	0.367
	<i>Total</i>	<i>0.213</i>	<i>0.315</i>	<i>0.367</i>	<i>0.270</i>	<i>0.303</i>	<i>0.285</i>	<i>0.263</i>	<i>0.423</i>	<i>0.237</i>	<i>0.214</i>	<i>0.558</i>	<i>0.389</i>	<i>0.465</i>	<i>0.459</i>	<i>0.196</i>	<i>0.342</i>	<i>0.435</i>	<i>0.342</i>	<i>0.188</i>	<i>0.450</i>	<i>0.207</i>	<i>0.334</i>	<i>0.374</i>
Low-education	1998-2003	-	<b>0.245</b>	0.321	0.140	<b>0.307</b>	<b>0.242</b>	<b>0.268</b>	<b>0.393</b>	<b>0.176</b>	0.120	-	0.278	0.440	0.351	0.161	0.263	0.386	0.296	<b>0.181</b>	-	<b>0.222</b>	<b>0.347</b>	<b>0.392</b>
	2004-2008	0.192	0.217	<b>0.334</b>	<b>0.274</b>	0.283	0.224	0.198	0.391	0.130	<b>0.206</b>	0.342	<b>0.295</b>	<b>0.441</b>	<b>0.401</b>	<b>0.172</b>	<b>0.373</b>	<b>0.421</b>	<b>0.302</b>	0.174	0.398	0.165	0.305	0.320
	<i>Total</i>	<i>0.192</i>	<i>0.225</i>	<i>0.321</i>	<i>0.222</i>	<i>0.277</i>	<i>0.228</i>	<i>0.213</i>	<i>0.388</i>	<i>0.138</i>	<i>0.184</i>	<i>0.342</i>	<i>0.284</i>	<i>0.438</i>	<i>0.382</i>	<i>0.168</i>	<i>0.292</i>	<i>0.413</i>	<i>0.301</i>	<i>0.176</i>	<i>0.398</i>	<i>0.181</i>	<i>0.312</i>	<i>0.335</i>
Medium-education	1998-2003	-	<b>0.377</b>	0.366	0.167	0.332	<b>0.321</b>	<b>0.338</b>	0.367	<b>0.301</b>	0.167	-	<b>0.419</b>	0.462	0.445	0.217	0.338	0.438	0.301	<b>0.228</b>	-	<b>0.263</b>	<b>0.386</b>	<b>0.405</b>
	2004-2008	0.271	0.332	<b>0.383</b>	<b>0.324</b>	0.332	0.294	0.265	<b>0.393</b>	0.263	<b>0.238</b>	0.453	0.409	<b>0.472</b>	<b>0.492</b>	<b>0.231</b>	<b>0.437</b>	<b>0.440</b>	<b>0.335</b>	0.202	0.457	0.234	0.335	0.364
	<i>Total</i>	<i>0.271</i>	<i>0.345</i>	<i>0.368</i>	<i>0.275</i>	<i>0.319</i>	<i>0.300</i>	<i>0.279</i>	<i>0.390</i>	<i>0.269</i>	<i>0.221</i>	<i>0.453</i>	<i>0.414</i>	<i>0.468</i>	<i>0.476</i>	<i>0.227</i>	<i>0.370</i>	<i>0.439</i>	<i>0.330</i>	<i>0.209</i>	<i>0.457</i>	<i>0.243</i>	<i>0.342</i>	<i>0.373</i>
High-education	1998-2003	-	<b>0.454</b>	0.408	0.196	<b>0.416</b>	0.380	<b>0.460</b>	<b>0.402</b>	<b>0.481</b>	0.259	-	<b>0.441</b>	0.516	0.449	<b>0.331</b>	0.415	0.395	<b>0.385</b>	0.300	-	<b>0.417</b>	<b>0.546</b>	0.495
	2004-2008	0.302	0.421	<b>0.430</b>	<b>0.397</b>	0.415	<b>0.399</b>	0.405	0.399	0.441	<b>0.386</b>	0.549	0.440	<b>0.537</b>	<b>0.537</b>	0.326	<b>0.502</b>	<b>0.536</b>	0.372	<b>0.313</b>	0.520	0.342	0.499	<b>0.501</b>
	<i>Total</i>	<i>0.302</i>	<i>0.429</i>	<i>0.416</i>	<i>0.343</i>	<i>0.411</i>	<i>0.395</i>	<i>0.411</i>	<i>0.397</i>	<i>0.445</i>	<i>0.362</i>	<i>0.549</i>	<i>0.440</i>	<i>0.531</i>	<i>0.514</i>	<i>0.328</i>	<i>0.451</i>	<i>0.511</i>	<i>0.373</i>	<i>0.310</i>	<i>0.520</i>	<i>0.358</i>	<i>0.505</i>	<i>0.499</i>
16-24 years olds	1998-2003	-	<b>0.434</b>	0.411	0.193	0.366	<b>0.351</b>	<b>0.344</b>	<b>0.397</b>	<b>0.332</b>	0.221	-	<b>0.601</b>	0.700	0.551	0.304	0.414	0.462	0.414	0.261	-	<b>0.256</b>	<b>0.456</b>	<b>0.461</b>
	2004-2008	0.231	0.377	<b>0.437</b>	<b>0.383</b>	<b>0.401</b>	0.307	0.327	0.326	0.284	<b>0.454</b>	-	0.584	<b>0.701</b>	<b>0.593</b>	<b>0.341</b>	<b>0.443</b>	<b>0.463</b>	<b>0.455</b>	<b>0.268</b>	0.563	0.241	0.417	0.437
	<i>Total</i>	<i>0.231</i>	<i>0.396</i>	<i>0.418</i>	<i>0.301</i>	<i>0.381</i>	<i>0.317</i>	<i>0.330</i>	<i>0.336</i>	<i>0.292</i>	<i>0.383</i>	-	<i>0.593</i>	<i>0.700</i>	<i>0.582</i>	<i>0.329</i>	<i>0.422</i>	<i>0.462</i>	<i>0.450</i>	<i>0.264</i>	<i>0.563</i>	<i>0.246</i>	<i>0.426</i>	<i>0.443</i>

**Table 6 Mobility index across country and worker group (Continued)**

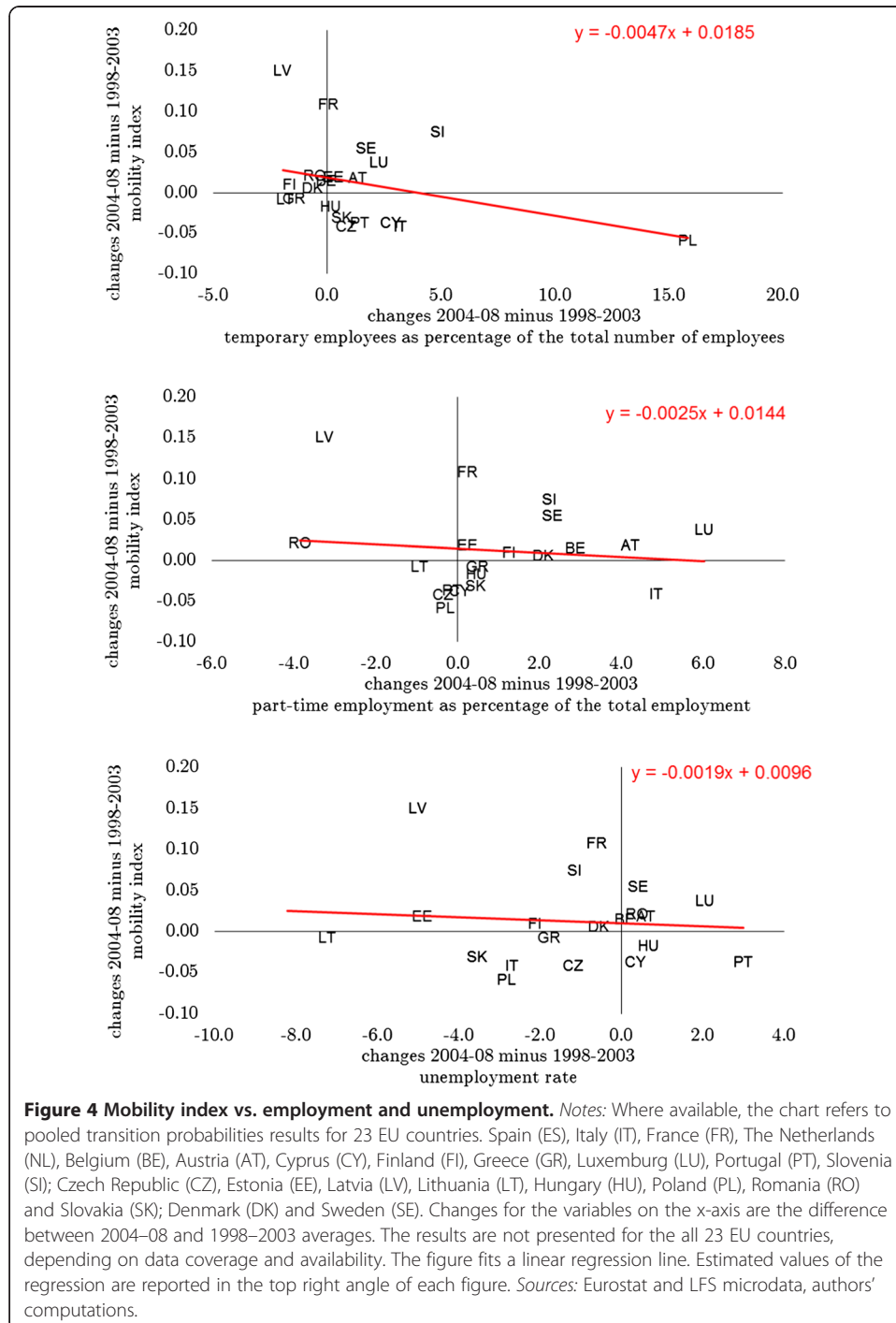
25-29 years olds	1998-2003	-	0.420	0.442	0.201	0.422	<b>0.364</b>	<b>0.423</b>	0.400	<b>0.383</b>	0.298	-	0.533	0.615	0.537	0.358	0.472	0.476	<b>0.411</b>	0.297	-	0.276	<b>0.475</b>	0.514
	2004-2008	0.313	0.384	<b>0.446</b>	<b>0.388</b>	<b>0.464</b>	0.362	0.388	<b>0.528</b>	0.347	<b>0.448</b>	-	<b>0.547</b>	<b>0.639</b>	<b>0.598</b>	<b>0.391</b>	<b>0.572</b>	<b>0.497</b>	0.409	<b>0.309</b>	0.590	<b>0.292</b>	0.472	<b>0.526</b>
	Total	0.313	0.395	0.438	0.325	0.436	0.362	0.395	0.488	0.353	0.411	-	0.535	0.631	0.579	0.381	0.505	0.495	0.409	0.304	0.590	0.286	0.468	0.521
30-54 years olds	1998-2003	-	0.304	<b>0.360</b>	0.157	0.312	<b>0.259</b>	<b>0.299</b>	0.379	<b>0.207</b>	0.118	-	0.380	0.421	0.413	0.164	0.290	0.378	0.287	0.169	-	<b>0.256</b>	<b>0.332</b>	<b>0.369</b>
	2004-2008	0.246	0.275	0.355	<b>0.294</b>	<b>0.314</b>	0.255	0.220	<b>0.515</b>	0.203	<b>0.162</b>	0.276	<b>0.397</b>	<b>0.446</b>	<b>0.481</b>	<b>0.194</b>	<b>0.383</b>	<b>0.432</b>	<b>0.297</b>	<b>0.179</b>	0.416	0.192	0.306	0.339
	Total	0.246	0.284	0.350	0.249	0.305	0.256	0.236	0.486	0.204	0.151	0.276	0.386	0.437	0.460	0.184	0.319	0.420	0.295	0.171	0.416	0.209	0.308	0.345
55-64 years olds	1998-2003	-	0.364	0.333	0.129	0.202	0.269	<b>0.374</b>	<b>0.378</b>	<b>0.289</b>	0.175	-	0.206	0.305	0.226	<b>0.134</b>	0.242	0.215	<b>0.265</b>	0.167	-	<b>0.277</b>	0.203	<b>0.335</b>
	2004-2008	0.204	0.276	<b>0.352</b>	<b>0.230</b>	<b>0.259</b>	<b>0.271</b>	0.215	0.376	0.226	<b>0.232</b>	0.472	<b>0.230</b>	<b>0.313</b>	<b>0.313</b>	0.125	<b>0.497</b>	<b>0.300</b>	0.248	<b>0.169</b>	0.320	0.159	<b>0.213</b>	0.238
	Total	0.204	0.292	0.336	0.204	0.245	0.270	0.230	0.377	0.232	0.222	0.472	0.215	0.309	0.281	0.127	0.284	0.290	0.251	0.169	0.320	0.184	0.211	0.254

Notes: Measures are based on the Shorrocks' mobility index. Highest mobility indexes for each sub-category across the periods 1998–2003 and 2004–2008 are in bold. The table refers to 23 EU countries: Spain (ES), Italy (IT), France (FR), The Netherlands (NL), Belgium (BE), Austria (AT), Cyprus (CY), Finland (FI), Greece (GR), Luxembourg (LU), Portugal (PT), Slovenia (SI); Czech Republic (CZ), Estonia (EE), Latvia (LV), Lithuania (LT), Hungary (HU), Poland (PL), Romania (RO) and Slovakia (SK); Denmark (DK) and Sweden (SE).

Sources: LFS microdata, authors' computations.

temporary), unemployment and the evolution of structure indicators (EPL, product market regulation, etc.). Our objective is to understand whether part of the observed changes in mobility can be broadly restraint to some “macro” explanatory factors.

Not surprisingly, the increase in mobility observed in some countries can be linked to the use of time-limited contracts and part-time work, and *viceversa*. Figure 4 (top and medium panels) shows that, broadly speaking, those countries where mobility increased over time are also those where the percentage of time limited contracts and



part time work increased. However, the correspondence is not one-to-one. Further, Latvia represents a major exception, as the observed increase in mobility is not found to be associated with an increase in the share of temporary or part-time jobs.

In addition, there is no clear correspondence between unemployment rate and mobility. In most countries increases in mobility are associated with a reduction of unemployment over time (Figure 4, bottom panel). Overall, however, in some countries mobility decreased and so too did unemployment rates (notably, Slovakia, Italy, Poland and the Czech Republic), suggesting that while a certain level of turnover is necessary for healthy labour markets (see also Boeri and Garibaldi 2009), it may not be sufficient (also depending on the direction in which changes in labour market statuses are observed; see Section 2).

Focusing on structure indicators (Figure 5), changes in mobility over time seem to be negatively related with changes in the strictness of Employment Protection Legislation (EPL)<sup>20</sup>, i.e. less regulation favours labour market turnovers and *viceversa*, especially in Sweden, Czech Republic and Poland. A similar pattern does not exist for Italy and Portugal, among the euro area countries, or Slovakia. Further, changes in the mobility index are, in most cases, correlated with changes in the expenditure on 'active' labour market policies, such as direct job creation, and, to a lesser extent, employment incentives<sup>21</sup>. A reduction in direct job-creation expenditures is associated with decreasing mobility over time in Italy and Portugal – among the euro area countries – and Slovakia. On the contrary, in France and Sweden a reduction in direct-job creation expenditure is positively associated with increased mobility.

The expenditure on out-of-work maintenance and support (including unemployment benefits, expenditure on early retirement<sup>22</sup>, etc...) is found to be negatively related with mobility over time. This is particularly clear for countries such as Italy, Portugal and Sweden, where increases (decreases) in the expenditure on out-of-work benefits are coupled with lower (higher) mobility over time. Poland and Slovakia provide the opposite picture.

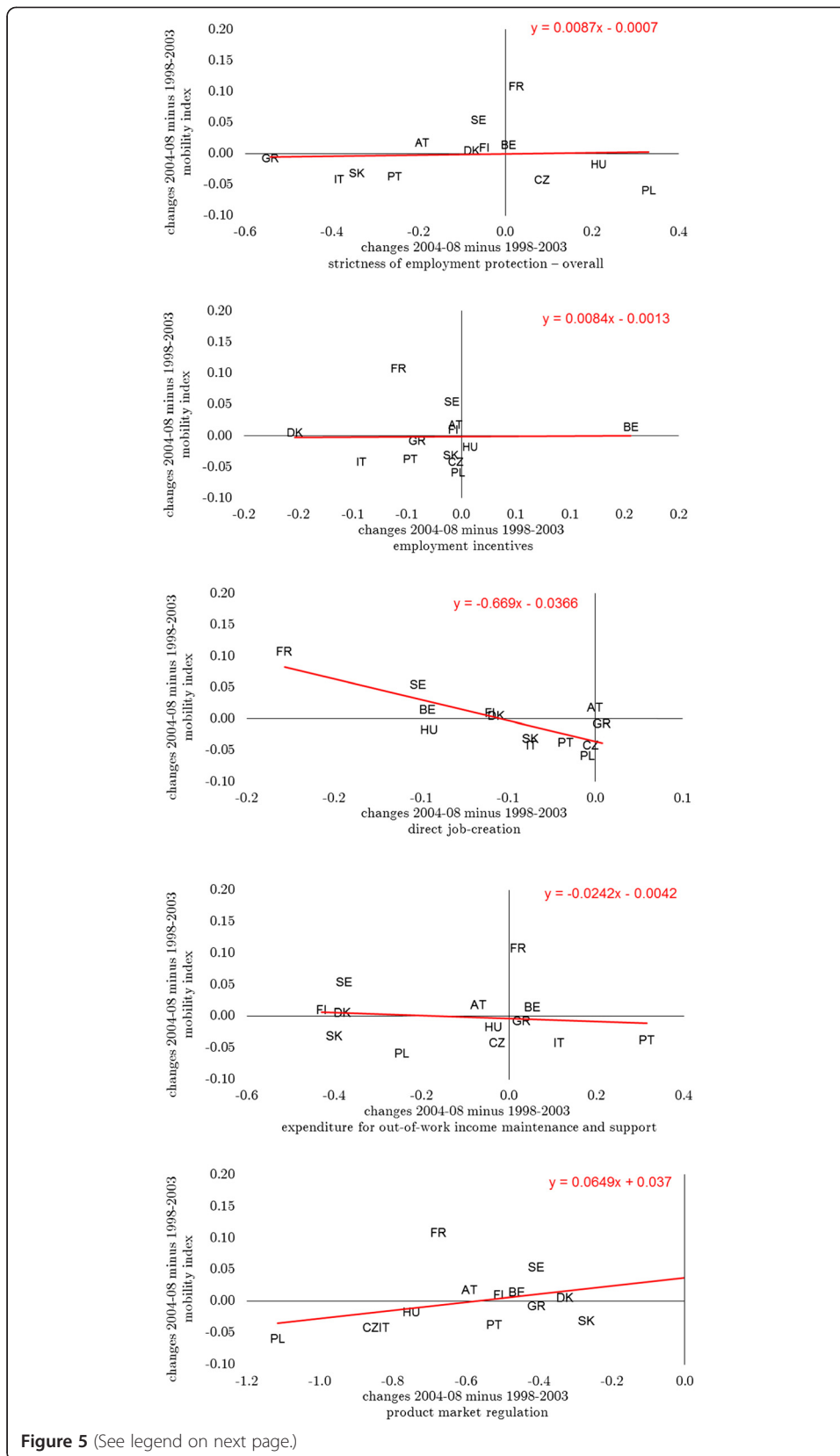
Finally, a decrease in product market regulation is related with increased mobility over time in almost all countries – with the exceptions of Italy and Portugal – among euro area countries – and mainly Poland, Czech Republic and Slovakia – among the CEE EU countries<sup>23</sup>.

#### 4 Conclusions

This paper presented information on labour market mobility in 23 EU countries for the period 1998 to 2008 using Eurostat Labour Force Survey (LFS) data. The analysis presented evidence by country and worker group.

Transitions from unemployment and inactivity back into employment are found to be less frequent in the Central Eastern, Mediterranean and Continental European countries than in the Nordic countries. Moreover, in Continental Europe and the Nordics, the number of people remaining in unemployment decreased over the period 1998–2008 whereas this number increased in the average Central Eastern and Mediterranean countries. At the same time, however, successful labour market entries (from outside the labour market) increased in Central Eastern European countries and the Nordics.

Summary mobility measures for the periods 1998 – 2004 and 2004 – 2008 show a decrease in labour market mobility over time in the Central Eastern European and Mediterranean countries and an increase in Continental and Nordic countries. This decline of labour market mobility in the Central Eastern European and Mediterranean



**Figure 5** (See legend on next page.)

(See figure on previous page.)

**Figure 5 Mobility index vs. structure indicators.** Notes: Where available, the chart refers to pooled transition probabilities results for 23 EU countries. Spain (ES), Italy (IT), France (FR), The Netherlands (NL), Belgium (BE), Austria (AT), Cyprus (CY), Finland (FI), Greece (GR), Luxemburg (LU), Portugal (PT), Slovenia (SI); Czech Republic (CZ), Estonia (EE), Latvia (LV), Lithuania (LT), Hungary (HU), Poland (PL), Romania (RO) and Slovakia (SK); Denmark (DK) and Sweden (SE). Changes for the variables on the x-axis are the difference between 2004–08 and 1998–2003 averages. The expenditure on direct-job creation and out-of work income maintenance and support are intended as a percentage of GDP. The results are not presented for the all 23 EU countries, depending on data coverage and availability. The figure fits a linear regression line. Estimated values of the regression are reported in the top right angle of each figure. Sources: OECD and LFS microdata, authors' computations.

countries may stem from a less efficient matching of individuals with jobs than in other countries, as evidenced by an increase in the probability to remain in unemployment. In contrast, in Continental and Mediterranean countries, mobility increased over this period, essentially as the result of a fall in the probability of remaining in unemployment. All in all, the highest degree of labour market mobility among the countries covered in this paper is consistently observed in Spain, Luxemburg, The Netherlands, Denmark and Sweden, with these results mainly reflecting higher mobility of people below the age of 29, highly educated and female workers. We also find that mobility of all worker groups has generally increased over time in Continental Europe and the Nordics.

Looking at some explanatory factors, the results suggest that countries who experienced an increase in mobility are also those which increased their percentage of time limited (e.g., temporary) contracts and part time work, and *viceversa*. However, looking at unemployment rates and some structure indicators the results provide a mixed picture, suggesting that the sense of mobility strongly varies across countries<sup>24</sup>.

## Endnotes

<sup>1</sup>The anonymized version of this data (which is used in this analysis and is the only version for many countries currently available to the ECB) suffers from some limitations in its use for economic analysis since individuals cannot be tracked over time and there are significant changes in the information collected, variable definitions and coding which limit the time series dimension of the data.

<sup>2</sup>A decrease in the average unemployment duration from 18 months (1998) to 11 months (2008) can be overall observed in Europe (Table 1).

<sup>3</sup>See, inter alia, Fujita and Ramey (2006; 2009); Shimer (2012) for the US.

<sup>4</sup>Due to missing data, some countries are also excluded when computing aggregated results. Based on the LFS, data are not available for Spain prior to 2006, for France for the 2003–2005 period, for Luxemburg and Slovenia prior to 1999 and 2000 respectively. For the Netherlands data availability reduces to 2008 for transitions from unemployment, and to 2006–2008 for transitions from employment and inactivity. For Latvia, Lithuania and Slovakia data are missing prior to 2001, for Romania and Hungary prior to 1999. For Sweden data are missing in 2005.

<sup>5</sup>The latter definition differs from the one used in Macchiarelli and Ward-Warmedinger (2013) in that it does not classify countries according to euro area membership or not.

<sup>6</sup>The LFS questionnaire asks about (i) the individual's socio-economic situation one year before the survey date and (ii) their current professional status during the reference week (i.e. in period  $t$ ). Our measure is therefore an 'annual' transition measure

and presents a lower bound for labour market mobility. No information is available about labour market mobility within a particular year. In addition, a similar analysis using objective classifications for each labour market state (i.e. ILO definitions) is not feasible, owing to a lack of data. For further details see [http://epp.eurostat.ec.europa.eu/portal/page/portal/employment\\_unemployment\\_lfs/documents/](http://epp.eurostat.ec.europa.eu/portal/page/portal/employment_unemployment_lfs/documents/).

<sup>7</sup>The latter limitation – common to such kind of studies (Boeri and Flinn 1999; Boeri and Garibaldi 2009) – allows only observing labour market flows between the survey date (t) and the year before (t-1), without transitions in and out of a particular status (be it employment, unemployment or out of the labour market) in the interval (t; t-1) can be observed. This, clearly, represents a major concern in our analysis, given the interval considered across two subsequent periods is relatively long, i.e. one year. This limitation is likely to underestimate the degree of labour market turnover, especially for those individuals who often make transitions in and out of the labour market (e.g., part-time workers). A feasible alternative would be that of drawing on matched records across different LFS waves using national LFS data. However, the results might be anyway imprecise owing to the merging procedure and possible attrition and nonresponse issues, or errors in the classification of the labour market statuses across countries. For a discussion see Boeri and Flinn (1999); Caliendo and Uhlenborff (2008).

<sup>8</sup>Those results are broadly consistent with Macchiarelli and Ward-Warmedinger (2013), where it is shown that the probability of remaining in unemployment is about 40% in both Denmark and Sweden.

<sup>9</sup>Those results are available upon request from the authors. An analysis of shifts into retirement or education is not provided here. For a discussion on retirement decisions see, inter alia, Aranki and Macchiarelli (2013).

<sup>10</sup>The probability of remaining in unemployment has increased in Czech Republic, Hungary, Poland, Romania and Slovakia over the last decade, but has fallen in the Baltic countries (Estonia, Latvia and Lithuania). In Latvia and Lithuania the fall in the probability of remaining in unemployment was accompanied by a higher probability of transiting from unemployment to inactivity over time, while for Estonia this probability remained roughly similar across time.

<sup>11</sup>Changes in the institutional arrangements and labour market composition (also in the light of labour market migration to Western Europe stemming from the EU accession in 2004) have contributed to this trend.

<sup>12</sup>Country-specific results point to the fact that flows from employment to unemployment or inactivity do not vary much across countries, whereas movements from unemployment to employment or inactivity as well as transitions from inactivity to employment show more pronounced cross-country variation.

<sup>13</sup>A change in definition for France explains the high rates of transition into inactivity for the euro area aggregates. These results do not change when controlling for education and retirement transitions.

<sup>14</sup>Results for Continental countries must be taken cautiously, as the effect of this recodification cannot be exactly quantified. As reported by the French National Institute of Statistics (INSEE) such an adjustment was adopted to make the unemployment definition conformable to the ILO criteria after 2003. For further details please see [http://www.insee.fr/fr/methodes/sources/pdf/estimations\\_chomageBIT\\_enquete\\_emploi.pdf](http://www.insee.fr/fr/methodes/sources/pdf/estimations_chomageBIT_enquete_emploi.pdf).



<sup>15</sup>Possibly, also in the light of the aforementioned change in definition for unemployment in France.

<sup>16</sup>While we recognize the role of out-migration in Central Eastern European countries to be extremely relevant – especially after EU accession – the LFS data do not specifically target migrants, being aimed instead at the resident population. Matching migration from origin to destination countries (outflows and inflows) after the 2004 and 2007 EU enlargements is thus very difficult in practice as “some migrants will be missing from the sampling frame [...] which is design to ensure a representative coverage of the overall population, rather than specifically migrants [...]”. For a further discussion see Eurostat (2011).

<sup>17</sup>From Figure 2, the results of labour market outflows increasing in Continental European countries are shown to be mainly driven by France, where the aforementioned change in the definition for unemployment is likely to over-estimate labour market quits (see also Macchiarelli and Ward-Warmedinger 2013) See footnote 14.

<sup>18</sup>As summarized before, the Shorrocks’ index is a proxy index for mobility. For example, with respect to the results in Tables 2 and 3, the decrease in state persistence over time (i.e. the reduction of the elements on the main diagonal from 1998–2003 to 2004–2008) implies an increase in the mobility index across the two sub-periods.

<sup>19</sup>Particularly, the fall in mobility in Central Eastern European countries from 2004 should be read in light of the political demand for social security after the transition period (early 90s). At that time several program of unemployment benefits, social security, income support and severance pay were put in place, with the (often mistaken) aim to enhance flexibility of workers and reduce long-term unemployment. Such active labour market spending seemed not to have crucially enhanced stagnation on unemployment pools before 2004 but, on the contrary, they seemed to create inefficiencies by means of displacement effects in the second period (2004–2008).

<sup>20</sup>EPL is likely to proxy institutional factors such as the degree of unionization, minimum wage policies, etc.

<sup>21</sup>With employment incentives we mean benefits paid to beneficiaries with low earning from part-time or intermittent jobs. See OECD.stat database.

<sup>22</sup>This type of expenditure refers to a scheme which allows (older) workers – already on unemployment benefits – to move to a similar benefit scheme where the work availability requirement is no longer necessary.

<sup>23</sup>For the former, the patters is, however, in line with the idea that a higher regulation is expected to reduce employment by slowing down the pace at which displaced workers find new jobs (see also Burgess et al. 2000), resulting into a lower level of labour turnover.

<sup>24</sup>As discussed in Section 2, also depending on the direction in which transitions across labour market statuses are observed – be it from unemployment to employment, from unemployment to inactivity and so on. The effectiveness of labour market measures and their interactions are likely to affect the degree of labour market turnover as well.

## Additional file

**Additional file 1: Table S1.** Transition probabilities across country.

### Competing interests

The IZA Journal of European Labor Studies is committed to the IZA Guiding Principles of Research Integrity. The authors declare that they have observed these principles.

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#### Acknowledgements

The views expressed are those of the authors only and should not be reported as representing the views of the European Central Bank (ECB). The authors are grateful to Julian Morgan, Giulio Nicoletti, José Marín Arcas and other participants at an internal seminar organized by the Directorate Economic Developments of the ECB. The paper also benefited from comments provided by participants at an internal seminar organized by the Centre for European Economic Research (ZEW). Finally, the authors are thankful to Vassilis Monastiriotis for further input and discussion.

Responsible editor: Alan Barrett

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Received: 25 November 2013 Accepted: 27 June 2014

Published: 09 Sep 2014

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10.1186/2193-9012-3-17

Cite this article as: Ward-Warmedinger and Macchiarelli: Transitions in labour market status in EU labour markets. *IZA Journal of European Labor Studies* 2014, 3:17