

Leitner, Sebastian; Stehrer, Robert

**Working Paper**

## Labour Market Transitions of Young People during the Economic Crisis

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# Labour Market Transitions of Young People during the Economic Crisis

Sebastian Leitner and Robert Stehrer





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SEBASTIAN LEITNER

ROBERT STEHRER

Sebastian Leitner is Research Economist at the Vienna Institute for International Economic Studies (wiiw). Robert Stehrer is Deputy Scientific Director of wiiw.



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# Abstract

This paper analyses the impacts of the crisis on various groups in the labour market, providing a comparison across groups of EU countries and individual Central and East European new EU Member States. In particular, it reports how the crisis affected the transitions of people between different states in the labour market: employment, unemployment, education and inactivity. Based on EU SILC data, a descriptive overview concerning the changes in transition rates is provided by estimating Markov transition probabilities. This is complemented by a set of probit regression results pointing towards significant changes in the various transitions triggered by the crisis. This is particularly the case for the younger age cohorts and low-educated workers.

**Keywords:** labour market transitions, crisis effects, young cohorts

**JEL classification:** E24, J23, J63



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# 1. Introduction

The crisis impacted on the labour markets in the various European countries to a different extent depending on the depth and length of the crisis in each country. In some countries unemployment rates rocketed to very high levels whereas in other countries only small changes were observed. Similar developments can be seen when considering other indicators such as employment rates. Furthermore, not only have overall unemployment or corresponding employment rates changed, but the crisis also had a different impact on the various labour market groups. For example, it is argued that males have been hit harder by the crisis than females though this changed partly in the recovery phase. Young ages and the low-educated also seem to be affected more by the crisis in so far as finding a job has become much more difficult or as these groups have lost their jobs more frequently. Such differences are mostly argued by considering unemployment and employment rates differentiated for the respective groups. Less is known, however, on the exact mechanisms behind the differential effects. For example, a higher unemployment rate of the younger age cohorts or the low-educated might result from a higher probability of losing their jobs or a much reduced chance of finding a job at all forcing them to stay in their actual status (such as inactivity or education) or to shift to another status (such as from unemployment to inactivity).

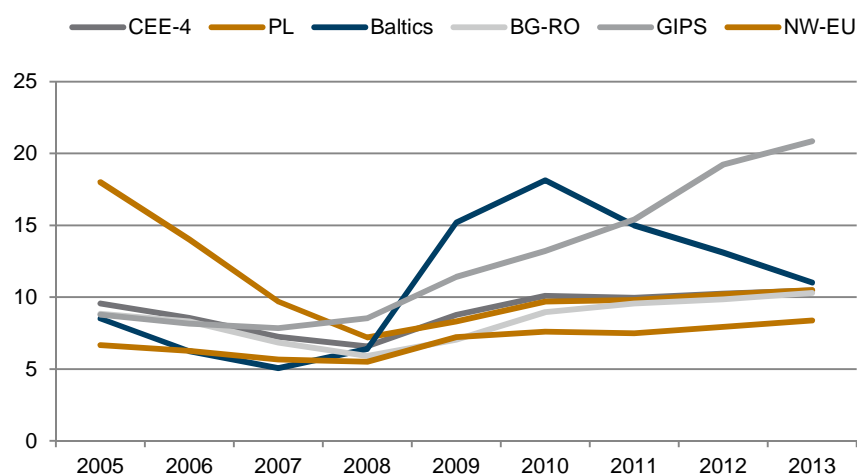
This paper therefore aims to shed light on the flows of persons across labour market states. Specifically, the paper considers the flows of people between the statuses employment, unemployment, inactivity and education together with indicators concerning the probability remaining in each of these statuses. In doing so a comparison is provided for these flows concerning the situations before and during the crisis period, for various country groups and for different labour market groups with a focus on the younger age cohorts. This analysis, which relies on calculating transition probabilities using data from the EU SILC (European Survey on income and living conditions), is complemented by an econometric exercise considering the changes in the respective probabilities concerning the flows mentioned above over the crisis period. The results point towards significant differences with respect to changes in labour market flows as triggered by the crisis for the various subgroups and across countries.

The paper goes as follows. In Section 2 some important trends in the development of labour market indicators over the crisis period are compared across countries, indicating the different strategies with which countries and labour market groups responded to the crisis. In particular, trends in unemployment rates, participation in education for the younger age cohorts and trends in employment rates are presented. Underlying these changes in stocks are flows of people across labour market states which need to be considered carefully when analysing the effects of the crisis on labour market outcomes. Section 3 therefore takes a detailed look at the various rates capturing the probabilities of people moving across labour market states, emphasising the differentiated impact of the crisis period and the differences across EU country groups and CEE new EU Member States (CEE NMS). Particular attention is again paid to the developments of these rates for the younger age cohorts. Finally, Section 4 presents results from a set of probit estimations for four different labour market transitions, hinting towards significant differences of labour market flows across labour market groups and the effects of the crisis. Section 5 concludes.

## 2. General labour market developments

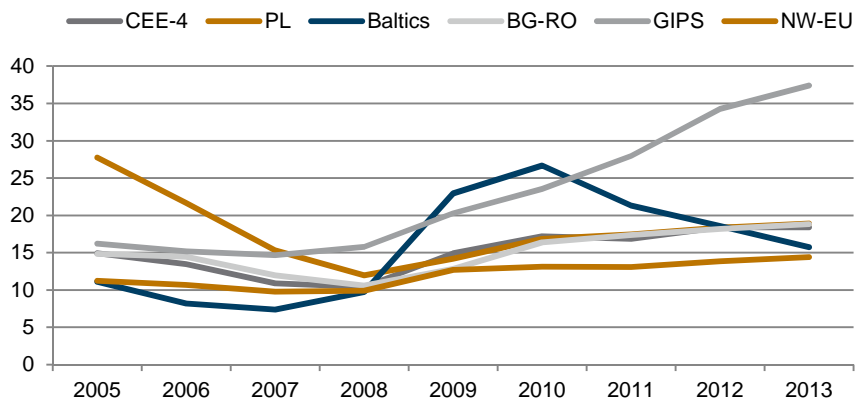
Although the economic and financial crisis hit all countries in the EU, the extent to which it led to a downturn in labour demand has been quite differentiated across countries (see Figure 1 below). In the Baltic States, where the crisis emerged already in 2007 after the burst of a local housing bubble, unemployment rates surged from 6.4% in 2008 to 18% in 2010. In the other CEE NMS, unemployment rose less drastically but remained on average at a level of about 10% in the years 2011 to 2013. In the South European Member States (GIPS) the long-lasting depressionary developments affected unemployment rates which rose to 21% of the labour force in 2013. In the other Northern and Western EU members unemployment rates increased from a low of 5.5% in 2008 to 7.5% in 2010. The short-lived economic upswing at that time seemed to stabilise the situation in the labour markets. However, the economic stagnation thereafter let unemployment rates rise again slightly to 8.4%.

**Figure 1 / Unemployment rates in EU regions, age 15-64**



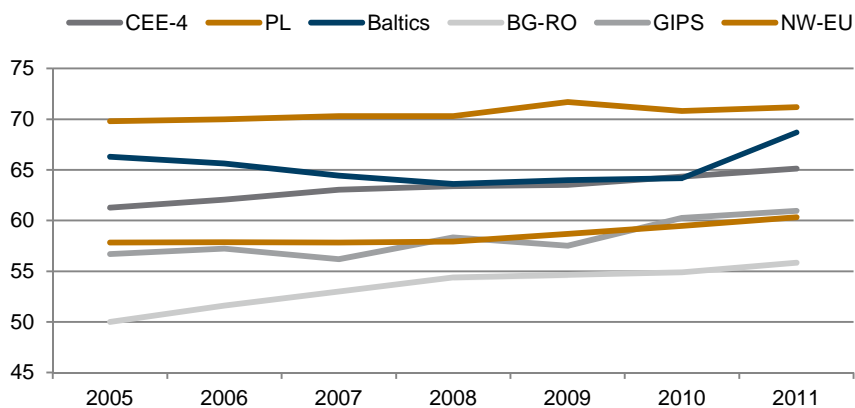
Note: CEE-4: CZ, HU, SI, SK; GIPS: EL, IT, PT, ES; NW-EU: AT, BE, DE, DK, FI, FR, IE, LU, NL, SE, UK.  
Source: Eurostat.

The labour market situation of youngsters (aged 15-29 years) worsened however much more compared to that of the total working-age population (see Figure 2). Unemployment rates continued to increase also after 2010 in almost all EU regions (except for the Baltic States), although at a slower pace than in the years 2008-2010. By contrast, in the Baltic States the unemployment rate declined from its peak of 37% in 2010 to 16% in 2013. In the other CEE EU Member States, on average 11% of the young labour force was unemployed in 2008; in 2010 the rate increased to 17% and further on to 19% in 2013. In South Europe the unemployment rate had higher than in other EU regions already in 2008, reaching 16%, and went on escalating after 2010 to 37% in 2013. In the rest of the EU countries the increase from about 10% in 2008 to 13% in 2010 was followed by a further rise to 14.5% in 2013.

**Figure 2 / Unemployment rates in EU regions, age 15-29**

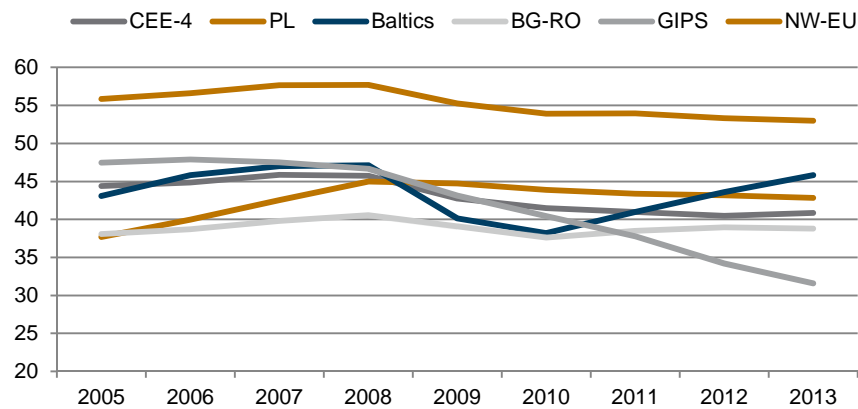
Note: CEE-4: CZ, HU, SI, SK; GIPS: EL, IT, PT, ES; NW-EU: AT, BE, DE, DK, FI, FR, IE, LU, NL, SE, UK.  
Source: Eurostat.

One reason for the higher levels of unemployment rates of young age cohorts compared to those of older age is that the former have obviously higher participation rates in education and thus lower employment rates. Moreover, a rise of participation rates in education (i.e. people stay longer in employment or move from employment back into education) would increase unemployment rates even if the number of unemployed persons stayed the same. Figure 3 (data are only available for the age group 15-24) shows that the share of young people in education differs considerably in the EU regions, between about 55% in Bulgaria and Romania and more than 70% in Poland in the year 2011. However, in all regions participation rates were rising gradually over the period 2005-2011. The strongest increases could be observed in the CEE-4 and Bulgaria and Romania.

**Figure 3 / Participation in education in EU regions, age 15-24, in % of total population 15-24**

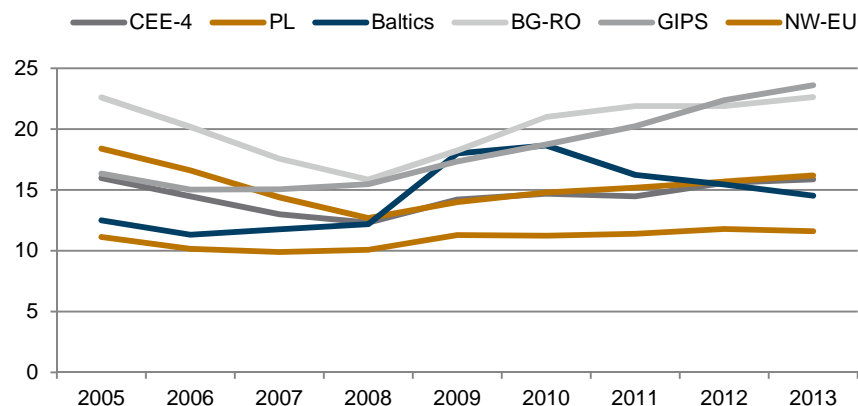
Note: CEE-4: CZ, HU, SI, SK; GIPS: EL, IT, PT, ES; NW-EU: AT, BE, DE, DK, FI, FR, IE, LU, NL, SE, UK.  
Source: Eurostat.

From 2008 onwards, there was an ongoing fall of employment rates in the EU countries (except for the Baltic States where a rebound took place after 2010) (see Figure 4). The strongest fall was experienced in South Europe, from 47% in 2008 to 32% in 2013. In the CEE EU Member States (except for the Baltics) the employment rate declined from 44% on average to 41% in 2013, while in the rest of the EU it decreased from 58% to 53%.

**Figure 4 / Employment rates in EU regions, age 15-29**

Note: CEE-4: CZ, HU, SI, SK; GIPS: EL, IT, PT, ES; NW-EU: AT, BE, DE, DK, FI, FR, IE, LU, NL, SE, UK.  
Source: Eurostat.

However, as can be seen from Figure 5, unemployment rates did not only rise due to higher participation in education and associated with that lower employment of youngsters. Also the share of youngsters 'not in employment or education/training' in the total population of that age cohort, which declined gradually due to higher participation in education in the years before 2008, increased considerably in many of the EU regions during the crisis. In the South European countries and in Bulgaria and Romania about 23% of the population aged 15-29 years was without a job or not in education/training in 2013. In all other CEE NMS this group amounted to 15.5% on average of the population of that age cohort and in the rest of the EU countries to 12% on average.

**Figure 5 / Persons not in employment, education or training in EU regions, age 15-29, in % of total population 15-29**

Note: CEE-4: CZ, HU, SI, SK; GIPS: EL, IT, PT, ES; NW-EU: AT, BE, DE, DK, FI, FR, IE, LU, NL, SE, UK.  
Source: Eurostat.

Underlying these changes in employment and unemployment rates are labour market flows of people across the various labour market states. For example, unemployment rates may rise because people are forced to change from employment status to unemployment or because youngsters leave education and enter the labour market but remain unemployed. Both flows will lead to an increase in the rate of unemployment. The following analysis sheds light on the most important labour market flows underlying the development of stocks.

## 3. Descriptive analysis of the structure of labour transitions in the EU

### 3.1 DATA ISSUES AND STATISTICAL METHODS

In order to analyse the structure and changes of labour transitions before and during the economic crisis, first a descriptive assessment is applied which is followed by an econometric one, the latter to be found in Section 4 of the paper. Both approaches are based on longitudinal microdata of the European Survey of Income and Living Conditions (EU SILC), which covers in principle all EU Member States and in addition Iceland and Norway. For most countries covered by EU SILC the survey is designed as a four-year rotational panel. Thus a quarter of the surveyed population which has been observed for a four-year period is skipped every year and replaced by newly drawn households out of the population. In order to use the maximum of the data for the analysis and still perform useful country comparisons over a reasonable time period, we constructed a longitudinal dataset covering the years 2005 to 2011 with the use of the EU SILC longitudinal files 2007 to 2011. The constructed dataset allows, given by the rotational panel design, observing four subgroups of the population over a timespan of four years, three subgroups over a timespan of three years and two for a two-year period. Since data for a multitude of countries are missing in the 2011 longitudinal file, only 19 EU countries could be used for the labour transition analysis. However, in the case of the descriptive analysis performed in this chapter we had to skip two further countries. Data for Bulgaria are only available for the years 2006 to 2011, in the case of Romania only for the years 2007 to 2011. Thus data for the latter two countries are only used in the regression analysis in Section 4. In order to counterbalance the selection bias of the survey population, personal weights available in the EU SILC files are used.

To present the probability of transition from one state to another, Markov transition matrices are reported (see also Schmid, 2011). The probability of moving from one state  $i$  to another  $j$  in  $n$  time steps is:

$$p_{ij}^{(n)} = \Pr(X_n = j | X_0 = i)$$

and a single-step transition is therefore given by

$$p_{ij} = \Pr(X_1 = j | X_0 = i)$$

Our analysis concentrates on the single-step transitions between four different labour statuses of individuals between 15 and 65 years of age and also focuses on individuals between 15 and 29 years of age. These statuses ( $i$  and  $j$ ) (drawing on the EU SILC variable PL031) are employment (employees and self-employed), unemployment, education or training, inactivity (including retirement, military service, disability, fulfilling domestic tasks or other types of inactivity). In order to compare periods before and during the crisis, Markov transition matrices for the average probabilities of the periods 2005-2008 (including three annual transitions: 2005-2006, 2006-2007 and 2007-2008), 2008-2010 (2008-2009, 2009-2010) and for 2010-2011 are calculated. Moreover, in the case of young persons (15-29 years of



age) individual transition matrices for different educational attainment groups (low-, medium- and highly educated persons applying the EU SILC variable PE040) are presented.

### 3.2 THE CASE OF THE TOTAL POPULATION 15-64 YEARS OF AGE

In order to observe the changes of labour market transitions between the pre-crisis period and the crisis period, Markov transition matrices for year-to-year labour market transitions between four different types of labour market states as mentioned above have been calculated. The states considered are employment (employees and self-employed), unemployment, education or training and inactivity. Since longitudinal data are not available for Germany, and also missing for some years for other EU Member States, the country sample had to be reduced to 17 EU countries. Table 1 presents Markov matrices for the total working-age population (15-64 years). It can be seen that in the pre-crisis period 2005 to 2008 close to 93% of those individuals being employed in one particular year remained in employment in the subsequent year, while 2.9% went from employment into unemployment and 3.9% into inactivity (including retirement). About a third of those being unemployed in one year found employment in the subsequent period, while 48.9% remained unemployed. Close to 18% went from unemployment into inactivity while 2.4% of those being unemployed obtained further training. 14.9% of those individuals who were in education or training found a job the next year, while 5.3% changed into unemployment and 3.7% into inactivity. Still some 7% of those being in inactivity found employment in the next period, while 3.5% went into unemployment. With the start of the economic and financial crisis in 2008-2009, the structure of labour market transitions changed considerably. In Table 1 the average of transitions from 2008-2010 are reported: in this period unemployment rates went up remarkably in all countries, while in the period thereafter, from 2010 to 2011, the deterioration of the labour market situation levelled off in most EU countries (except for the South European EU Member States) or even improved in some (such as the Baltic States). Compared to the pre-crisis period, in the years 2008-2010 the stability of jobs decreased. The rate of those remaining in employment fell to 91%, while those leaving employment into unemployment increased considerably, to 4.6%. Only about 25% of those being in unemployment could find a job in the subsequent year, while almost 56% remained unemployed in the next period. A much smaller number of individuals that had been in education or training in the years 2008 and 2009 found a job in the subsequent year (11.8%) while more of those (6.8%) became unemployed compared to the pre-crisis period. The impossibility of finding a job in the tense labour market resulted in many of those in education staying there for a longer period of time (78.3%). Accordingly, also those being inactive had a lower chance to find a job in the subsequent year (6.1%) in the crisis period and more of those moved into unemployment (4.3%). The stabilisation in the labour market from 2010 to 2011 left the structure of employment transition almost unchanged. Only a slightly higher rate of those being unemployed in 2010 could find a job in the following year (26.8%) compared to the acute crisis period (2008-2010) before (25.2%).

**Table 1 / Markov transition matrices, EU-17<sup>1)</sup>, year-to-year transitions, population 15-65**

Origin \ Destination	Employment	Unemployment	Education/Training	Inactivity
<i>2005-2008 transitions</i>				
Employment	92.7	2.9	0.7	3.8
Unemployment	31.0	49.0	2.4	17.6
Education/Training	14.9	5.3	76.1	3.7
Inactivity	7.4	3.7	0.8	88.0
Total <sup>2)</sup>	60.5	6.6	8.5	24.4
<i>2008-2010 transitions</i>				
Employment	91.1	4.6	0.7	3.6
Unemployment	25.3	56.0	3.1	15.7
Education/Training	11.8	6.8	78.3	3.1
Inactivity	6.4	4.6	1.0	88.0
Total <sup>2)</sup>	59.9	8.5	8.8	22.8
<i>2010-2011 transitions</i>				
Employment	91.2	4.6	0.7	3.4
Unemployment	26.9	55.5	3.1	14.5
Education/Training	12.5	7.1	77.1	3.3
Inactivity	6.4	4.9	1.0	87.7
Total <sup>2)</sup>	58.9	9.6	9.1	22.4

Notes: 1) EU excluding BG, CY, DE, EL, HR, IE, FR, MT, RO, SE, SK - 2) Total is the share of individual labour market statuses in the total population in period t.

Source: wiiw calculations based on EU-SILC longitudinal datasets 2007-2011; pooled year-to-year transitions.

### 3.3 YOUNG AGE COHORTS

The structure of labour transitions of the young-aged population just entering the labour market looks in general quite different from that of older age cohorts. We chose to analyse the age group 15-29 in order to observe also the majority of those youngsters who have finished tertiary education. The stability of jobs (employment to employment transitions) is lower for younger person (see Table 2). In the years before the crisis about 89% of those having a job remained in employment the year after, while 5% of those became unemployed. During the crisis employment stability dropped much more for youngsters, to 86%, while 8% of those in work moved into unemployment, almost double the rate of the total population. On the other hand, young-aged persons had a slightly higher chance to find a new job when being unemployed in the pre-crisis years (37.2%) but for young unemployed this probability fell considerably during the crisis, to 30.4%. Compared to the total population, for youngsters this situation did not improve in the economic upswing of the years 2010-2011. One effect of lower employment demand for young-aged persons in the labour market was that they remained in education and that formerly employed, unemployed and inactive youngsters took the chance of further training. Thus the share of young persons in education in the total population of the age cohort 15-29 rose from an average 33.2% in the years 2005-2008 to 36.6% in 2010-2011.

**Table 2 / Markov transition matrices, EU-17<sup>1)</sup>, year-to-year transitions, population 15-29**

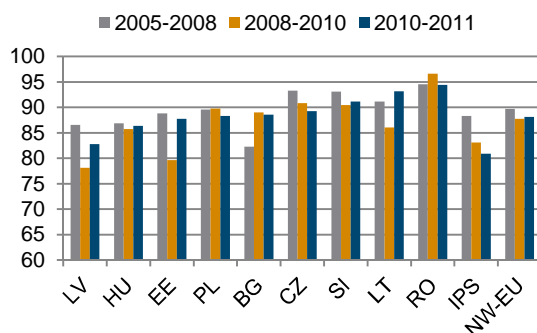
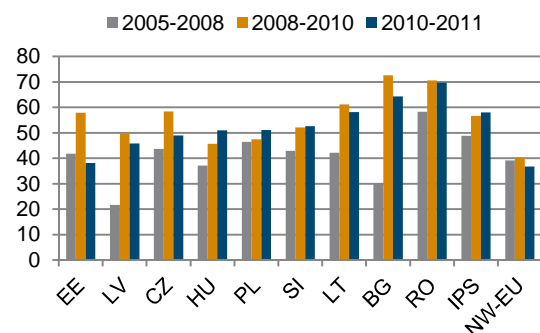
Origin \ Destination	Employment	Unemployment	Education/Training	Inactivity
<i>2005-2008 transitions</i>				
Employment	89.1	5.0	3.0	2.9
Unemployment	37.2	45.9	6.4	10.4
Education/Training	14.1	5.1	77.6	3.2
Inactivity	20.5	10.8	8.3	60.4
Total <sup>2)</sup>	49.6	9.2	33.2	7.9
<i>2008-2010 transitions</i>				
Employment	86.2	7.8	3.4	2.7
Unemployment	30.4	52.5	8.4	8.7
Education/Training	11.4	6.3	79.6	2.7
Inactivity	17.2	13.8	11.3	57.7
Total <sup>2)</sup>	46.2	11.7	34.9	7.1
<i>2010-2011 transitions</i>				
Employment	85.8	7.7	4.0	2.5
Unemployment	30.4	52.1	9.3	8.3
Education/Training	12.0	6.6	78.3	3.0
Inactivity	16.9	12.0	10.6	60.5
Total <sup>2)</sup>	43.6	12.4	36.6	7.4

Notes: 1) EU excluding BG, CY, DE, EL, HR, IE, FR, MT, RO, SE, SK - 2) Total is the share of individual labour market statuses in the total population in period t.

Source: wiiw calculations based on EU-SILC longitudinal datasets 2007-2011; pooled year-to-year transitions.

### 3.3.1 YOUNG AGE COHORTS IN INDIVIDUAL CEE EU MEMBER STATES

In order to analyse the situation of youngsters aged 15-29 in the labour markets of the individual CEE NMS, Figures 6-7 present selected transition rates (for the Slovak Republic no data are available in the 2011 longitudinal EU SILC files) comparing those with the average of available South European countries (IPS: Italy, Portugal, Spain) and the average of available North and West European countries (NW-EU: Belgium, Denmark, Luxembourg, Netherlands, Austria, Finland, UK). For Bulgaria the rate depicted as '2005-2008' comprises only transitions of the years 2006-2008. In the case of Romania the rate of the pre-crisis period includes only data for the years 2007-2008.

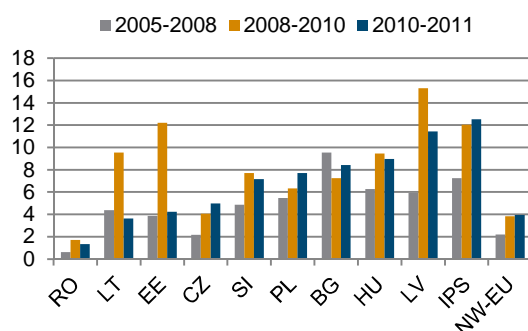
**Figure 6 / Transition: employment to employment, age 15-29****Figure 7 / Transition: unemployment to unemployment, age 15-29**

Note: IPS: IT, PT, ES; NW-EU: AT, BE, DK, FI, LU, NL, UK; data for BG: 2006-2008; data for RO: 2007-2008.

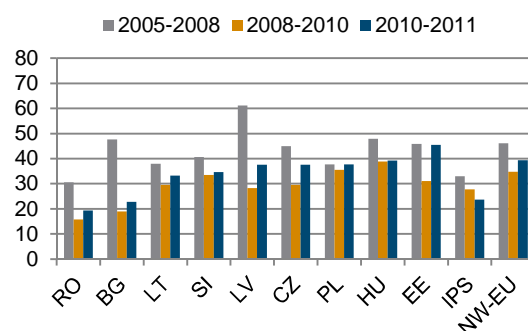
Source: wiiw calculations based on EU-SILC longitudinal datasets 2007-2011; pooled year-to-year transitions.

The stability of employment for individual NMS is shown in Figure 6. As can be seen, the probability for youngsters to stay in the job differs considerably in the region, ranging from about 82% in Latvia in 2010-2011 to more than 95% in Romania. During the crisis period a sharp drop of the probability to stay in employment took place, especially in Latvia and Estonia, but also Lithuania. However, in the latter countries the rebound in 2010-2011 had the effect that those having remained in employment had again a similar chance to keep their job as before the crisis. In Hungary, Slovenia and the Czech Republic a less severe drop took place followed by a revival in the first two countries in 2011. The South European countries experienced a sharper drop of employment probability, which fell to about 80% up to 2011, while in the rest of the EU countries a slight drop was observed in 2008-2010 followed by a modest rebound in 2011. One reason for generally lower employment stability rates in the Southern and NW-EU countries is also that they have higher shares of youngsters with lower levels of education in the labour force compared to the CEE NMS. Contrary to the above-described developments, employment to employment transition even rose in Poland, Bulgaria and Romania during the crisis years. However, at the same time in the latter two countries also the probability to remain unemployed rose considerably for those who had lost their job before (see Figure 7). While in Estonia the unemployment persistence declined again after a crisis-induced increase in the period 2010-2011, in all other countries it remained well above the pre-crisis level. Especially in the case of Bulgaria and Romania the above-described developments show a crisis-induced situation of lower labour mobility, with those having a job enjoying relative employment stability while unemployed lack a chance of getting a job. Although unemployment rates are the highest in the South European countries, the probability of becoming long-term unemployment when having lost the job is comparable to that in the CEE Member States. In the North and Western EU countries the unemployment persistence remained almost unchanged during the crisis and was relatively low in 2010-2011, at 37%, compared to the CEE NMS.

**Figure 8 / Transition: employment to employment, age 15-29**



**Figure 9 / Transition: unemployment to unemployment, age 15-29**



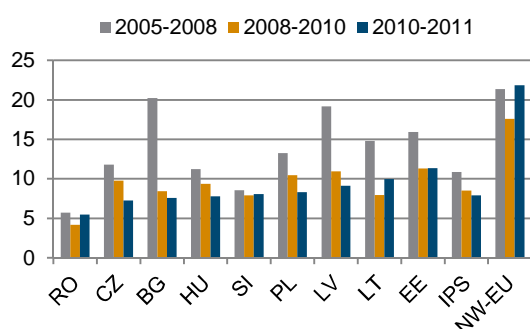
Note: IPS: IT, PT, ES; NW-EU: AT, BE, DK, FI, LU, NL, UK; data for BG: 2006-2008; data for RO: 2007-2008.

Source: wiiw calculations based on EU-SILC longitudinal datasets 2007-2011; pooled year-to-year transitions.

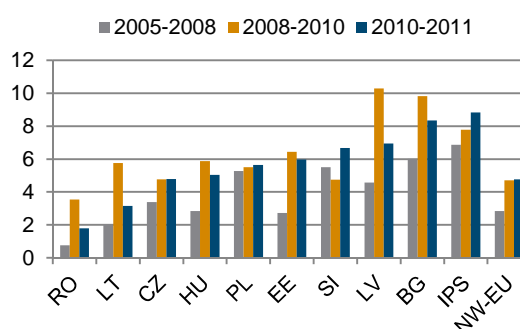
In Figures 8 and 9 the movements between the labour statuses employed and unemployed of young-aged persons are shown. Figure 8 depicts the loss of employment that escalated particularly in the three Baltic States in the crisis years, but also in Slovenia, Hungary and especially in the South European countries, where it remained high thereafter. Although a drop of employment to unemployment probabilities took place in 2010-2011 in some countries, the levels remained above those of the pre-crisis period. Figure 9 completes the picture of unemployment persistence depicted in Figure 7 above.

The chance to find a job after having been unemployed is in all countries lower in the years 2010-2011 (except for Estonia and Poland) compared to the pre-crisis period. While in Bulgaria and Romania only 20% of the unemployed could find employment the year after, similar to Southern Europe, in Estonia and Hungary the chance was at about 40% in 2010-2011, which equals the level of North and Western European countries.

**Figure 10 / Transition: education to employment, age 15-29**

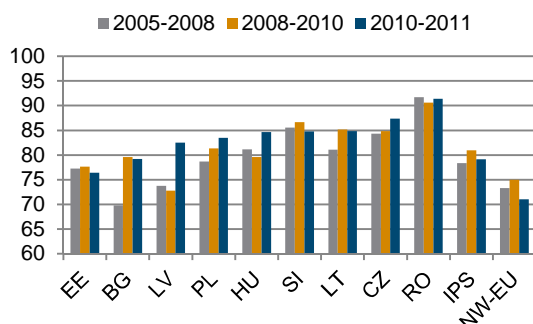
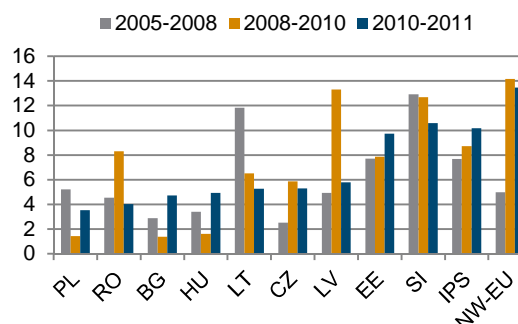


**Figure 11 / Transition: education to unemployment, age 15-29**



Note: IPS: IT, PT, ES; NW-EU: AT, BE, DK, FI, LU, NL, UK; Data for BG: 2006-2008; Data for RO: 2007-2008.  
Source: wiiw calculations based on EU-SILC longitudinal datasets 2007-2011; pooled year-to-year transitions.

The transition rates from education to employment are depicted in Figure 10. The level of the rates is influenced by the structure of education levels of the young population in the individual countries. In many CEE NMS the share of students enrolling in upper secondary and tertiary education in the total young age cohort is higher than in North and West European countries nowadays. Thus the annual transition rates of youngsters in the former countries are generally lower. However, the sudden fall of the probability to move from education into employment, irrespective of the level in the Baltic States but also Bulgaria, shows that labour demand for young-aged persons declined considerably during the crisis. In all NMS countries and Southern Europe the transition rates from education to employment also remained low in 2010-2011 or even declined in those years. Only for the North and Western EU countries it can be observed that labour demand for young entrants was on the rise again in that period and even surpassed the level of 2005-2008. The rate of those who left education without finding a job is depicted in Figure 11. During the crisis, in Latvia and Bulgaria the rate rose to 10%, in South European countries to 8%, while in the other CEE NMS on average about 5% of the youngsters went directly from education to unemployment, comparable to North and Western European countries. Although in 2010-2011 the situation improved, the levels are still higher compared to the pre-crisis period. Moreover, comparing the rates of Figure 10 and Figure 11 shows that in Bulgaria and the South European countries less than half of those leaving education in search of a job had a chance to find employment in 2010-2011.

**Figure 12 / Transition: education to education, age 15-29****Figure 13 / Transition: unemployment to education, age 15-29**

Note: IPS: IT, PT, ES; NW-EU: AT, BE, DK, FI, LU, NL, UK; Data for BG: 2006-2008; Data for RO: 2007-2008.

Source: wiiw calculations based on EU-SILC longitudinal datasets 2007-2011; pooled year-to-year transitions.

One of the possibilities for youngsters facing a tense labour market situation is to take up further education or training. The development of education to education transition rates in Figure 12 shows that in many new EU Member States young persons decided to stay longer in education in the period 2008-2011 compared to the pre-crisis period. Strong increases of transition rates are to be observed for Bulgaria and Latvia. Again the level of the rates is influenced by the structure of educational levels attained by the population. Thus in North and Western EU countries the levels are in general lower due to a higher share of young people leaving education after having finished the lower or upper secondary level. Figure 13 shows the probability of youngsters looking for a job to take up further education. These rates depend upon public means provided for additional training, particularly in the form of active labour market measures. As can be seen, in many NMS the probability to move from unemployment to education did not really increase. In Lithuania the high rate of unemployment to education transition fell sharply with the rise of unemployed in the labour force during the crisis, while in Latvia the expansion of active labour market measures seems to have been of short duration. In the Czech Republic the share of those unemployed youngsters getting further training doubled but still remained below 6%. In Estonia the rate rose to 10% in 2010-2011, while in Slovenia it has been traditionally high and amounted to 12% on average throughout the whole period under observation. In the South European countries the share of the unemployed taking up further training also rose gradually, to about 10%, while in North and West Europe, where the rate rose to about 13%, public expenditures for active labour market measures for youngsters seem to have risen considerably after the outbreak of the economic crisis.

### 3.3.2 TRANSITIONS OF YOUNGSTERS BY EDUCATIONAL ATTAINMENT GROUPS

In order to take a closer look at the chances of young persons in the labour market to find and stay in employment before and during the economic crisis, we depict transition matrices for the age group 15-29 by educational attainment groups. The majority of young people of that age group have already finished education also if they had enrolled in a tertiary programme. It is thus possible to compare the structure of labour transitions and crisis effects of the groups of primary-, upper secondary- and tertiary-educated persons.

In the years before the crisis (2005-2008) the transition matrices of the three groups of young persons aged 15-29 by educational attainment level (see Table 3) look as expected. Highly educated employees had an about 7% higher probability to remain in the job compared to low-educated and a much lower probability (2.5% compared to 8.4%) to become unemployed. The chance of tertiary-educated to find a job again in the subsequent year if having been unemployed was also much higher (46.4%) than that of the low-educated (31.4%) and so was their probability to take up further education (9.7% compared to 5.1%). The probability rates of medium-educated are in between those of the highly and low-educated attainment groups.

**Table 3 / Markov transition matrices, EU-17<sup>1)</sup>, year-to-year transitions, population 15-29, period 2005-2008**

Origin \ Destination	Employment	Unemployment	Education/Training	Inactivity
<i>Primary and lower secondary educated</i>				
Employment	85.9	8.4	2.7	3.0
Unemployment	31.4	51.6	5.1	11.8
Education/Training	9.3	5.0	82.2	3.4
Inactivity	14.9	11.7	8.0	65.4
Total <sup>2)</sup>	34.7	11.2	44.9	9.3
<i>Upper secondary educated</i>				
Employment	88.8	4.6	3.4	3.2
Unemployment	38.7	45.3	6.4	9.6
Education/Training	16.1	5.0	76.1	2.8
Inactivity	22.1	10.9	9.3	57.8
Total <sup>2)</sup>	51.8	8.9	31.9	7.4
<i>Tertiary educated</i>				
Employment	92.8	2.5	2.4	2.3
Unemployment	46.4	34.0	9.7	9.9
Education/Training	29.2	6.0	60.3	4.4
Inactivity	29.4	8.3	5.7	56.5
Total <sup>2)</sup>	73.3	6.1	13.5	7.0

Notes: 1) EU excluding BG, CY, DE, EL, HR, IE, FR, MT, RO, SE, SK - 2) Total is the share of individual labour market statuses in the total population in period t.

Source: wiiw calculations based on EU-SILC longitudinal datasets 2007-2011; pooled year-to-year transitions.

In the course of the crisis the labour market situation obviously deteriorated for all educational attainment groups in the 17 EU countries observed (see Table 4). The low-educated were hit hardest by the economic downturn. The employment stability of this group fell the strongest, to 79%, while the probability to lose the job almost doubled, to 15.1%. The probability to find a job again dropped to 24.6% and the persistence of unemployment increased to 61.2%. Clearly, the labour market situation was relatively more favourable for the tertiary educated also in the crisis years. However, even for this educational attainment group some transition rates changed considerably. The probability to move from education to employment dropped strongest for this group, from 29% in 2005-2008 to 24% in 2008-2011. The persistence of unemployment, at 41%, came much closer to the level of the medium-educated and the probability to move from education to unemployment, at 9.8%, became considerably higher than that of the medium-educated (6%). In general, tertiary-educated young persons were still in a more favourable position in the labour market compared to upper secondary-educated. However, their relative position deteriorated somewhat vis-à-vis medium-educated persons.

**Table 4 / Markov transition matrices, EU-17<sup>1)</sup>, year-to-year transitions, population 15-29, period 2008-2011**

Origin \ Destination	Employment	Unemployment	Education/Training	Inactivity
<i>Primary and lower secondary educated</i>				
Employment	78.7	15.1	3.4	2.8
Unemployment	24.6	61.2	6.0	8.2
Education/Training	7.0	6.2	83.5	3.3
Inactivity	10.7	16.7	10.4	62.2
Total <sup>2)</sup>	27.2	15.7	49.0	8.1
<i>Upper secondary educated</i>				
Employment	86.4	6.9	3.8	3.0
Unemployment	32.4	48.4	9.3	9.9
Education/Training	13.8	6.0	77.9	2.3
Inactivity	18.4	11.7	10.8	59.1
Total <sup>2)</sup>	47.8	10.6	34.2	7.4
<i>Tertiary educated</i>				
Employment	90.3	4.5	3.4	1.8
Unemployment	38.9	41.4	14.0	5.7
Education/Training	24.0	9.8	62.8	3.3
Inactivity	26.4	10.4	13.6	49.6
Total <sup>2)</sup>	70.5	8.8	15.4	5.2

Notes: 1) EU excluding BG, CY, DE, EL, HR, IE, FR, MT, RO, SE, SK - 2) Total is the share of individual labour market statuses in the total population in period t.

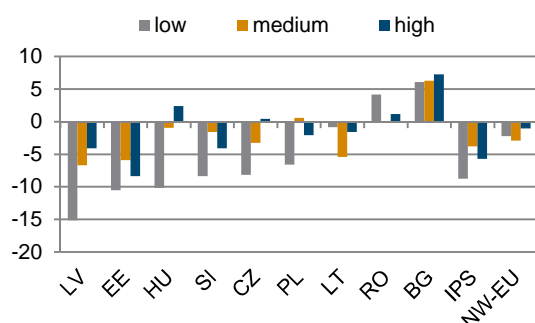
Source: wiiw calculations based on EU-SILC longitudinal datasets 2007-2011; pooled year-to-year transitions.

### 3.3.3 EDUCATIONAL ATTAINMENT GROUPS IN INDIVIDUAL CEE EU MEMBER STATES

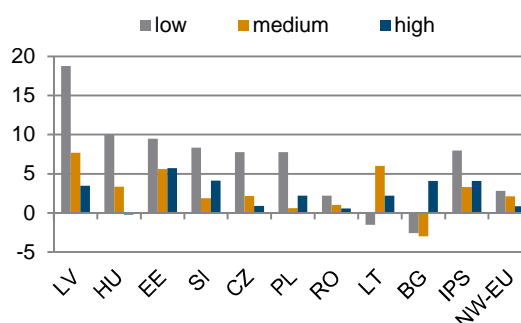
In the following the changes in probability rates of the most important labour market transitions between the period 2005-2008 and 2008-2011 for individual NMS and the groups of South European and North and Western EU countries by education attainment levels are presented. As can be seen from Figure 14, in Latvia, Estonia, Hungary, Slovenia, the Czech Republic and Poland the probability to stay in employment declined much more for the low-educated than for other educational attainment groups; the same could be observed in South European countries. In North and West European countries and also in Lithuania, the medium-educated had to face the strongest loss in job stability. Figure 15, showing employment to unemployment transitions, complements the above-described developments, since in the aforementioned CEE countries the probability of losing the job increased most for the low-educated. The surprising development of rising job security in Bulgaria illustrates the emerging insider-outsider problem in the labour market in the course of the crisis, especially when complemented with the results presented in Figure 16 and Figure 17 below.



**Figure 14 / Transition: employment to employment, difference 2005-2008 to 2008-2011, by education groups, age 15-29**

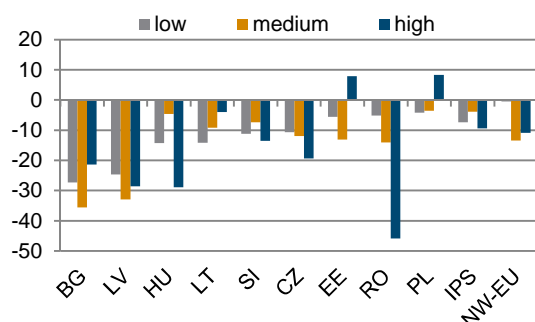


**Figure 15 / Transition: employment to unemployment, difference 2005-2008 to 2008-2011, by education groups, age 15-29**

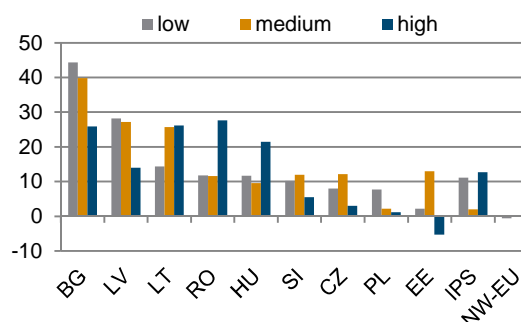


Note: IPS: IT, PT, ES; NW-EU: AT, BE, DK, FI, LU, NL, UK; Data for BG: 2006-2008; Data for RO: 2007-2008.  
Source: wiiw calculations based on EU-SILC longitudinal datasets 2007-2011; pooled year-to-year transitions

**Figure 16 / Transition: unemployment to employment, difference 2005-2008 to 2008-2011, by education groups, age 15-29**



**Figure 17 / Transition: unemployment to unemployment, difference 2005-2008 to 2008-2011, by education groups, age 15-29**



Note: IPS: IT, PT, ES; NW-EU: AT, BE, DK, FI, LU, NL, UK; Data for BG: 2006-2008; Data for RO: 2007-2008.  
Source: wiiw calculations based on EU-SILC longitudinal datasets 2007-2011; pooled year-to-year transitions

The changes in the probability to find a job again after having been unemployed between the crisis and the pre-crisis periods are depicted in Figure 16. Only in Lithuania the deterioration was strongest for the low-educated young persons, while the medium-educated suffered the highest losses in Bulgaria, Latvia and Estonia as was the case in the North and West European countries. By contrast, in Hungary, Slovenia, the Czech Republic and especially Romania the tertiary-educated experienced stronger declines of transition rates compared to the medium- or low-educated, which also happened in South European countries. Figure 17 complements the picture of lowered chances to re-enter the labour market for unemployed young persons. The persistence of unemployment rose strongest for the low-educated in Bulgaria and Latvia; in Slovenia, the Czech Republic and Estonia the situation deteriorated most for medium-educated persons, while in Romania and also South European countries the probability of staying in unemployment increased strongest for the tertiary-educated. In the age group 15-29, the tertiary-educated are just entering the labour market and thus have only little work experience compared to the low- and medium-educated – a fact which may play a role especially in times of generally low labour demand.

## 4. Regressions analysis of labour transitions

### 4.1 REGRESSION MODEL

In our econometric approach, a probit estimator is applied, which is particularly suited to models where the dependent variable takes on only two values (i.e. where the outcome is binary) and thus overcomes the problems of estimating such models using standard Ordinary Least Squares methods (these problems include heteroscedasticity and the issue that predicted probabilities may lie outside the unit interval). Probit models are non-linear models that take the general form:

$$P(y = 1|x) = G(\mathbf{x}\boldsymbol{\beta})$$

where  $y$  is the binary dependent variable,  $\mathbf{x}$  is a vector of observable characteristics and  $\boldsymbol{\beta}$  are parameters to be estimated. The function  $G$  is strictly increasing and is the standard normal density. The model can be estimated in a straightforward manner using Maximum Likelihood Estimation (MLE). In our case the binary dependent variable  $y$  is a dummy variable depicting if one of 16 possible labour transitions has taken place or not between two consecutive years for an individual. The regressions are performed for the most important selected year-to-year transitions, which are employment to employment (i.e. the probability to stay in employment in the following year), employment to unemployment, unemployment to employment and unemployment to unemployment (i.e. to remain unemployed in the consecutive year) for individuals of the age group 15-64. Furthermore, for the age group 15-29 we estimated, in addition to the above-mentioned regression, probabilities for the transitions from education to employment and education to unemployment. For the estimation we used pooled data of the annual transitions between 2005 and 2011 for the country group EU-19 (see Table 5 and Table 10). Individual regressions were performed for various EU country groups, which are the CEE-3 (Czech Republic, Hungary, Slovenia); Poland; the Baltic States (Estonia, Latvia, Lithuania); Bulgaria and Romania; South European countries (IPS: Italy, Portugal, Spain); and North-West European countries (NW-EU: Austria, Belgium, Denmark, Finland, Luxembourg, Netherlands, United Kingdom) (see Tables 6-9, 11 and 12). Furthermore, in the Annex results of separate regressions for the periods 2005-2008 and 2008-2011 (for the country group EU-19) can be found as well as regressions for all individual 19 EU Member States. The results of those regressions are not described in the sections below.

The vector of explanatory variables  $\mathbf{x}$  contains information on the following individual characteristics: gender, age (based on the groups 15-29, 30-54 and 55-64) and educational attainment level (based on the groups low-educated: ISCED 0-2, medium-educated: ISCED 3-4, and highly educated: ISCED 5-6). Moreover, two control variables are included which are available in the EU SILC longitudinal data: 'Living in partnership' (EU SILC variable PB200) and 'health problems' (EU SILC variable PH030: Limitation in activities because of health problems). These subgroups of the explanatory variables are represented by dummies in the probit estimation. In order to analyse whether individual gender, age or education groups were affected significantly by the economic crisis, we included interaction terms containing dummies in the case of the transition having taken place in the crisis years (2008-2011). In order to reduce the omitted variable bias we estimate a fixed effect model including dummy variables for countries and years.

## 4.2 REGRESSION RESULTS

### 4.2.1 TOTAL EU

In Table 5 the results of the estimations for four different transition probabilities for the EU-19 countries (including now also data on Bulgaria for the period 2006-2011 and on Romania for the period 2007-2011) comprising the total population aged 15-64 are presented. In column 1 the results for employment to employment transitions are shown (see also columns 1-2 in Table A1 in the Annex).

**Table 5 / Probit estimation results for labour transitions, EU-19<sup>1)</sup>, year-to-year transitions, population 15-65, period 2005-2011**

Dependent variable: Transition	(1) From employment to employment	(2) From employment to unemployment	(3) From unemployment to employment	(4) From unemployment to unemployment
Male	0.266*** (0.0131)	-0.0518*** (0.0178)	0.222*** (0.0237)	0.128*** (0.0221)
Male * Crisis <sup>2)</sup>	-0.104*** (0.0176)	0.0987*** (0.0228)	-0.0529 (0.0328)	0.0744** (0.0304)
Low-educated	-0.215*** (0.0161)	0.236*** (0.0211)	-0.211*** (0.0261)	0.110*** (0.0243)
Highly educated	0.201*** (0.0174)	-0.277*** (0.0262)	0.188*** (0.0398)	-0.162*** (0.0387)
Low-educated * Crisis <sup>2)</sup>	-0.0977*** (0.0207)	0.0867*** (0.0259)	0.0211 (0.0356)	0.0695** (0.0327)
Highly educated * Crisis <sup>2)</sup>	-0.0302 (0.0230)	0.0559* (0.0326)	-0.0635 (0.0525)	0.110** (0.0506)
Age 15-29	-0.340*** (0.0159)	0.192*** (0.0204)	0.227*** (0.0262)	-0.194*** (0.0254)
Age 55-64	-0.607*** (0.0185)	-0.0547 (0.0358)	-0.617*** (0.0487)	-0.0271 (0.0390)
Age 15-29 * Crisis <sup>2)</sup>	-0.0430** (0.0211)	0.0378 (0.0258)	-0.101*** (0.0352)	0.0194 (0.0337)
Age 55-64 * Crisis <sup>2)</sup>	0.0715*** (0.0241)	0.00833 (0.0436)	0.0226 (0.0667)	-0.0154 (0.0511)
Living in partnership	0.0860*** (0.00983)	-0.201*** (0.0125)	0.106*** (0.0189)	-0.142*** (0.0174)
Health problems	-0.253*** (0.0123)	0.121*** (0.0160)	-0.214*** (0.0237)	-0.0405** (0.0207)
Constant	1.511*** (0.0208)	-1.953*** (0.0295)	-0.499*** (0.0536)	-0.337*** (0.0519)
Country effects	yes	yes	yes	yes
Year effects	yes	yes	yes	yes
Observations	439,942	439,942	59,020	59,020
Prob > chi2	0.0000	0.0000	0.0000	0.0000
Pseudo R2	0.0623	0.0791	0.0486	0.0298

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Note: 1) Data for EU-19: EU excluding CY, DE, EL, HR, IE, FR, MT, SE, SK. – 2) Crisis: 2008-2011.

Source: EU-SILC longitudinal datasets 2007-2011, pooled year-to-year transitions.

Over the whole period analysed, 2005-2011, men have a higher probability to stay in employment. The interaction term depicting the effect of the crisis (2008-2011) shows that, while job stability declined, the conditional difference to women is still positive. In the case of educational attainment groups, as expected, the low-educated show a lower probability to stay in employment than the reference group of medium-educated persons, whereas the highly educated have a higher chance to stay in the job. Throughout the economic crisis, the situation aggravated most for low-educated persons. Also for highly educated the probability of staying in employment fell, however, the result of unconditional sunken

probability is not significant. The results for individual age groups indicate that youngsters (15-29) have a much lower probability compared to the reference group aged 30-54 to stay in employment. During the crisis the situation aggravated for the young age cohorts. Old aged persons obviously have the lowest probability to stay in the job over the whole period analysed since part of those leave the labour market for retirement. During the crisis years, however, they were affected less, thus more of the old employees could stay in their jobs. Apart from country- and year-dummies, which are not reported in the tables, we used two control variables available in the EU SILC data: 'partner' if the persons are married or living in a consensual union, and 'healthproblem' for those persons who have declared that they have a health problem which is limiting their activities. Both control variables show robust results of the expected sign: persons in relationships have a higher probability to stay in the job, and persons with health problems a lower one.

In column 2 results of the regression for employment to unemployment transitions are presented. Before the crisis men had a lower conditional probability to lose their job for unemployment compared to women. However, in the years of the crisis becoming unemployed was more probable for men, while women were more probable to move from employment to inactivity before and during the crisis (see columns 5-6 in Table A.1). As expected, the low-educated are more affected by job loss compared to the medium-educated, whereas the highly educated face a lower probability. During the crisis the situation aggravated again most for the low-educated, while the conditional deterioration seems to be lower for the highly educated. However, in order to analyse whether the various population subgroups were to a significant degree affected differently by the crisis, Wald tests for differences in parameter were performed. In the case of low-educated employed and those being highly educated the parameters for the crisis effect are not significantly different from each other. Young employees have in general a higher risk to move into unemployment than those aged 30-54 years. The result for employees aged 55-64 is non-significant. The crisis seems to have hit all age cohorts negatively but the effect is insignificant for all groups.

In column 3 the results of unemployment to employment transitions, the chance to find a job again, are reported. Men have a higher chance to find employment again throughout the whole period. The crisis seems to have reduced this probability but the result is insignificant. The low-educated have a lower chance to find a job again after having been unemployed compared to the medium-educated, while for the highly educated the probability is higher. In this respect the low-educated have not been hit negatively by the crisis, whereas in the case of the highly educated a reduction in the chance to find a job again seems to have taken place. However, both results are non-significant. Although youngsters are more susceptible to losing their job, their chance to take up employment again is also higher than for those aged 30-54 years. For old age cohorts (55-64) the chance to find a job again is lower. During the crisis the conditional probability to find a job declined only for those unemployed and aged 15-29. For the old aged group the change was insignificant.

Finally, in column 4 the results for unemployed remaining in this labour status over a year are presented. Male jobseekers have a higher probability to remain in unemployment than women. During the crisis this situation aggravated. As expected, the low-educated are hit harder by longer unemployment spells than the medium-educated, while the highly educated have a higher chance to leave unemployment for employment. Both educational attainment groups were negatively affected by the crisis. Their coefficient is not significantly different from each other. The probability of youngsters (aged 15-29) to stay in unemployment is lower than for those aged 30-54. The coefficient for older age cohorts (55-64) is

insignificant. The changes in probability to stay in unemployment are insignificant for all age groups in the course of the crisis years 2008-2011.

#### 4.2.2 COUNTRY GROUPS

The following Tables 6-9 present the results of estimations concerning the four different labour transitions for individual country groups. These are the CEE-3, comprising the Czech Republic, Hungary and Slovenia (data for Slovakia are not available in the EU SILC data file for 2011); Poland is presented separately; the three Baltic States Estonia, Latvia and Lithuania; Bulgaria and Romania as one country group; IPS comprises the South European countries Italy, Portugal and Spain (data for Greece are missing in the 2011 EU SILC file); and NW-EU, comprising North and West European countries available in the data file: Austria, Belgium, Denmark, Finland, France, Luxembourg, the Netherlands, Sweden and the United Kingdom. In addition to estimations for country groups, we also calculated regressions for individual countries which are however not described in detail below. The respective tables can be found in the Annex.

**Table 6 / Probit estimation results for transition: Employment to employment, EU country groups<sup>1)</sup>, year-to-year transitions, population 15-65, period 2005-2011**

Country groups	(1) CEE-3	(2) Poland	(3) Baltic States	(4) BG-RO	(5) IPS	(6) NW-EU
Male	0.269*** (0.0263)	0.350*** (0.0301)	0.181*** (0.0320)	0.207*** (0.0526)	0.259*** (0.0222)	0.267*** (0.0258)
Male * Crisis <sup>2)</sup>	-0.0600* (0.0360)	-0.0956** (0.0439)	-0.199*** (0.0411)	-0.0563 (0.0636)	-0.104*** (0.0290)	-0.0894** (0.0359)
Low-educated	-0.303*** (0.0375)	-0.224*** (0.0486)	-0.273*** (0.0449)	-0.355*** (0.0600)	-0.250*** (0.0256)	-0.192*** (0.0337)
Highly educated	0.246*** (0.0374)	0.394*** (0.0415)	0.371*** (0.0406)	0.435*** (0.0817)	0.198*** (0.0324)	0.0816*** (0.0299)
Low-educated * Crisis <sup>2)</sup>	-0.0938* (0.0512)	-0.105 (0.0722)	-0.00995 (0.0593)	-0.0438 (0.0733)	-0.0912*** (0.0334)	-0.00605 (0.0469)
Highly educated * Crisis <sup>2)</sup>	0.0351 (0.0510)	0.0157 (0.0591)	-0.0566 (0.0511)	-0.219** (0.0962)	-0.0752* (0.0415)	0.0411 (0.0411)
Age 15-29	-0.432*** (0.0330)	-0.280*** (0.0352)	-0.299*** (0.0392)	-0.375*** (0.0606)	-0.286*** (0.0271)	-0.421*** (0.0322)
Age 55-64	-0.978*** (0.0332)	-0.643*** (0.0528)	-0.287*** (0.0419)	-0.651*** (0.0717)	-0.630*** (0.0337)	-0.567*** (0.0320)
Age 15-29 * Crisis <sup>2)</sup>	-0.00866 (0.0457)	-0.0247 (0.0489)	0.0190 (0.0504)	0.135* (0.0741)	-0.115*** (0.0348)	-0.0254 (0.0447)
Age 55-64 * Crisis <sup>2)</sup>	0.234*** (0.0449)	0.00250 (0.0731)	-0.0830 (0.0527)	0.0314 (0.0850)	0.138*** (0.0431)	0.0349 (0.0437)
Living in partnership	-0.0509** (0.0208)	0.0867*** (0.0265)	0.0803*** (0.0223)	0.0236 (0.0330)	0.119*** (0.0168)	0.105*** (0.0191)
Health problems	-0.362*** (0.0241)	-0.270*** (0.0376)	-0.202*** (0.0249)	-0.345*** (0.0550)	-0.196*** (0.0203)	-0.297*** (0.0232)
Constant	1.741*** (0.0364)	1.407*** (0.0414)	1.309*** (0.0371)	1.902*** (0.0448)	1.556*** (0.0331)	1.558*** (0.0352)
Country effects	yes	.	yes	yes	yes	yes
Year effects	yes	yes	yes	yes	yes	yes
Observations	70,006	41,137	54,671	30,306	106,438	137,384
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R2	0.0886	0.0526	0.0601	0.0926	0.0578	0.0600

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Note: 1) CEE-3: Czech Republic, Hungary, Slovenia; IPS: Italy, Portugal, Greece; NW-EU: AT, BE, DK, FI, LU, NL, UK. – 2) Crisis: 2008-2011.

Source: EU-SILC longitudinal datasets 2007-2011, pooled year-to-year transitions.

The first transition to be analysed is the movement from employment to employment (see Table 6), i.e. the probability to stay in the job. All country groups show that men have a higher chance to stay in employment as compared to women. During the crisis men were hit significantly conditional on all other variables by the crisis in all regions, particularly so in the Baltics, but not in Bulgaria and Romania, where the reduction of job stability was not significant. The low-educated had a lower probability to stay in the job; however, the difference to the medium-educated was much lower in NW-EU countries than in other regions and highest in BG-RO and the CEE-3. Particularly low in NW-EU was also the positive difference between highly educated and medium-educated, while it was remarkably high in BG-RO, Poland and the Baltics. The low-educated were hit significantly by the crisis in the CEE-3 and in South Europe (IPS), whereas in other regions the results were non-robust. A deterioration of job stability for the highly educated from 2008 onwards is only to be detected in BG-RO and the IPS region. In all regions analysed, employees aged 15-29 had a considerably lower chance to stay in employment compared to the reference groups aged 30-54. The chance of old age cohorts (55-64) to stay in employment was lowest in most regions compared to other age groups and particularly low in the CEE-3, while in the Baltics job stability of the old aged is significantly higher than that of youngsters. A clearly negative impact of the crisis on young aged employed is only to be detected in South Europe (IPS). In BG-RO the chance to stay in employment even increased for those youngsters (15-29) having a job. As in the IPS also in the CEE-3 the probability of old age cohorts to stay in employment rose.

**Table 7 / Probit estimation results for transition: Employment to unemployment, EU country groups<sup>1)</sup>, year-to-year transitions, population 15-65, period 2005-2011**

	(1)	(2)	(3)	(4)	(5)	(6)
Country groups	CEE-3	Poland	Baltic States	BG-RO	IPS	NW-EU
Male	0.0810** (0.0357)	-0.146*** (0.0383)	0.130*** (0.0411)	0.0824 (0.0646)	-0.122*** (0.0284)	0.0594 (0.0410)
Male * Crisis <sup>2)</sup>	-0.0310 (0.0464)	0.0262 (0.0541)	0.0407 (0.0504)	0.0480 (0.0770)	0.121*** (0.0357)	0.107** (0.0544)
Low-educated	0.410*** (0.0456)	0.211*** (0.0598)	0.276*** (0.0556)	0.278*** (0.0664)	0.269*** (0.0335)	0.291*** (0.0483)
Highly educated	-0.531*** (0.0715)	-0.543*** (0.0627)	-0.497*** (0.0626)	-0.645*** (0.110)	-0.212*** (0.0427)	-0.107** (0.0517)
Low-educated * Crisis <sup>2)</sup>	0.179*** (0.0604)	0.187** (0.0853)	-0.0293 (0.0700)	0.112 (0.0822)	0.0700* (0.0418)	-0.0589 (0.0651)
Highly educated * Crisis <sup>2)</sup>	-0.00230 (0.0873)	0.0920 (0.0830)	0.141* (0.0729)	0.351*** (0.128)	0.0542 (0.0527)	-0.0556 (0.0670)
Age 15-29	0.179*** (0.0417)	0.216*** (0.0433)	0.0109 (0.0503)	0.0536 (0.0723)	0.241*** (0.0326)	0.140*** (0.0508)
Age 55-64	-0.0866 (0.0633)	-0.143 (0.0884)	-0.281*** (0.0656)	-0.120 (0.110)	-0.00615 (0.0573)	-0.0488 (0.0696)
Age 15-29 * Crisis <sup>2)</sup>	0.0305 (0.0548)	0.0187 (0.0580)	0.0969 (0.0618)	0.0559 (0.0879)	0.0553 (0.0405)	0.0553 (0.0649)
Age 55-64 * Crisis <sup>2)</sup>	0.0308 (0.0789)	0.179 (0.119)	0.176** (0.0779)	-0.0477 (0.127)	-0.0824 (0.0695)	0.0936 (0.0873)
Living in partnership	-0.105*** (0.0253)	-0.206*** (0.0315)	-0.152*** (0.0260)	-0.0903** (0.0397)	-0.194*** (0.0200)	-0.271*** (0.0287)
Health problems	0.197*** (0.0331)	0.102** (0.0497)	0.119*** (0.0303)	0.179** (0.0737)	0.0863*** (0.0254)	0.178*** (0.0329)
Constant	-1.718*** (0.0438)	-1.550*** (0.0484)	-1.461*** (0.0414)	-2.397*** (0.0548)	-1.631*** (0.0389)	-2.026*** (0.0515)
Country effects	yes	.	yes	yes	yes	yes
Year effects	yes	yes	yes	yes	yes	yes
Observations	70,006	41,137	54,671	30,306	106,438	137,384
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R2	0.0616	0.0447	0.0697	0.111	0.0661	0.0500

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Note: 1) CEE-3: Czech Republic, Hungary, Slovenia; IPS: Italy, Portugal, Greece; NW-EU: AT, BE, DK, FI, LU, NL, UK. – 2) Crisis: 2008-2011.

Source: EU-SILC longitudinal datasets 2007-2011, pooled year-to-year transitions.

The results of employment to unemployment transitions (see Table 7) show that only in Poland and in South Europe (IPS) men have a lower probability to lose their job compared to women, while in the CEE-3 and the Baltics the chance is higher. In this respect, only in South Europe and NW-EU men were hit negatively during the crisis conditional on all other variables. The low-educated had in general a higher probability to move from employment to unemployment, particularly in the CEE-3, while for highly educated employees in all regions the chance to lose the job is considerably lower compared to the medium-educated. The difference between the highly and medium-educated is much lower in South Europe than in all regions comprising the CEE NMS and particularly low in the NW-EU countries. In the course of the crisis the probability to move into unemployment for the low-educated rose only in Poland and South Europe, while for highly educated the chance increased in the Baltics and BG-RO. Youngsters aged 15-29 have a higher chance to lose their job in most EU regions except for the Baltics and BG-RO. A lower chance to move into unemployment is depicted for old age cohorts (55-64) in the Baltics. The crisis triggered an increase of the chance to lose the job for unemployment only in the Baltics for employees aged 55-64.

**Table 8 / Probit estimation results for transition: Unemployment to employment, EU country groups<sup>1)</sup>, year-to-year transitions, population 15-65, period 2005-2011**

Country groups	(1) CEE-3	(2) Poland	(3) Baltic States	(4) BG-RO	(5) IPS	(6) NW-EU
Male	0.143*** (0.0508)	0.434*** (0.0433)	0.0961 (0.0637)	0.304*** (0.0720)	0.212*** (0.0408)	-0.101 (0.0694)
Male * Crisis <sup>2)</sup>	0.0311 (0.0727)	0.00195 (0.0761)	-0.0582 (0.0808)	-0.0891 (0.0974)	-0.0679 (0.0527)	0.154 (0.0949)
Low-educated	-0.458*** (0.0559)	-0.292*** (0.0532)	-0.270*** (0.0826)	-0.279*** (0.0739)	-0.114** (0.0466)	-0.400*** (0.0792)
Highly educated	0.214* (0.119)	0.264*** (0.0967)	0.117 (0.105)	0.140 (0.152)	0.248*** (0.0623)	0.0343 (0.0904)
Low-educated * Crisis <sup>2)</sup>	0.0858 (0.0815)	0.0210 (0.101)	0.0142 (0.102)	-0.147 (0.101)	0.0308 (0.0607)	0.214** (0.109)
Highly educated * Crisis <sup>2)</sup>	-0.0233 (0.155)	0.0527 (0.144)	0.147 (0.129)	0.0584 (0.187)	-0.132 (0.0815)	0.108 (0.123)
Age 15-29	0.199*** (0.0573)	0.276*** (0.0485)	0.414*** (0.0829)	0.101 (0.0794)	0.172*** (0.0445)	0.301*** (0.0812)
Age 55-64	-0.558*** (0.104)	-0.467*** (0.0946)	-0.505*** (0.0946)	-0.528*** (0.123)	-0.757*** (0.0960)	-0.614*** (0.101)
Age 15-29 * Crisis <sup>2)</sup>	-0.125 (0.0800)	0.0319 (0.0805)	-0.149 (0.0984)	-0.335*** (0.104)	-0.0251 (0.0557)	-0.191* (0.110)
Age 55-64 * Crisis <sup>2)</sup>	-0.240* (0.141)	-0.172 (0.169)	-0.0625 (0.122)	-0.0910 (0.166)	0.174 (0.120)	0.00694 (0.141)
Living in partnership	0.0580 (0.0397)	0.115*** (0.0416)	0.265*** (0.0422)	-0.0328 (0.0564)	0.0884*** (0.0313)	0.193*** (0.0494)
Health problems	-0.281*** (0.0460)	-0.315*** (0.0593)	-0.251*** (0.0470)	-0.0499 (0.106)	-0.102*** (0.0375)	-0.417*** (0.0540)
Constant	-0.704*** (0.0690)	-0.905*** (0.0772)	-0.489*** (0.0610)	-0.787*** (0.0946)	-0.734*** (0.0602)	-0.370*** (0.0935)
Country effects	yes	.	yes	yes	yes	yes
Year effects	yes	yes	yes	yes	yes	yes
Observations	8,702	8,190	8,246	5,066	18,974	9,842
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R2	0.0595	0.0531	0.0592	0.0594	0.0417	0.0816

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Note: 1) CEE-3: Czech Republic, Hungary, Slovenia; IPS: Italy, Portugal, Greece; NW-EU: AT, BE, DK, FI, LU, NL, UK. – 2) Crisis: 2008-2011.

Source: EU-SILC longitudinal datasets 2007-2011, pooled year-to-year transitions.

Moving out of unemployment into employment is more probable for men in most EU regions except for the Baltics and NW-EU (see Table 8). The crisis did not change this probability of men significantly. Low-educated have a lower chance to find employment again throughout the EU, while a higher chance of highly educated to find a job is only observed for the CEE-3, Poland and South Europe (IPS). An effect of the crisis on low-educated is only found in NW-EU, where the chance to find a job surprisingly increased somewhat compared to the pre-crisis period. For highly educated the probabilities did not change in the years 2008-2011. The young-aged not only have a higher chance to lose their job (see Table 7 above) but also a higher probability to find employment again. This is the case for all regions except for BG-RO. Older age cohorts have a considerably lower chance to move out of unemployment into employment again. The economic crisis lowered the probability for unemployed aged 15-29 to find a job again only in the case of BG-RO and NW-EU; for those aged 55-64 the chance declined further in the case of the CEE-3.

**Table 9 / Probit estimation results for transition: Unemployment to unemployment, EU country groups<sup>1)</sup>, year-to-year transitions, population 15-65, period 2005-2011**

Country groups	(1) CEE-3	(2) Poland	(3) Baltic States	(4) BG-RO	(5) IPS	(6) NW-EU
Male	0.0950* (0.0495)	-0.0887** (0.0409)	0.199*** (0.0637)	0.0983 (0.0706)	0.213*** (0.0372)	0.257*** (0.0633)
Male * Crisis <sup>2)</sup>	-0.0433 (0.0704)	0.0772 (0.0713)	-0.0159 (0.0796)	-0.0440 (0.0918)	0.0478 (0.0480)	0.0420 (0.0877)
Low-educated	0.505*** (0.0531)	0.172*** (0.0490)	0.250*** (0.0787)	0.103 (0.0733)	0.0155 (0.0427)	0.211*** (0.0719)
Highly educated	-0.164 (0.126)	-0.133 (0.0956)	-0.130 (0.114)	0.00375 (0.141)	-0.252*** (0.0598)	-0.0604 (0.0855)
Low-educated * Crisis <sup>2)</sup>	-0.161** (0.0765)	0.0331 (0.0891)	-0.109 (0.0977)	0.225** (0.0953)	0.116** (0.0554)	-0.126 (0.100)
Highly educated * Crisis <sup>2)</sup>	-0.0540 (0.157)	0.0627 (0.141)	-0.122 (0.136)	-0.216 (0.172)	0.220*** (0.0770)	-0.0150 (0.119)
Age 15-29	-0.265*** (0.0574)	-0.322*** (0.0469)	-0.511*** (0.0846)	-0.158** (0.0788)	-0.115*** (0.0418)	-0.162* (0.0831)
Age 55-64	-0.338*** (0.0873)	-0.114 (0.0785)	-0.0686 (0.0923)	0.0314 (0.107)	0.0442 (0.0728)	0.0221 (0.0748)
Age 15-29 * Crisis <sup>2)</sup>	0.0604 (0.0795)	0.00976 (0.0776)	0.157 (0.0993)	0.323*** (0.0998)	-0.0582 (0.0521)	-0.0890 (0.112)
Age 55-64 * Crisis <sup>2)</sup>	0.173 (0.123)	0.140 (0.128)	-0.272** (0.112)	-0.111 (0.136)	-0.0740 (0.0898)	0.0253 (0.106)
Living in partnership	-0.104*** (0.0385)	-0.219*** (0.0387)	-0.230*** (0.0402)	0.0665 (0.0523)	-0.147*** (0.0283)	-0.160*** (0.0465)
Health problems	0.0688 (0.0430)	0.0438 (0.0511)	0.0172 (0.0434)	-0.181** (0.0865)	-0.0980*** (0.0326)	0.0220 (0.0490)
Constant	0.348*** (0.0659)	0.478*** (0.0701)	0.101* (0.0573)	0.271*** (0.0847)	0.293*** (0.0541)	-0.405*** (0.0895)
Country effects	yes	.	yes	yes	yes	yes
Year effects	yes	yes	yes	yes	yes	yes
Observations	8,702	8,190	8,246	5,066	18,974	9,842
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R2	0.0360	0.0270	0.0505	0.0393	0.0217	0.0726

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Note: 1) CEE-3: Czech Republic, Hungary, Slovenia; IPS: Italy, Portugal, Greece; NW-EU: AT, BE, DK, FI, LU, NL, UK. – 2) Crisis: 2008-2011.

Source: EU-SILC longitudinal datasets 2007-2011, pooled year-to-year transitions.

The results of probit-regressions for unemployment to unemployment transitions as dependent variable are presented in Table 9, i.e. the persistence of unemployment. In most regions men have a higher probability to stay in unemployment, except for Poland where it is lower, while in BG-RO the result is



insignificant. The crisis did not change the probabilities significantly. A higher chance to stay in unemployment is found for low-educated in all regions except for BG-RO and South Europe (IPS). Only in South Europe the chance to remain unemployed is significantly lower for highly educated compared to medium-educated. During the crisis the probability to remain in unemployment increased for low-educated in BG-RO and South Europe (IPS), while it fell surprisingly in the case of the CEE-3. For highly educated the probability increased only in South Europe (IPS). Young age cohorts stay less long in unemployment than those aged 30-54, particularly in the Baltics. In the CEE-3 the probability is also lower for those aged 55-64. Only in BG-RO youngsters aged 15-29 were hit by a higher probability to remain unemployed, while in the Baltic States the chance to remain unemployed declined for old age cohorts (55-64).

#### 4.2.3 YOUNG AGE COHORTS

**Table 10 / Probit estimation results for labour transitions, EU-19<sup>1)</sup>, year-to-year transitions, population 15-29, period 2005-2011**

Dependent variable: Transition	(1) From Education to Employment	(2) From Education to Unemployment
Male	0.111*** (0.0266)	0.0324 (0.0330)
Male * Crisis <sup>2)</sup>	-0.0383 (0.0384)	0.182*** (0.0447)
Low-educated	-0.335*** (0.0300)	0.0532 (0.0345)
Highly educated	0.427*** (0.0500)	0.117* (0.0708)
Low-educated * Crisis <sup>2)</sup>	-0.0565 (0.0413)	-0.00151 (0.0464)
Highly educated * Crisis <sup>2)</sup>	-0.0852 (0.0689)	0.158* (0.0898)
Living in partnership	0.237*** (0.0592)	0.249*** (0.0957)
Health problems	-0.121*** (0.0448)	0.0264 (0.0555)
Constant	-0.727*** (0.0472)	-1.695*** (0.0630)
Country effects	yes	yes
Year effects	yes	yes
Observations	81,004	81,004
Prob > chi2	0.0000	0.0000
Pseudo R2	0.0767	0.0285

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Note: 1) Data for EU-19: EU excluding CY, DE, EL, HR, IE, FR, MT, SE, SK. – 2) Crisis: 2008-2011.

Source: EU-SILC longitudinal datasets 2007-2011, pooled year-to-year transitions.

For the young-aged in education two further separate probit-models have been estimated, one for the transition from education to employment and another one for the transition from education to unemployment (see Table 10). Column 1 shows the results for the first transition. In general, over the whole period 2005-2011 men have a higher probability to find a job after finishing education. This did not change significantly during the crisis years. Low-educated have as expected a lower probability to move into employment compared to medium-educated, while highly educated have a higher chance to find a job. The regression results show that there was no significant change for the whole EU-19 country group with respect to educational attainment groups. When looking at the detailed results for country groups

(see Table 11) one can see that in the CEE-3 and BG-RO men were negatively hit by the crisis. Furthermore, in the Baltics and South Europe (IPS) the chance of low-educated to attain a job further declined during the crisis years. In Italy, Spain and Portugal (IPS) also the probability to move into employment out of education declined for highly educated persons.

**Table 11 / Probit estimation results for transition: Education to employment, EU country groups<sup>1)</sup>, year-to-year transitions, population 15-29, period 2005-2011**

Country groups	(1) CEE-3	(2) Poland	(3) Baltic States	(4) BG-RO	(5) IPS	(6) NW-EU
Male	0.252*** (0.0530)	0.137*** (0.0488)	0.143*** (0.0515)	0.491*** (0.127)	0.140*** (0.0467)	-0.0448 (0.0601)
Male * Crisis <sup>2)</sup>	-0.172** (0.0750)	0.0238 (0.0783)	0.00530 (0.0794)	-0.422*** (0.153)	-0.0295 (0.0652)	0.0250 (0.0848)
Low-educated	-0.509*** (0.0540)	-0.661*** (0.0496)	-0.553*** (0.0535)	-0.495*** (0.140)	-0.0898 (0.0560)	-0.297*** (0.0620)
Highly educated	0.351*** (0.128)	0.859*** (0.138)	0.589*** (0.159)	1.542*** (0.435)	0.618*** (0.0712)	0.180** (0.0915)
Low-educated * Crisis <sup>2)</sup>	0.0542 (0.0772)	0.0892 (0.0797)	-0.152* (0.0812)	-0.211 (0.169)	-0.181** (0.0760)	0.102 (0.0875)
Highly educated * Crisis <sup>2)</sup>	-0.160 (0.176)	-0.310 (0.209)	0.0723 (0.221)	-0.786 (0.478)	-0.209** (0.0980)	0.0686 (0.127)
Living in partnership	0.330*** (0.126)	0.149 (0.112)	0.268* (0.144)	0.0943 (0.255)	0.323* (0.187)	0.257*** (0.0880)
Health problems	0.0795 (0.0792)	-0.127 (0.0967)	-0.00991 (0.0759)	-0.112 (0.272)	-0.125 (0.0802)	-0.212** (0.0865)
Constant	-1.425*** (0.0673)	-1.228*** (0.0695)	-0.925*** (0.0718)	-1.489*** (0.105)	-1.251*** (0.0652)	-0.580*** (0.0702)
Country effects	yes	.	yes	yes	yes	yes
Year effects	yes	yes	yes	yes	yes	yes
Observations	14,027	11,154	12,473	5,212	21,194	16,944
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R2	0.0435	0.0687	0.0815	0.0938	0.0596	0.0454

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Note: 1) CEE-3: Czech Republic, Hungary, Slovenia; IPS: Italy, Portugal, Greece; NW-EU: AT, BE, DK, FI, LU, NL, UK. – 2) Crisis: 2008-2011.

Source: EU-SILC longitudinal datasets 2007-2011, pooled year-to-year transitions.

The results for transitions from education to unemployment for the EU-19 group are depicted in column 2 of Table 10. Over the whole period probabilities are not significantly different between men and women; however, men were hit by the economic crisis. Highly educated have a higher chance to move from education directly into unemployment compared to medium-educated, while this is not the case for low-educated. In the course of the crisis the probability increased only for highly educated persons. The regression results for individual country groups (see Table 12) show that in the CEE-3, Poland and South Europe (IPS) the probability to move from education to unemployment increased for men in the crisis years. In South Europe low-educated as well as highly educated have a higher chance to move into unemployment compared to medium-educated. During the crisis the probability of highly educated also increased in this country group. Only in BG-RO the chance to become unemployed when leaving education increased for low-educated during the crisis years.

**Table 12 / Probit estimation results for transition: Education to unemployment, EU country groups<sup>1)</sup>, year-to-year transitions, population 15-29, period 2005-2011**

Country groups	(1) CEE-3	(2) Poland	(3) Baltic States	(4) BG-RO	(5) IPS	(6) NW-EU
Male	-0.0410 (0.0763)	-0.0454 (0.0604)	0.293*** (0.0864)	0.0331 (0.178)	0.0297 (0.0487)	0.118 (0.102)
Male * Crisis <sup>2)</sup>	0.236** (0.0979)	0.327*** (0.0933)	-0.0465 (0.111)	0.246 (0.195)	0.107* (0.0648)	0.211 (0.138)
Low-educated	-0.0333 (0.0773)	-0.162*** (0.0618)	-0.00528 (0.0981)	-0.168 (0.182)	0.147*** (0.0512)	0.109 (0.109)
Highly educated	-0.238 (0.276)	-0.120 (0.215)	-0.195 (0.273)	-0.0995 (0.482)	0.174** (0.0831)	0.150 (0.175)
Low-educated * Crisis <sup>2)</sup>	-0.102 (0.0996)	-0.0684 (0.0946)	-0.188 (0.122)	0.358* (0.199)	0.00704 (0.0699)	-0.0222 (0.142)
Highly educated * Crisis <sup>2)</sup>	0.0733 (0.328)	0.0683 (0.292)	0.417 (0.346)	0.239 (0.543)	0.289*** (0.109)	-0.0642 (0.216)
Living in partnership	0.346** (0.170)	0.257* (0.150)	0.716*** (0.159)	0.0328 (0.199)	0.0963 (0.238)	0.267 (0.185)
Health problems	0.205** (0.0931)	-0.251** (0.127)	0.180** (0.0903)	0.247 (0.366)	-0.0311 (0.0818)	0.136 (0.129)
Constant	-1.602*** (0.0777)	-1.604*** (0.0938)	-1.532*** (0.0916)	-2.296*** (0.107)	-1.633*** (0.0670)	-1.754*** (0.105)
Country effects	yes	.	yes	yes	yes	yes
Year effects	yes	yes	yes	yes	yes	yes
Observations	14,027	11,154	12,473	5,212	21,194	16,944
Prob > chi2	76.06	67.55	157.7	132.5	123.1	83.48
Pseudo R2	0.0214	0.0194	0.0562	0.0744	0.0159	0.0440

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Note: 1) CEE-3: Czech Republic, Hungary, Slovenia; IPS: Italy, Portugal, Greece; NW-EU: AT, BE, DK, FI, LU, NL, UK. –  
2) Crisis: 2008-2011.

Source: EU-SILC longitudinal datasets 2007-2011, pooled year-to-year transitions.

## 5. Summary, conclusions and policy recommendations

### 5.1. R&D STOCKS

In this paper we have analysed the impacts of the crisis on various groups in the labour market, providing a comparison across groups of EU countries and individual CEE new EU Member States. Particularly, we report how the crisis affected the transitions of people between different states in the labour market: employment, unemployment, education and inactivity. In Section 2 of the paper we gave a brief descriptive overview on general developments in the labour markets of EU regions from 2005 up until 2013. In 2008 unemployment rates were in general on the decline in the EU. In the following two years the situation on the labour markets of all EU regions aggravated remarkably; unemployment rates for the total working-age population increased particularly strong in the Baltic States. Thereafter the economic upswing was too weak to bring down unemployment again, in South Europe rates even went on escalating to an average 21% in 2013. Only in the Baltic States the situation improved. However, for young persons (aged 15-29 years) developments were even worse. After 2010 unemployment rates went on rising (except for the Baltic States) to between about 10% and 20% in all EU regions except for South Europe where they soared to more than 35% in 2013. Meanwhile employment rates declined, leaving an increasing share of the young population outside employment, education or training. Underlying these changes in employment and unemployment rates are labour market flows of people across the various labour market states. For example, unemployment rates may rise because people are forced to change from employment status to unemployment or because youngsters leave education and enter the labour market but remain unemployed or also because youngsters leave employment for education. All these flows may lead to an increase in the rate of unemployment.

In Section 3 we shed light on the most important labour market flows underlying the developments of stocks described in Section 2. Based on EU SILC microdata we started with a descriptive overview concerning the changes in transition rates by estimating Markov transition probabilities, first for the population aged 15-64 years in the group of 17 EU countries available in the EU SILC database for the years 2005-2011. In the crisis years 2008-2010 the structure of labour market transitions changed remarkably. Unemployment rose not only due to an increase of inflows from employment but particularly due to a strongly declining outflow into employment. At the same time transition rates from employment to inactivity declined and those from unemployment to inactivity rose only slightly, which made the situation of jobseekers even more difficult. Thus long-term unemployment (depicted by increasing unemployment to unemployment transitions) became more widespread. In the short upswing period 2010-2011 for which data are available no remarkable change in the structure of labour market transitions are to be observed.

For youngsters (15-29) job stability (employment to employment transitions) is in general lower than for older age cohorts, but in addition it declined disproportionately during the crisis. The chance to find a job fell considerably for unemployed as well as for those finishing education. One reaction of youngsters to the tense labour market situation was to stay longer in education or move back to training if being

unemployed. In the following subsections of the paper we took a closer look at the unconditional changes of the structure of labour market transitions of individual young (15-29) educational attainment groups. In the course of the crisis, the low-educated were hit hardest by the economic downturn as shown by a substantial drop in employment stability, increased flows into unemployment and reduced probability to find a job again if being unemployed. For the tertiary-educated in general the labour market situation was still more favourable before and during the crisis as compared to other educational attainment groups. However, the probability to move from education to employment dropped strongest for this group and the persistence of unemployment rose more strongly for this group than for the medium-educated. In general, tertiary-educated young persons were still in a more favourable position in the labour market than the upper secondary-educated. However, their relative position deteriorated somewhat vis-à-vis medium-educated persons.

In Section 4 of the paper the descriptive analysis was complemented by a set of fixed effect probit regressions in order to find out if the conditional changes in the structure of labour transitions of various population subgroups were significant when comparing the pre-crisis and the crisis periods. The regression results for the group of 19 EU countries show that coefficients of conditional changes during the crisis years for gender, age and educational attainment groups have the expected signs and are significant. Men had to face higher flows from employment to unemployment; however, the stability of employment remained higher than for women (who thus moved to a higher degree from employment to inactivity). The low-educated were hit in all respects by the crisis, while the coefficient for the highly educated are partly not significant. For youngsters job stability declined and the chance to find employment again if being unemployed fell. For older age cohorts (55-64), however, employment stability even rose during the crisis, i.e. the retirement age of old-aged persons increased on average.

Looking at regression results by country groups somewhat changes the picture of which population subgroups were hit particularly hard by the crisis. Although in all EU regions job stability of men declined (except for Bulgaria and Romania) only in South, North and West European countries men also had to face higher probabilities of employment to unemployment transitions. Job stability of the low-educated declined significantly only in the CEE-3 and South Europe. An increase in employment to unemployment transitions took place in Poland and South Europe and the persistence of unemployment increased in Bulgaria, Romania and South Europe. For the highly educated, employment stability decreased only in Bulgaria, Romania and South Europe and transitions from employment to unemployment increased only in Bulgaria, Romania and the Baltic States. Only in South Europe the persistence of unemployment increased for this population group. The situation of youngsters deteriorated in South Europe with respect to declining employment stability, in North and West European countries due to lower chances to find a job again after having been unemployed, and in Bulgaria and Romania due to lower chances to find a job and higher persistence of unemployment.

For youngsters we also performed regressions for the transitions from education to employment and to unemployment. Only in the CEE-3 and Bulgaria and Romania men had to face lower education to employment probabilities in the course of the crisis. The low-educated were hit in this respect only in the Baltic States and South European countries. And only in South European countries probabilities declined for the highly educated youngsters. Education to unemployment probabilities of men rose, apart from the CEE-3 and South Europe, also in Poland. Low-educated youngsters were hit in this respect by the crisis only in Bulgaria and Romania, and the highly educated only in South European countries.

The main conclusion drawn particularly from the regression analysis is that the deterioration of the situation in the labour market in the course of the economic crisis did not result in a considerable change in the relative structure of labour transitions and thus in the relative position of disadvantaged groups especially in the CEE new EU Member States. Young-aged persons and the low-educated are in a disproportionately difficult situation, facing lower employment stability and longer spells of unemployment. Policy recommendations to be derived are that investments in education and life-long learning are necessary to be expanded. For young age cohorts still in education, it allows not only to enhance their capabilities but also to bridge time spans of low labour demand. Active labour market measures can in addition help to facilitate the career entry. The plan of the EU to foster youth guarantee schemes in the Member States is a fruitful step forward in this direction. Likewise, the low-educated should be supported via active labour market policies and additional training to improve their skills.

## 6. References

Schmidt, C.M. (ed.) (2011), Studies on 'Flexicurity' Lot 1: Study on Various Aspects of Labour Market Performance using Micro Data from the European Union Statistics on Income and Living Conditions (EU-SILC), Rheinisch-Westfälisches Institut für Wirtschaftsforschung.

**Table A1 / Probit estimation results for labour transitions, EU-19<sup>1)</sup>, year-to-year transitions, population 15-65, periods 2005-2008<sup>2)</sup> and 2008-2011**

Dependent variable Transition	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	From employment to employment		From employment to unemployment		From employment to inactivity		From unemployment to employment		From unemployment to unemployment	
	2005-2008	2008-2011	2005-2008	2008-2011	2005-2008	2008-2011	2005-2008	2008-2011	2005-2008	2008-2011
Male	0.260*** (0.0130)	0.167*** (0.0117)	-0.0459** (0.0179)	0.0435*** (0.0142)	-0.405*** (0.0165)	-0.399*** (0.0162)	0.215*** (0.0243)	0.179*** (0.0232)	0.129*** (0.0224)	0.195*** (0.0208)
Low-educated	-0.235*** (0.0167)	-0.298*** (0.0148)	0.255*** (0.0223)	0.310*** (0.0177)	0.189*** (0.0209)	0.206*** (0.0208)	-0.241*** (0.0272)	-0.170*** (0.0268)	0.143*** (0.0254)	0.158*** (0.0244)
Highly educated	0.188*** (0.0176)	0.181*** (0.0157)	-0.261*** (0.0265)	-0.232*** (0.0203)	-0.0904*** (0.0211)	-0.0737*** (0.0207)	0.162*** (0.0407)	0.144*** (0.0365)	-0.136*** (0.0397)	-0.0703** (0.0344)
Age 15-29	-0.348*** (0.0166)	-0.377*** (0.0155)	0.185*** (0.0220)	0.236*** (0.0183)	0.168*** (0.0230)	0.175*** (0.0249)	0.209*** (0.0279)	0.138*** (0.0279)	-0.196*** (0.0270)	-0.174*** (0.0262)
Age 55-64	-0.607*** (0.0188)	-0.538*** (0.0160)	-0.0499 (0.0361)	-0.0476* (0.0251)	0.855*** (0.0207)	0.879*** (0.0188)	-0.622*** (0.0492)	-0.598*** (0.0460)	-0.0215 (0.0397)	-0.0399 (0.0340)
Living in partnership	0.0724*** (0.0149)	0.0995*** (0.0131)	-0.218*** (0.0206)	-0.192*** (0.0158)	0.189*** (0.0204)	0.182*** (0.0195)	0.0753*** (0.0270)	0.133*** (0.0263)	-0.157*** (0.0253)	-0.136*** (0.0241)
Health problems	-0.284*** (0.0185)	-0.237*** (0.0165)	0.137*** (0.0261)	0.116*** (0.0204)	0.364*** (0.0220)	0.337*** (0.0213)	-0.245*** (0.0346)	-0.199*** (0.0324)	-0.00774 (0.0304)	-0.0612** (0.0281)
Constant	1.566*** (0.0264)	1.489*** (0.0252)	-2.084*** (0.0423)	-1.947*** (0.0354)	-2.030*** (0.0331)	-2.033*** (0.0337)	-0.285*** (0.0775)	-0.551*** (0.0666)	-0.491*** (0.0773)	-0.336*** (0.0637)
Country effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	210,378	229,564	210,378	229,564	210,378	229,564	26,623	32,397	26,623	32,397
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R2	0.0607	0.0639	0.0690	0.0799	0.102	0.115	0.0530	0.0422	0.0276	0.0279

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Note: 1) Data for EU-19: EU excluding CY, DE, EL, HR, IE, FR, MT, SE, SK. – 5) Bulgaria: 2006-2008, Romania: 2007-2008.

Source: EU-SILC longitudinal datasets 2007-2011, pooled year-to-year transitions.



**Table A2 / Probit estimation results for transition: Employment to employment, EU countries, year-to-year transitions, population 15-65, period 2005-2011<sup>1)</sup>**

Countries	(1) AT	(2) BE	(3) BG	(4) CZ	(5) DK	(6) EE	(7) ES	(8) FI	(9) HU	(10) IT	(11) LT	(12) LU	(13) LV	(14) NL	(15) PL	(16) PT	(17) RO	(18) SI	(19) UK
Male	0.331*** (0.0444)	0.200*** (0.0591)	0.123* (0.0633)	0.441*** (0.0423)	0.313*** (0.0829)	0.256*** (0.0613)	0.291*** (0.0353)	0.267*** (0.0624)	0.192*** (0.0357)	0.244*** (0.0309)	0.205*** (0.0564)	0.191*** (0.0495)	0.131*** (0.0460)	0.268*** (0.0596)	0.350*** (0.0301)	0.126** (0.0571)	0.320*** (0.0908)	0.231*** (0.0679)	0.277*** (0.0390)
Male * Crisis <sup>2)</sup>	-0.0795 (0.0605)	-0.114 (0.0756)	-0.0604 (0.0749)	-0.0436 (0.0585)	-0.390*** (0.117)	-0.245*** (0.0755)	-0.177*** (0.0455)	-0.127 (0.0840)	-0.122** (0.0485)	-0.0249 (0.0413)	-0.259*** (0.0742)	0.0763 (0.0768)	-0.125** (0.0585)	-0.0904 (0.0803)	-0.0956** (0.0439)	-0.0495 (0.0738)	-0.0840 (0.106)	-0.140 (0.0854)	-0.0672 (0.0549)
Low-educated	-0.243*** (0.0559)	-0.329*** (0.0750)	-0.380*** (0.0693)	-0.329*** (0.0758)	-0.161 (0.101)	-0.226*** (0.0813)	-0.216*** (0.0457)	-0.113 (0.0892)	-0.254*** (0.0463)	-0.303*** (0.0327)	-0.228** (0.0955)	-0.207*** (0.0566)	-0.352*** (0.0611)	-0.191*** (0.0735)	-0.224*** (0.0486)	-0.115 (0.0811)	-0.312*** (0.102)	-0.312*** (0.0817)	-0.180*** (0.0578)
Highly educated	0.0815 (0.0615)	0.223*** (0.0677)	0.416*** (0.0976)	0.147** (0.0593)	0.197** (0.0929)	0.314*** (0.0707)	0.276*** (0.0492)	0.258*** (0.0694)	0.305*** (0.0491)	0.0779 (0.0497)	0.509*** (0.0719)	0.127** (0.0638)	0.263*** (0.0632)	0.0730 (0.0699)	0.394*** (0.0415)	0.132 (0.106)	0.479*** (0.151)	0.364*** (0.0953)	0.0441 (0.0428)
Low-educated * Crisis <sup>2)</sup>	-0.0426 (0.0791)	0.196** (0.0954)	-0.0994 (0.0836)	-0.0555 (0.102)	-0.185 (0.146)	0.0363 (0.105)	-0.123** (0.0602)	-0.187 (0.123)	-0.161** (0.0636)	-0.0634 (0.0439)	0.0615 (0.129)	-0.0832 (0.0888)	-0.0367 (0.0794)	0.00308 (0.102)	-0.105 (0.0722)	-0.0349 (0.104)	0.00161 (0.124)	-0.0328 (0.105)	0.00718 (0.0830)
Highly educated * Crisis <sup>2)</sup>	0.0956 (0.0837)	0.0380 (0.0874)	-0.168 (0.112)	-0.0418 (0.0841)	-0.0330 (0.134)	-0.0616 (0.0867)	-0.121* (0.0645)	0.00300 (0.0932)	0.0533 (0.0662)	0.0251 (0.0649)	-0.112 (0.0934)	0.0799 (0.0992)	-0.0194 (0.0774)	0.125 (0.0925)	0.0157 (0.0591)	0.0103 (0.135)	-0.301* (0.169)	-0.0676 (0.114)	0.0209 (0.0594)
Age 15-29	-0.337*** (0.0551)	-0.264*** (0.0723)	-0.438*** (0.0731)	-0.482*** (0.0536)	-0.516*** (0.113)	-0.405*** (0.0757)	-0.182*** (0.0427)	-0.357*** (0.0754)	-0.413*** (0.0431)	-0.422*** (0.0383)	-0.275*** (0.0738)	-0.274*** (0.0607)	-0.298*** (0.0539)	-0.359*** (0.0824)	-0.280*** (0.0352)	-0.175** (0.0716)	-0.327*** (0.100)	-0.215*** (0.0832)	-0.476*** (0.0483)
Age 55-64	-0.965*** (0.0637)	-0.929*** (0.0768)	-0.620*** (0.0859)	-0.998*** (0.0473)	-0.841*** (0.0885)	-0.262*** (0.0753)	-0.446*** (0.0598)	-0.328*** (0.0831)	-1.030*** (0.0511)	-0.823*** (0.0434)	-0.361*** (0.0743)	-0.943*** (0.0637)	-0.260*** (0.0636)	-0.806*** (0.0644)	-0.643*** (0.0528)	-0.587*** (0.0766)	-0.674*** (0.124)	-1.162*** (0.0949)	-0.458*** (0.0479)
Age 15-29 * Crisis <sup>2)</sup>	-0.0720 (0.0700)	-0.0784 (0.0923)	0.198** (0.0871)	-0.0678 (0.0753)	0.0620 (0.170)	0.0103 (0.0901)	-0.206*** (0.0538)	-0.143 (0.101)	0.0392 (0.0588)	-0.0161 (0.0504)	0.0283 (0.0969)	-0.140 (0.0943)	0.0450 (0.0698)	0.0451 (0.115)	-0.0247 (0.0489)	-0.0169 (0.0884)	0.0942 (0.120)	-0.0309 (0.104)	-0.0131 (0.0679)
Age 55-64 * Crisis <sup>2)</sup>	0.135 (0.0880)	0.146 (0.0980)	0.182* (0.0987)	0.184*** (0.0656)	0.253** (0.125)	0.0276 (0.0942)	0.139* (0.0749)	-0.0143 (0.109)	0.368*** (0.0677)	0.153*** (0.0572)	-0.0686 (0.0933)	-0.0951 (0.102)	-0.121 (0.0800)	0.186** (0.0861)	0.00250 (0.0731)	0.0557 (0.0977)	-0.148 (0.144)	0.0266 (0.119)	-0.0162 (0.0661)
Living in partnership	0.0200 (0.0365)	0.166*** (0.0402)	0.0478 (0.0394)	-0.0729** (0.0348)	0.190*** (0.0612)	0.00308 (0.0275)	0.155*** (0.0436)	0.0373 (0.0275)	-0.0485* (0.0436)	0.0808*** (0.0275)	0.137*** (0.0228)	0.0404 (0.0447)	0.0709** (0.0304)	0.0826** (0.0408)	0.0867*** (0.0265)	0.138*** (0.0438)	0.00523 (0.0687)	0.219*** (0.0460)	0.112*** (0.0297)
Health problems	-0.180*** (0.0400)	-0.475*** (0.0485)	-0.365*** (0.0739)	-0.407*** (0.0379)	-0.343*** (0.0745)	-0.205*** (0.0437)	-0.260*** (0.0312)	-0.178*** (0.0469)	-0.353*** (0.0334)	-0.116*** (0.0316)	-0.212*** (0.0501)	-0.338*** (0.0481)	-0.196*** (0.0353)	-0.264*** (0.0513)	-0.270*** (0.0376)	-0.235*** (0.0463)	-0.320*** (0.0738)	-0.165*** (0.0478)	-0.305*** (0.0388)
Constant	1.517*** (0.0523)	1.576*** (0.0646)	1.425*** (0.0509)	1.678*** (0.0502)	1.487*** (0.108)	1.578*** (0.0656)	1.235*** (0.0473)	1.308*** (0.0726)	1.540*** (0.0435)	1.319*** (0.0349)	1.492*** (0.0683)	1.774*** (0.0832)	1.279*** (0.0467)	1.799*** (0.0719)	1.407*** (0.0414)	1.512*** (0.0774)	1.888*** (0.0604)	1.462*** (0.0670)	1.597*** (0.0527)
Year effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	19,857	17,839	14,735	28,656	9,079	18,910	41,561	11,141	26,969	50,440	17,249	34,628	18,512	20,702	41,137	14,437	15,571	14,381	24,138
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R2	0.0704	0.0935	0.0578	0.107	0.108	0.0571	0.0569	0.0517	0.0741	0.0668	0.0532	0.0957	0.0598	0.0683	0.0526	0.0371	0.0729	0.108	0.0517

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Note: 1) Bulgaria: 2006-2011, Romania: 2007-2011. – 2) Crisis: 2008-2011.

Source: EU-SILC longitudinal datasets 2007-2011, pooled year-to-year transitions.

**Table A3 / Probit estimation results for transition: Employment to unemployment, EU countries, year-to-year transitions, population 15-65, period 2005-2011<sup>1)</sup>**

Countries	(1) AT	(2) BE	(3) BG	(4) CZ	(5) DK	(6) EE	(7) ES	(8) FI	(9) HU	(10) IT	(11) LT	(12) LU	(13) LV	(14) NL	(15) PL	(16) PT	(17) RO	(18) SI	(19) UK
Male	-0.0824 (0.0612)	-0.263*** (0.0821)	0.00428 (0.0709)	0.00738 (0.0598)	-0.179 (0.143)	0.227*** (0.0807)	-0.141*** (0.0417)	0.0301 (0.0899)	0.122** (0.0475)	-0.130*** (0.0439)	0.00961 (0.0691)	-0.0703 (0.0652)	0.208*** (0.0581)	-0.118 (0.112)	-0.146*** (0.0383)	-0.0180 (0.0667)		-0.135* (0.0798)	0.217*** (0.0702)
Male * Crisis <sup>2)</sup>	0.173** (0.0841)	0.233** (0.103)	0.0727 (0.0846)	-0.0568 (0.0773)	0.295 (0.180)	-0.0185 (0.0953)	0.142*** (0.0521)	0.139 (0.118)	-0.00624 (0.0621)	0.127** (0.0559)	0.110 (0.0883)	-0.0314 (0.101)	-0.000939 (0.0704)	0.161 (0.137)	0.0262 (0.0541)	-0.0272 (0.0846)		0.164* (0.0982)	0.0464 (0.0930)
Low-educated	0.348*** (0.0719)	0.398*** (0.0982)	0.441*** (0.0758)	0.517*** (0.0961)	0.178 (0.180)	0.248** (0.0993)	0.235*** (0.0542)	0.117 (0.115)	0.372*** (0.0551)	0.349*** (0.0457)	0.287** (0.115)	0.293*** (0.0752)	0.320*** (0.0749)	0.307** (0.154)	0.211*** (0.0598)	0.0751 (0.0907)		0.315*** (0.0977)	0.302*** (0.0958)
Highly educated	-0.0636 (0.0877)	-0.351*** (0.0968)	-0.575*** (0.121)	-0.541*** (0.123)	-0.00138 (0.157)	-0.588*** (0.108)	-0.247*** (0.0586)	-0.481*** (0.111)	-0.565*** (0.0929)	-0.101 (0.0768)	-0.516*** (0.0984)	-0.0243 (0.0872)	-0.482*** (0.0962)	0.0861 (0.134)	-0.543*** (0.0627)	-0.261** (0.130)		-0.283*** (0.116)	-0.0535 (0.0825)
Low-educated * Crisis <sup>2)</sup>	0.0195 (0.102)	-0.301** (0.123)	0.0217 (0.0920)	-0.0697 (0.126)	0.211 (0.221)	-0.0896 (0.121)	0.133* (0.0685)	0.293* (0.160)	0.0792 (0.0738)	0.00104 (0.0586)	-0.168 (0.154)	0.113 (0.117)	0.00640 (0.0922)	-0.193 (0.189)	0.187** (0.0853)	0.0874 (0.116)		-0.0227 (0.123)	-0.0959 (0.130)
Highly educated * Crisis <sup>2)</sup>	-0.219* (0.122)	-0.0146 (0.123)	0.279** (0.139)	0.153 (0.155)	-0.112 (0.204)	0.237* (0.124)	0.0964 (0.0743)	0.0987 (0.142)	-0.0675 (0.114)	-0.0598 (0.0965)	0.134 (0.120)	-0.161 (0.140)	0.152 (0.110)	-0.163 (0.161)	0.0920 (0.0830)	0.0848 (0.162)		0.0167 (0.135)	-0.0669 (0.106)
Age 15-29	-0.00418 (0.0777)	0.206** (0.0972)	0.174** (0.0825)	0.0614 (0.0767)	0.0675 (0.192)	-0.0278 (0.0928)	0.130*** (0.0489)	-0.360** (0.140)	0.214*** (0.0525)	0.420*** (0.0476)	0.0807 (0.0914)	0.240*** (0.0747)	-0.00825 (0.0673)	0.110 (0.139)	0.216*** (0.0433)	0.197** (0.0787)		0.153 (0.0983)	0.221*** (0.0844)
Age 55-64	-0.0952 (0.123)	-0.0734 (0.139)	-0.124 (0.118)	0.0981 (0.0849)	0.123 (0.173)	-0.319*** (0.114)	0.0594 (0.0779)	0.252** (0.113)	-0.294*** (0.110)	-0.299** (0.123)	-0.187* (0.110)	-0.589*** (0.119)	-0.324*** (0.105)	-0.475*** (0.184)	-0.143 (0.0884)	0.134 (0.101)		0.429*** (0.120)	-0.0451 (0.110)
Age 15-29 * Crisis <sup>2)</sup>	0.0827 (0.0977)	0.0202 (0.120)	-0.0371 (0.0970)	0.0783 (0.0993)	0.0967 (0.237)	0.133 (0.109)	0.139** (0.0597)	0.467*** (0.169)	0.0352 (0.0697)	-0.0404 (0.0611)	0.0693 (0.117)	0.00720 (0.116)	0.0746 (0.0824)	-0.0995 (0.177)	0.0187 (0.0580)	-0.0756 (0.0969)		0.0555 (0.118)	0.0289 (0.107)
Age 55-64 * Crisis <sup>2)</sup>	-0.00829 (0.164)	-0.0873 (0.184)	-0.0177 (0.137)	-0.0739 (0.108)	-0.0552 (0.227)	0.161 (0.135)	-0.145 (0.0962)	-0.248 (0.155)	0.108 (0.132)	0.145 (0.140)	0.193 (0.131)	0.391* (0.215)	0.128 (0.124)	0.409* (0.214)	0.179 (0.119)	-0.137 (0.130)		-0.109 (0.153)	0.150 (0.136)
Living in partnership	-0.169*** (0.0509)	-0.246*** (0.0526)	-0.0592 (0.0448)	-0.146*** (0.0428)	-0.226** (0.0886)	-0.100** (0.0499)	-0.197*** (0.0300)	-0.228*** (0.0596)	-0.0808** (0.0336)	-0.220*** (0.0301)	-0.136*** (0.0494)	-0.217*** (0.0551)	-0.193*** (0.0350)	-0.287*** (0.0683)	-0.206*** (0.0315)	-0.120** (0.0481)		-0.235*** (0.0520)	-0.317*** (0.0488)
Health problems	0.241*** (0.0536)	0.271*** (0.0642)	0.225*** (0.0867)	0.336*** (0.0502)	0.240** (0.101)	0.125** (0.0549)	0.114*** (0.0363)	0.121* (0.0700)	0.123*** (0.0477)	0.0646 (0.0439)	0.0616 (0.0621)	0.273*** (0.0628)	0.158*** (0.0427)	0.200*** (0.0759)	0.102** (0.0497)	0.0891 (0.0556)		0.102* (0.0562)	0.105 (0.0675)
Constant	-1.884*** (0.0723)	-1.762*** (0.0849)	-1.633*** (0.0587)	-1.808*** (0.0623)	-1.882*** (0.149)	-1.825*** (0.0830)	-1.392*** (0.0529)	-1.779*** (0.100)	-1.642*** (0.0523)	-1.551*** (0.0432)	-1.692*** (0.0736)	-1.924*** (0.113)	-1.346*** (0.0527)	-2.090*** (0.101)	-1.550*** (0.0484)	-1.652*** (0.0863)		-1.592*** (0.0756)	-2.084*** (0.0833)
Year effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes		yes	yes
Observations	19,857	17,839	14,735	28,656	9,079	18,910	41,561	11,141	26,969	50,440	17,249	34,628	18,512	20,702	41,137	14,437		14,381	24,138
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000
Pseudo R2	0.0358	0.0583	0.0458	0.0501	0.0851	0.0882	0.0528	0.0666	0.0595	0.0677	0.0455	0.0544	0.0810	0.0359	0.0447	0.0192		0.0474	0.0492

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Note: 1) Bulgaria: 2006-2011, Romania: 2007-2011. – 2) Crisis: 2008-2011.

Source: EU-SILC longitudinal datasets 2007-2011, pooled year-to-year transitions.

**Table A4 / Probit estimation results for transition: Unemployment to employment, EU countries, year-to-year transitions, population 15-65, period 2005-2011<sup>1)</sup>**

Countries	(1) AT	(2) BE	(3) BG	(4) CZ	(5) DK	(6) EE	(7) ES	(8) FI	(9) HU	(10) IT	(11) LT	(12) LU	(13) LV	(14) NL	(15) PL	(16) PT	(17) RO	(18) SI	(19) UK
Male	0.00528 (0.112)	0.0628 (0.107)	0.471*** (0.0765)	0.0312 (0.0828)	-0.121 (0.269)	-0.153 (0.142)	0.240*** (0.0644)	-0.400*** (0.137)	0.269*** (0.0705)	0.183*** (0.0587)	0.222** (0.107)	0.106 (0.114)	0.115 (0.0923)	-0.199 (0.227)	0.434*** (0.0433)	0.294*** (0.111)	0.0924 (0.174)	0.0792 (0.109)	-0.175 (0.142)
Male * Crisis <sup>2)</sup>	-0.0179 (0.156)	0.0820 (0.145)	-0.345*** (0.100)	0.187 (0.129)	0.613* (0.372)	0.0379 (0.174)	-0.0765 (0.0802)	0.405** (0.193)	-0.134 (0.0954)	-0.0402 (0.0785)	-0.0872 (0.143)	-0.125 (0.186)	-0.114 (0.111)	0.355 (0.311)	0.00195 (0.0761)	-0.145 (0.139)	0.188 (0.223)	0.164 (0.147)	0.185 (0.185)
Low-educated	-0.227* (0.126)	-0.111 (0.132)	-0.387*** (0.0802)	-0.507*** (0.0975)	-0.178 (0.304)	-0.344** (0.166)	-0.165** (0.0816)	-0.344** (0.165)	-0.427*** (0.0735)	-0.111* (0.0620)	-0.119 (0.154)	0.00232 (0.132)	-0.367*** (0.106)	-0.373 (0.257)	-0.292*** (0.0532)	-0.0291 (0.163)	-0.410** (0.188)	-0.406*** (0.119)	-0.695*** (0.166)
Highly educated	0.115 (0.177)	0.289** (0.118)	-0.177 (0.167)	-0.194 (0.189)	-0.343 (0.297)	-0.121 (0.203)	0.211** (0.0993)	0.00495 (0.163)	0.501*** (0.181)	0.201** (0.0916)	0.296* (0.162)	0.434** (0.176)	0.00481 (0.172)	0.105 (0.289)	0.264*** (0.0967)	0.376* (0.206)	0.650** (0.298)	0.516** (0.206)	-0.0772 (0.184)
Low-educated * Crisis <sup>2)</sup>	0.133 (0.171)	0.0525 (0.173)	0.0323 (0.107)	0.293** (0.148)	-0.483 (0.420)	0.121 (0.199)	0.0280 (0.104)	0.263 (0.235)	-0.0593 (0.102)	0.123 (0.0837)	-0.178 (0.199)	-0.152 (0.206)	0.166 (0.130)	-0.160 (0.374)	0.0210 (0.101)	-0.154 (0.200)	-0.0423 (0.241)	0.155 (0.170)	0.423* (0.225)
Highly educated * Crisis <sup>2)</sup>	0.153 (0.247)	0.0754 (0.179)	0.393** (0.199)	0.307 (0.291)	-0.0754 (0.425)	0.254 (0.243)	-0.137 (0.126)	0.351 (0.243)	-0.310 (0.218)	-0.00970 (0.125)	0.0987 (0.208)	-0.717** (0.297)	0.166 (0.196)	0.0139 (0.372)	0.0527 (0.144)	-0.332 (0.257)	-0.408 (0.364)	-0.243 (0.250)	0.175 (0.226)
Age 15-29	0.256* (0.138)	0.550*** (0.110)	0.150* (0.0834)	0.229** (0.0956)	0.00865 (0.395)	0.558*** (0.162)	0.304*** (0.0713)	0.280 (0.175)	0.154** (0.0777)	0.0528 (0.0634)	0.180 (0.151)	0.396*** (0.129)	0.646*** (0.113)	0.360 (0.296)	0.276*** (0.0485)	0.363*** (0.132)	0.106 (0.187)	0.456*** (0.118)	0.152 (0.153)
Age 55-64	-0.643*** (0.198)	-1.162*** (0.204)	-0.628*** (0.129)	-0.398*** (0.146)	-0.727** (0.293)	-0.0883 (0.192)	-0.798*** (0.126)	-0.786*** (0.173)	-0.722*** (0.165)	-0.485*** (0.160)	-0.667*** (0.160)	-0.354 (0.298)	-0.506*** (0.142)	-1.371*** (0.298)	-0.467*** (0.0946)	-1.113*** (0.211)	-0.388 (0.468)	-0.664*** (0.206)	-0.137 (0.217)
Age 15-29 * Crisis <sup>2)</sup>	-0.0864 (0.180)	-0.397** (0.154)	-0.299*** (0.108)	-0.130 (0.146)	-0.0136 (0.510)	-0.348* (0.186)	-0.181** (0.0886)	-0.637*** (0.249)	-0.106 (0.102)	0.0932 (0.0796)	0.170 (0.181)	0.111 (0.191)	-0.464*** (0.132)	0.760* (0.425)	0.0319 (0.0805)	-0.0133 (0.154)	-0.441** (0.222)	-0.139 (0.154)	-0.0572 (0.198)
Age 55-64 * Crisis <sup>2)</sup>	-0.173 (0.288)	-0.0952 (0.278)	0.130 (0.167)	-0.554*** (0.204)	0.0844 (0.466)	-0.452* (0.242)	0.161 (0.156)	0.0574 (0.239)	0.0792 (0.216)	0.254 (0.208)	0.0776 (0.222)	0.393 (0.445)	-0.0680 (0.174)	0.0655 (0.400)	-0.172 (0.169)	0.314 (0.256)	-0.485 (0.615)	-0.00426 (0.286)	-0.140 (0.276)
Living in partnership	0.108 (0.0816)	0.129* (0.0741)	-0.00286 (0.0597)	-0.0402 (0.0676)	0.427** (0.173)	0.208** (0.0856)	0.118*** (0.0453)	0.00450 (0.0965)	0.135*** (0.0519)	0.0723 (0.0483)	0.330*** (0.0785)	0.0608 (0.108)	0.238*** (0.0548)	0.272* (0.152)	0.115*** (0.0416)	0.0215 (0.0810)	-0.00939 (0.141)	-0.000169 (0.0821)	0.238** (0.0959)
Health problems	-0.429*** (0.0846)	-0.339*** (0.0904)	-0.0474 (0.109)	-0.258*** (0.0741)	-0.578*** (0.195)	-0.297*** (0.0917)	-0.0640 (0.0542)	-0.371*** (0.102)	-0.298*** (0.0631)	-0.0782 (0.0607)	-0.339*** (0.1000)	-0.482*** (0.112)	-0.160*** (0.0600)	-0.826*** (0.173)	-0.315*** (0.0593)	-0.312*** (0.0844)	0.00209 (0.178)	-0.389*** (0.0798)	-0.448*** (0.112)
Constant	-0.262* (0.135)	-0.768*** (0.132)	-0.576*** (0.0874)	-0.400*** (0.106)	0.0981 (0.303)	-0.210* (0.124)	-0.683*** (0.0757)	-0.434** (0.176)	-0.297*** (0.0785)	-1.120*** (0.0740)	-0.978*** (0.113)	-0.353* (0.209)	-0.442*** (0.0756)	-0.160 (0.261)	-0.905*** (0.0772)	-0.507*** (0.139)	-0.688*** (0.149)	-0.600*** (0.128)	-0.376** (0.156)
Year effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	1,406	2,512	3,988	2,615	360	2,233	8,531	1,405	3,890	8,203	2,455	2,659	3,558	476	8,190	2,240	1,078	2,197	1,024
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000
Pseudo R2	0.0658	0.125	0.0795	0.0614	0.164	0.0475	0.0440	0.0966	0.0570	0.0147	0.0705	0.0826	0.0625	0.278	0.0531	0.0882	0.0498	0.0912	0.0539

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Note: 1) Bulgaria: 2006-2011, Romania: 2007-2011. – 2) Crisis: 2008-2011.

Source: EU-SILC longitudinal datasets 2007-2011, pooled year-to-year transitions.

**Table A5 / Probit estimation results for transition: Unemployment to unemployment, EU countries, year-to-year transitions, population 15-65, period 2005-2011<sup>1)</sup>**

Countries	(1) AT	(2) BE	(3) BG	(4) CZ	(5) DK	(6) EE	(7) ES	(8) FI	(9) HU	(10) IT	(11) LT	(12) LU	(13) LV	(14) NL	(15) PL	(16) PT	(17) RO	(18) SI	(19) UK
Male	0.114 (0.108)	-0.114 (0.0928)	-0.134* (0.0736)	0.120 (0.0812)	0.304 (0.292)	0.400*** (0.138)	0.172*** (0.0613)	0.510*** (0.126)	0.0766 (0.0696)	0.296*** (0.0520)	0.0780 (0.107)	0.166 (0.118)	0.232** (0.0915)	0.0232 (0.221)	-0.0887** (0.0409)	-0.144 (0.101)	0.427** (0.168)	0.102 (0.0992)	0.543*** (0.149)
Male * Crisis <sup>2)</sup>	0.153 (0.150)	0.140 (0.126)	0.208** (0.0946)	-0.0476 (0.126)	-0.705* (0.377)	-0.131 (0.167)	-0.0251 (0.0757)	-0.307* (0.182)	-0.0195 (0.0925)	0.127* (0.0694)	0.0143 (0.139)	0.246 (0.189)	0.0270 (0.110)	0.472 (0.295)	0.0772 (0.0713)	0.189 (0.127)	-0.309 (0.207)	-0.187 (0.132)	0.00444 (0.192)
Low educated	0.274** (0.120)	0.0628 (0.109)	0.254*** (0.0783)	0.632*** (0.0939)	-0.0776 (0.365)	0.260* (0.156)	0.0725 (0.0787)	0.111 (0.146)	0.479*** (0.0711)	0.0310 (0.0558)	0.281* (0.147)	0.0598 (0.134)	0.182* (0.104)	0.0680 (0.252)	0.172*** (0.0490)	0.0262 (0.154)	0.169 (0.174)	0.0923 (0.107)	0.463*** (0.162)
Highly educated	0.0113 (0.175)	-0.299*** (0.109)	0.253 (0.161)	-0.0431 (0.194)	0.597* (0.319)	-0.0684 (0.208)	-0.146 (0.0969)	-0.113 (0.157)	-0.296 (0.197)	-0.268*** (0.0878)	-0.323* (0.178)	-0.513*** (0.184)	0.0548 (0.191)	0.101 (0.290)	-0.133 (0.0956)	-0.383* (0.200)	-0.348 (0.284)	-0.236 (0.200)	0.0475 (0.200)
Low educated * Crisis <sup>2)</sup>	-0.0212 (0.165)	-0.187 (0.146)	0.0158 (0.101)	-0.273* (0.141)	0.517 (0.470)	-0.127 (0.187)	0.104 (0.0996)	0.0132 (0.212)	-0.130 (0.0965)	0.0629 (0.0743)	-0.146 (0.188)	0.128 (0.207)	-0.0542 (0.125)	0.250 (0.339)	0.0331 (0.0891)	0.0150 (0.189)	0.138 (0.215)	-0.0704 (0.147)	-0.375* (0.219)
Highly educated * Crisis <sup>2)</sup>	-0.0375 (0.243)	0.0454 (0.162)	-0.538*** (0.191)	-0.214 (0.277)	-0.202 (0.423)	-0.0769 (0.245)	0.117 (0.122)	-0.0589 (0.234)	0.0587 (0.231)	0.277** (0.117)	-0.0200 (0.217)	0.695** (0.291)	-0.272 (0.217)	-0.441 (0.406)	0.0627 (0.141)	0.236 (0.247)	0.151 (0.339)	0.0666 (0.240)	-0.125 (0.241)
Age 15-29	-0.376*** (0.140)	-0.501*** (0.105)	-0.377*** (0.0818)	-0.382*** (0.0948)	-0.907* (0.511)	-0.431*** (0.163)	-0.309*** (0.0714)	-0.628*** (0.175)	-0.153* (0.0785)	0.0257 (0.0574)	-0.457*** (0.150)	-0.396*** (0.131)	-0.682*** (0.120)	-0.947*** (0.351)	-0.322*** (0.0469)	-0.388*** (0.129)	0.156 (0.179)	-0.462*** (0.111)	0.264* (0.157)
Age 55-64	-0.181 (0.160)	0.301** (0.120)	0.101 (0.111)	-0.622*** (0.134)	0.166 (0.316)	-0.0814 (0.177)	0.177* (0.104)	-0.0877 (0.141)	-0.0540 (0.139)	-0.281** (0.119)	-0.0378 (0.151)	-0.0214 (0.238)	-0.0894 (0.133)	0.385 (0.240)	-0.114 (0.0785)	-0.102 (0.137)	-0.162 (0.396)	-0.213 (0.144)	-0.388* (0.229)
Age 15-29 * Crisis <sup>2)</sup>	-0.0564 (0.181)	0.294** (0.146)	0.391*** (0.103)	0.0167 (0.146)	0.604 (0.606)	0.152 (0.185)	0.104 (0.0870)	0.388 (0.248)	0.0250 (0.101)	-0.135* (0.0718)	0.0768 (0.180)	-0.0562 (0.192)	0.336** (0.138)	0.154 (0.484)	0.00976 (0.0776)	-0.00724 (0.151)	0.172 (0.206)	0.279* (0.145)	-0.482** (0.205)
Age 55-64 * Crisis <sup>2)</sup>	0.122 (0.229)	0.139 (0.162)	-0.144 (0.140)	0.280 (0.193)	-0.277 (0.487)	-0.255 (0.223)	-0.155 (0.126)	0.508** (0.201)	0.203 (0.177)	0.0366 (0.155)	-0.387** (0.188)	-0.853** (0.373)	-0.151 (0.158)	-0.274 (0.338)	0.140 (0.128)	0.0187 (0.170)	-0.290 (0.453)	-0.292 (0.186)	0.114 (0.277)
Living in partnership	-0.261*** (0.0803)	-0.192*** (0.0624)	-0.0178 (0.0550)	-0.0695 (0.0664)	-0.320* (0.167)	-0.156* (0.0818)	-0.115*** (0.0431)	-0.152* (0.0892)	-0.144*** (0.0498)	-0.232*** (0.0416)	-0.289*** (0.0721)	-0.203* (0.108)	-0.204*** (0.0533)	-0.0585 (0.150)	-0.219*** (0.0387)	-0.0440 (0.0737)	0.146 (0.132)	-0.0579 (0.0717)	-0.127 (0.0979)
Health problems	0.375*** (0.0805)	-0.0661 (0.0704)	-0.214** (0.0933)	0.0447 (0.0704)	0.201 (0.195)	-0.0169 (0.0870)	-0.133*** (0.0496)	0.146 (0.0940)	0.0526 (0.0589)	-0.0971* (0.0509)	0.0889 (0.0854)	0.192* (0.111)	-0.0372 (0.0580)	0.00153 (0.161)	0.0438 (0.0511)	0.00813 (0.0714)	-0.146 (0.151)	0.181*** (0.0698)	-0.120 (0.115)
Constant	-0.182 (0.130)	0.503*** (0.115)	0.348*** (0.0807)	0.226** (0.102)	-0.315 (0.314)	-0.0876 (0.115)	0.106 (0.0708)	-0.0357 (0.179)	0.0244 (0.0756)	0.149** (0.0624)	0.603*** (0.102)	-0.298 (0.211)	0.0799 (0.0707)	-0.573** (0.241)	0.478*** (0.0701)	0.412*** (0.130)	0.119 (0.132)	0.201* (0.109)	-0.452*** (0.156)
Year effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	1,406	2,512	3,988	2,615	360	2,233	8,531	1,405	3,890	8,203	2,455	2,659	3,558	476	8,190	2,240	1,078	2,197	1,024
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R2	0.0498	0.0371	0.0687	0.0466	0.162	0.0329	0.0295	0.0568	0.0336	0.0305	0.0561	0.0596	0.0477	0.0985	0.0270	0.0312	0.0368	0.0309	0.0534

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Note: 1) Bulgaria: 2006-2011, Romania: 2007-2011. – 2) Crisis: 2008-2011.

Source: EU-SILC longitudinal datasets 2007-2011, pooled year-to-year transitions.



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