



## **Labour Market Transitions in the EU Before and During the Economic Crisis with a View on Youngsters in the New EU Member States**

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## **Labour Market Transitions in the EU Before and During the Economic Crisis with a View on Youngsters in the New EU Member States**

**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 CEE New EU Member States. Particularly 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 codes: E24, J23, J63

### **1. Introduction**

The crisis impacted 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 are observed. Similar developments can be seen when considering other indicators like employment rates, for example. Furthermore, not only overall unemployment or corresponding employment rates have changed, but also the crisis had a different impact on the various labour market groups. For example, it is argued that male have been hit harder by the crisis as compared to female though this changed partly in the recovery phase. Young agers and low educated also seem to be affected more by the crisis in the way that finding jobs have become much more difficult or that these groups lost jobs more frequently. Such differences are mostly argued by considering unemployment and employment rates differentiated for the respective groups. Less is however known on the exact mechanisms behind the differential effects. For example, a higher unemployment rate of the younger age cohorts or the low educated persons 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 (like inactivity or education) or to shift to another status (like from unemployment to inactivity).

This paper therefore sheds 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

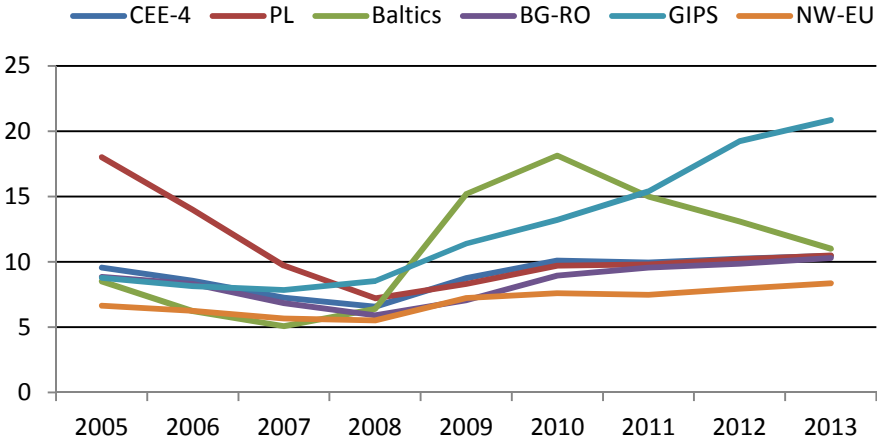
over the crisis period. The results point towards significant differences with respect to changes in labour market flows as triggered by the crisis for the various subgroups and across countries.

The paper goes as follows. In Section 2 some important trends concerning the development of labour market indicators over the crisis period are compared across countries indicating the different strategies how countries and labour market groups responded to the crisis. Particularly, 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, were the burst of a local housing bubble let the crisis emerge already in 2007, 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 have been rising 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 rising again slightly to 8.4%.

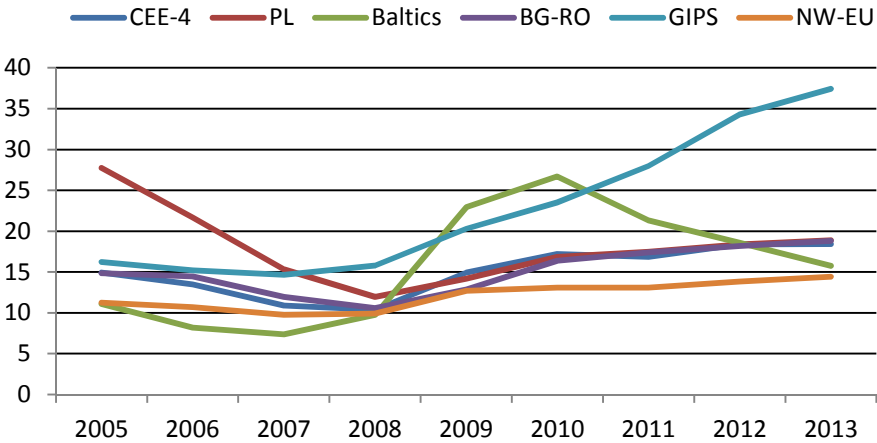
**Figure 1.** Unemployment rates in EU regions, age 15-64



Note: CEEC-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 the one of the total working age population (see Figure 2 below). Unemployment rates went on increasing also after 2010 in almost all EU regions (except for the Baltic States), although at a slower pace compared to the years 2008-2010. The only region where the unemployment rate declined from its peak of 37% in 2010 to 16% in 2013 has been the Baltic States. 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 was with 16% already higher in 2008 compared to other EU regions 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.

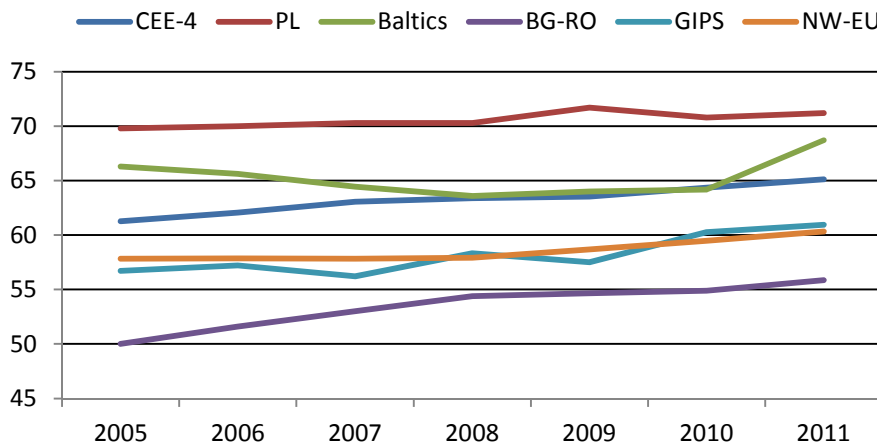
**Figure 2. Unemployment rates in EU regions, age 15-29**



Note: CEEC-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 would stay the same. Figure 3 (data is only available for the age group 15-24) shows that the share of young people in education differs considerably in the EU regions, in 2011 between about 55% in Bulgaria and Romania and more than 70% in Poland. However, in all regions participation rates have risen gradually over the period 2005-2011. The strongest increases can be observed in the CEE-4 and Bulgaria and Romania.

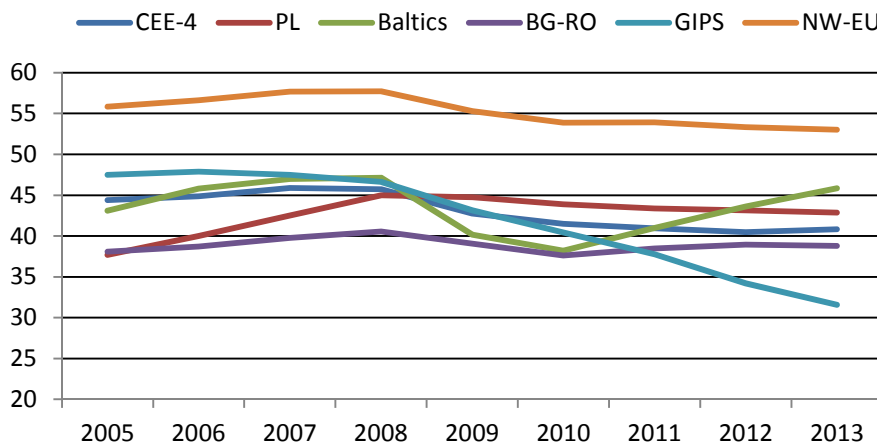
**Figure 3.** Participation in education in EU regions, age 15-24, in % of total population 15-24



Note: CEEC-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 Figure 4 below depicts an ongoing fall of employment rates in the EU countries (except for the Baltic States where a rebound took place after 2010). 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

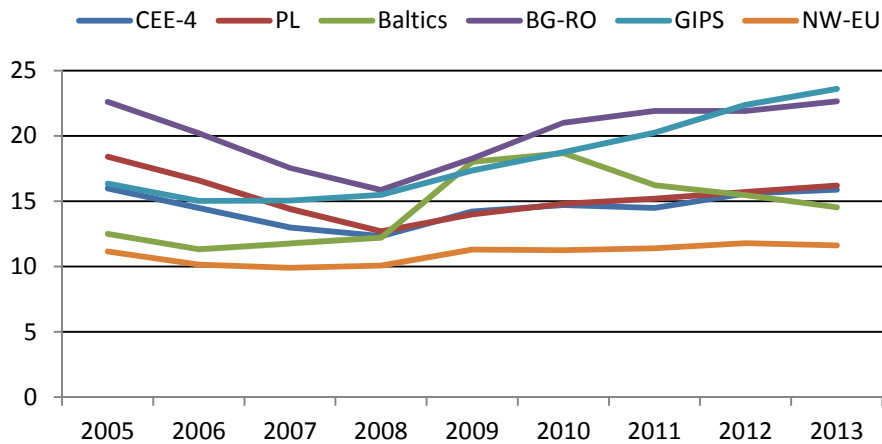


Note: CEEC-4: CZ, HU, SI, SK; GIPS: EL, IT, PT, ES; NW-EU: AT, BE, DE, DK, FI, FR, IE, LU, NL, SE, UK.  
Source: Eurostat.

However, as can be seen from Figure 5 below, 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, Bulgaria and Romania about 23% of the population aged 15-29 years is without job or training in 2013. In all other

CEE NMS this group amounts to on average 15.5% of the population of that age cohort and in the rest of the EU countries on average to 12%.

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



Note: CEEC-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 can 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 micro data 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 the 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 is 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. For Bulgaria data is only available for

the years 2006 to 2011, in the case of Romania only for the years 2007 to 2011. 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 aged 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 is not available at all for Germany or for some years for other EU Members, 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 altered considerably. In Table 1 the average of transitions from 2008-2010 are reported since in this period unemployment rates went up remarkably in all countries, while in the period thereafter from 2010-2011 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 (like 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 decreased 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. Much less individuals that were 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 to find a job in the tense labour market caused that many of those in education stayed 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(1), 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 compared with that of older age cohorts. We chose to analyse the age group 15-29 in order to observe also the majority of those youngsters that 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 ameliorate 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 on average 33.2% in the years 2005-2008 to 36.6% in 2010-2011.

**Table 2.** Markov Transition Matrices, EU 17), 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.

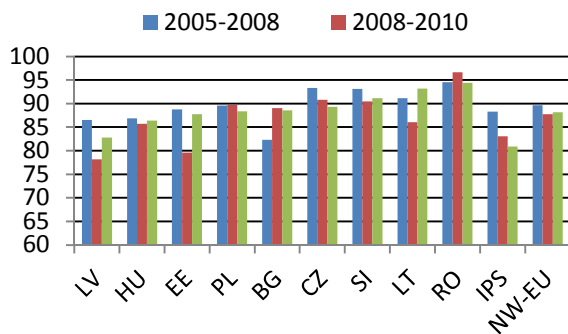
Source: wiiw calculations based on EU-SILC longitudinal datasets 2007-2011; pooled year-to-year transitions.

### 3.3.1 Young age cohorts in individual CEE EU Member States

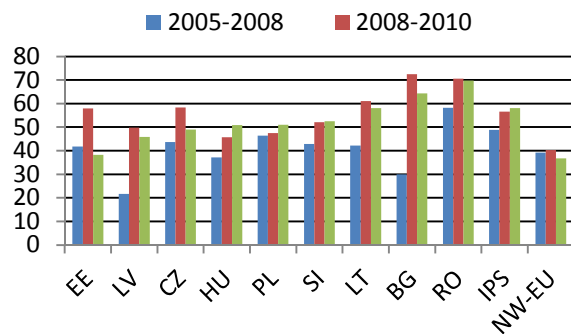
In order to analyse the situation of youngsters aged 15-29 years in the labour markets of the individual CEE NMS Figures 6-7 present selected transition rates (for the Slovak Republic no data is available in the 2011 longitudinal EU SILC files) comparing those with the average of available South European countries (IPS: Italy, Portugal, Spain) and the average of available North and West European countries (NW-EU: BE, DK, LU, NL, AT, FI, 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

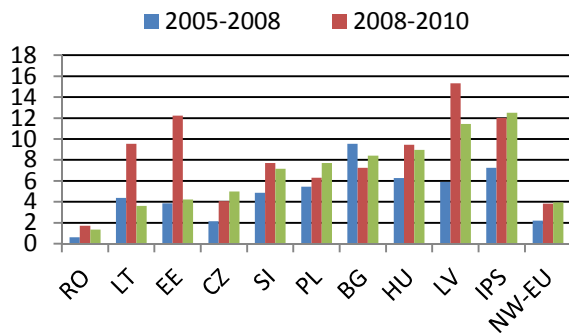


Note: IPS: IT, PT, ES; NW-EU: AT, BE, DK, FI, LU, NL, UK; Data for BG: 2006-2008; Data for RO: 2007-2008.

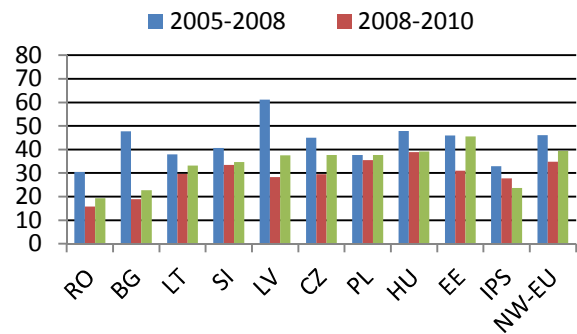
Source: wiiw calculations based on EU-SILC longitudinal datasets 2007-2011; pooled year-to-year transitions.

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 caused 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 slighter drop took place followed by a revival in the first two countries in 2011. A sharper drop of employment probability also took place in the South European countries 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 small 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 have 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 change 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 is with 37% in 2010-2011 relatively low compared to the CEE NMS.

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



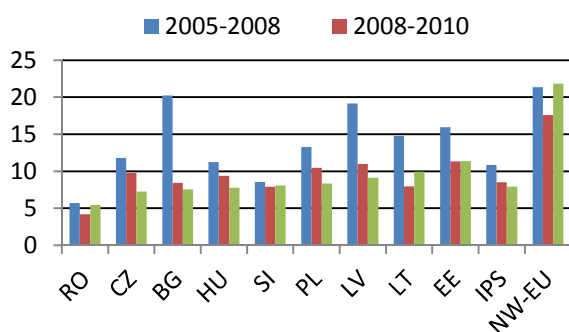
**Figure 9.** Transition: unemployment to unemployment, age 15-29



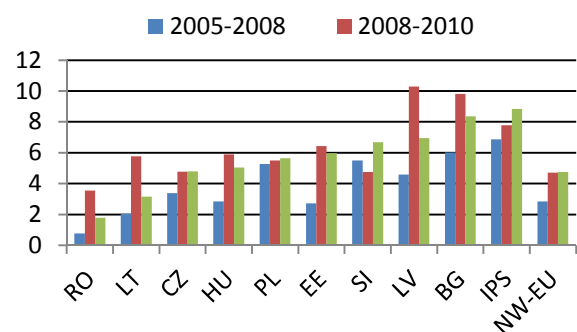
Note: IPS: IT, PT, ES; NW-EU: AT, BE, DK, FI, LU, NL, UK; Data for BG: 2006-2008; Data for RO: 2007-2008.  
Source: wiiw calculations based on EU-SILC longitudinal datasets 2007-2011; pooled year-to-year transitions.

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 substantially 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 being 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, comparable to Southern Europe, in Estonia and the Hungary the chance is 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

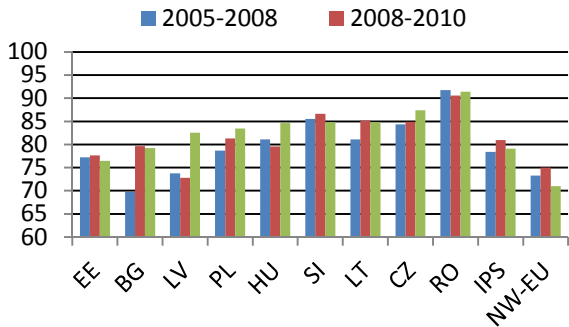


Note: IPS: IT, PT, ES; NW-EU: AT, BE, DK, FI, LU, NL, UK; Data for BG: 2006-2008; Data for RO: 2007-2008.  
Source: wiiw calculations based on EU-SILC longitudinal datasets 2007-2011; pooled year-to-year transitions.

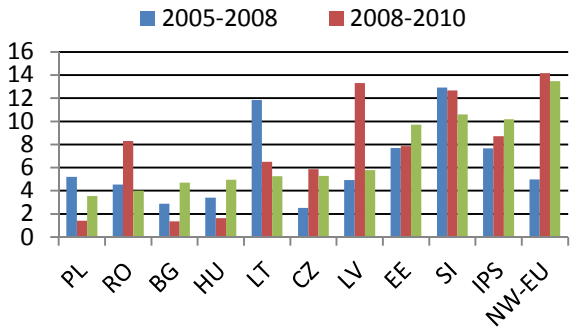
The transition rates from education to employment are depicted in Figure 10. The level of the rates is influenced by the structure of education levels of the young population in the individual countries. In many CEE NMS the share of students enrolling in upper secondary and tertiary education in the total

young age cohort is higher than in North and West European countries nowadays. Thus the annual transition rates of the 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 ameliorated 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 for 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 a high rate of unemployment to education transition fell sharply with the rise of unemployed in the labour force during the crisis, while in Latvia an 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 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 program. 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) looks 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 being unemployed was also with 46.4% much higher than that of low educated (31.4%) and also their probability to take up further education (9.7% compared to 5.1%). The probability rates of medium educated are in between those of 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). Low educated were hit hardest by the economic downturn. The employment stability of this group fell 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 tertiary educated also in the crisis years. However, also for this 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 came with 41% much closer to the level of medium educated and the probability to move from education to unemployment became with 9.8% considerably higher than that of 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

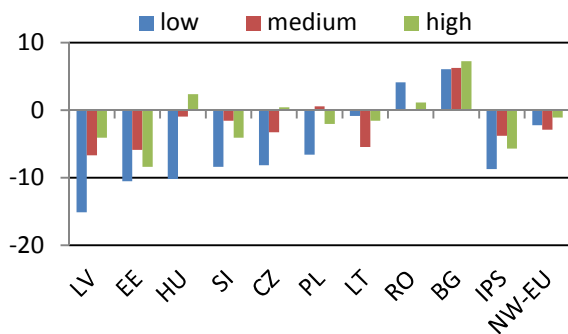
Notes: 1) EU excluding BG, CY, DE, EL, HR, IE, FR, MT, RO, SE, SK - 2) Total is the share of individual labour market statuses in the total population in period t.

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

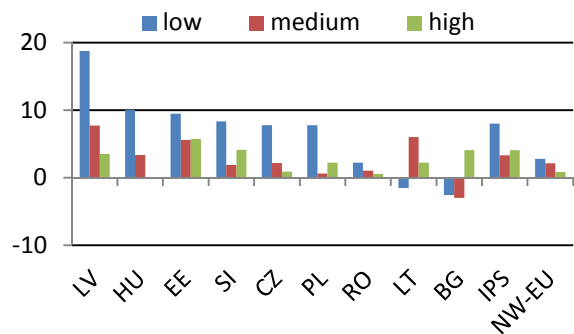
### 3.3.3 Educational attainment groups in individual CEE EU Member States

In the following the changes of probability rates of the most important labour market transitions between the period 2005-2008 and 2008-2011 for individual NMS and the groups of Southern European and North and Western EU countries by education levels are presented. As can be depicted from Figure 14 in Latvia, Estonia, Hungary, Slovenia, the Czech Republic and Poland the probability to stay in employment declined much more for low educated compared to other educational attainment groups, which happened also in South European countries. In North and West European countries and also in Lithuania 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 low educated. The surprising development of risen job security in Bulgaria depicts an emerging insider-outsider problem in the labour market in the course of the crisis, especially when complemented with the results shown 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

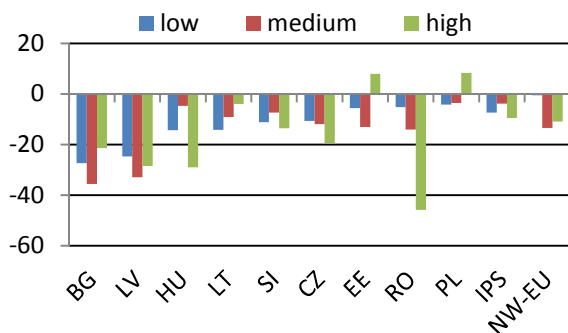


**Figure 15.** Transition: employment to unemployment, difference 2005-2008 to 2008-2011, by education groups, age 15-29

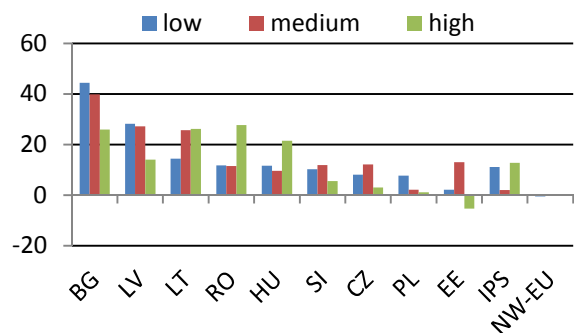


Note: IPS: IT, PT, ES; NW-EU: AT, BE, DK, FI, LU, NL, UK; Data for BG: 2006-2008; Data for RO: 2007-2008.  
Source: wiiw calculations based on EU-SILC longitudinal datasets 2007-2011; pooled year-to-year transitions.

**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 of the probability to find a job again after being unemployed between the crisis and the pre-crisis period are depicted in Figure 16. Only in Lithuania the deterioration was strongest for the low educated young persons, while medium educated suffered the highest losses in Bulgaria, Latvia and Estonia as was the case in the North and West European countries. Contrary, in Hungary, Slovenia, the Czech Republic and especially Romania tertiary educated experienced stronger declines of transition rates compared to 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 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 tertiary educated. At the age of 15-29 tertiary educated are just entering the labour market and have thus only little work experience compared to



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 overcome thus 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:

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

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 in addition to the above mentioned regression we estimated 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 CEE-3: Czech Republic, Hungary, Slovenia; Poland; 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, the Netherlands and United Kingdom (see Tables 6-9, 11 and 12). Furthermore in the Appendix 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 if 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 for Bulgaria for the period 2006-2011 and 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 A.1 in the Appendix).

**Table 5.** Probit estimation results for labour transitions, EU 191), 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 2005-2011 analysed men have a higher probability to stay in employment. The interaction term depicting the effect of the crisis (2008-2011) shows that job stability declined, however the conditional difference to women is still positive. In the case of educational attainment groups as expected low educated show a lower probability to stay in employment compared to the reference group of medium educated persons, while 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 age groups indicate that youngsters (15-29) have a much lower probability compared to the reference group of 30-54 years aged to stay in employment. During the crisis for the young age cohorts the situation aggravated. Old aged 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, persons with health problems a lower one.

In column 2 results of the regression for employment to unemployment transitions are presented. Men had before the crisis a lower conditional probability to lose their job for unemployment compared to women. However, in the years of crisis becoming unemployed was more probable for men, while women before and during the crisis are more probable to move from employment to inactivity (see columns 5-6 in Table A.1). Low educated are as expected more effected by job loss compared to medium educated, whereas highly educated face a lower probability. During the crisis the situation aggravated again most for low educated, while the conditional deterioration seems to be lower for highly educated. However, in order to analyse if various population subgroups were affected significantly different 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 compared to 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. Low educated have a lower chance to find a job again after being unemployed compared to medium educated, while for highly educated the probability is higher. Low educated have not been hit in this respect negatively by the crisis, whereas in the case of 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 lose their job, their chance to take up employment again is also higher compared to those aged 30-54 years. For old age cohorts (55-64) the chance is lower to find a job again. During the crisis only the conditional probability to find a job of those unemployed with age 15-29 years declined. 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, low educated are more hit by longer unemployment

spells compared to medium educated, while highly educated have a higher chance to leave unemployment for employment. Both educational attainment groups were hit negatively 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 compared to 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 is 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 is missing in the 2011 EU SILC file) and NW-EU comprising North and West European countries available in the data file: AT, BE, DK, FI, FR, LU, NL, SE and UK. 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 Appendix.

**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 compared to women. During the crisis men were hit significantly conditional on all other variables by the crisis in all regions particularly in the Baltics, but not in Bulgaria and Romania, where the reduction of job stability is not significant. Low educated have a lower probability to stay in the job; however, the difference to medium educated is much lower in NW-EU countries compared to other regions and highest in BG-RO and the CEE-3. Particularly low in NW-EU is also the positive difference between highly educated and medium educated, while considerably high in BG-RO, PL and the Baltics. Low educated were hit significantly by the crisis in the CEE-3 and in South Europe (IPS), while in other regions the results are non-robust. A deterioration of job stability for 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 have 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 is 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 clear 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

Country groups	(1) CEE-3	(2) Poland	(3) Baltic States	(4) BG-RO	(5) IPS	(6) 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>	0.0306 (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.

Results of employment to unemployment transitions (see Table 7) show that only in Poland and in Southern 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 the crisis only in South Europe and NW-EU men were hit conditional on all other variables negatively by the crisis in this respect. Low educated have in general a higher probability to move from employment to unemployment particularly in the CEE-3, while the

chance to lose the job is considerably lower compared to medium educated for highly educated employees in all regions. The difference between highly and medium educated is much lower in South Europe compared to 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 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 depicted for the CEE-3, Poland and South Europe (IPS). An effect of the crisis on low educated is only to be observed in NW-EU, where the chance surprisingly increased somewhat compared to the pre-crisis period. For highly educated the probabilities did not change in the years 2008-2011. Young aged not only have a higher chance to lose the 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 stay 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

<b>Dependent variable: Transition</b>	<b>(1) From Education to Employment</b>	<b>(2) From Education to Unemployment</b>
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 young aged in education two further separate probit-models have been estimated, one for the transition from education to employment and another one for 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 to 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 in 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) furthermore also the probability to move to 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 for low educated the chance to become unemployed when leaving education increased 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

In this paper we 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 short descriptive overview on general developments in the labour markets of EU regions from 2005 onwards upon 2013. Upon 2008 unemployment rates were in general on 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 on average 21% in 2013. Only in the Baltic States the situation ameliorated. 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 exempt in South Europe were they escalated 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 can 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 can 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 not only rose due to an increase of inflows from employment but particularly due to strongly declining outflow into employment. At the same time transition rates from employment to inactivity declined and rose only slightly from unemployment to inactivity, 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 is available no remarkable change of the structure of labour market transitions are to be observed.

For youngsters (15-29) job stability (employment to employment transitions) is in general lower compared to older age cohorts but in addition declined disproportionately in the crisis. The chance to find a job fell considerably for unemployed as well as for those finishing education. One reaction to the tense labour market situation of youngsters 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 into the unconditional changes of the structure of labour market transitions of individual young (15-29) education groups. In the course of the crisis low educated were hit hardest by the economic downturn depicted by a substantial drop in employment stability, increased flows into unemployment and sunken probability to find a job again if being unemployed. For tertiary educated in general the labour market situation was before and during the crisis still more favourable 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 for this group stronger than for medium educated. 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.

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 crisis period. 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 compared to women (who thus moved to a higher degree from employment to inactivity). Low educated were hit in all respects by the crisis, while the coefficient for 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 in the crisis, i.e. the pension age of old aged persons increased on average.

Looking at regression results by country groups changes somewhat the picture of which population subgroups were hit particularly 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 they also had to face higher probabilities of employment to unemployment transitions. Job stability of 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 increases in Bulgaria, Romania and South Europe. For 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 in respect to declined employment stability, in North and West European countries due to lower chances to find a job again after being 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. Low educated were hit in this respect only in the Baltic States and South European countries. Only in South European countries probabilities declined for highly educated youngsters. Education to unemployment probabilities of men rose apart from the CEE-3 and South Europe also in Poland. Only in Bulgaria and Romania low educated youngsters were hit in this respect by the crisis and 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 change considerably the relative structure of labour transitions and thus the relative position of disadvantaged groups especially in the CEE New EU Member States. Young aged persons and low educated are in a disproportionately severe situation having to face lower employment stability and longer spells of unemployment. Policy recommendations to be derived are that investments in education and live 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. Alike 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.

## Appendix

**Table A.1.** 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 A.2.** Probit estimation results for transition: Employment to employment, EU countries, year-to-year transitions, population 15-65, period 2005-2011<sup>1)</sup>

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Countries	AT	BE	BG	CZ	DK	EE	ES	FI	HU	IT	LT	LU	LV	NL	PL	PT	RO	SI	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 (0.0420)	0.155*** (0.0275)	0.0373 (0.0436)	-0.0485* (0.0275)	0.0808*** (0.0228)	0.137*** (0.0425)	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 A.3.** Probit estimation results for transition: Employment to unemployment, EU countries, year-to-year transitions, population 15-65, period 2005-2011<sup>1)</sup>

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Countries	AT	BE	BG	CZ	DK	EE	ES	FI	HU	IT	LT	LU	LV	NL	PL	PT	RO	SI	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 A.4.** Probit estimation results for transition: Unemployment to employment, EU countries, year-to-year transitions, population 15-65, period 2005-2011<sup>1)</sup>

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Countries	AT	BE	BG	CZ	DK	EE	ES	FI	HU	IT	LT	LU	LV	NL	PL	PT	RO	SI	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 A.5.** Probit estimation results for transition: Unemployment to unemployment, EU countries, year-to-year transitions, population 15-65, period 2005-2011<sup>1)</sup>

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Countries	AT	BE	BG	CZ	DK	EE	ES	FI	HU	IT	LT	LU	LV	NL	PL	PT	RO	SI	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.