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Employment and poverty dynamics in the EU countries before, during and after the crisis

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Abstract

The paper aims to contribute to a better understanding of how employment change relates to changes in poverty in the European Union's Member States by looking at both micro and macro level correlations. EU-LFS and EU-SILC data are used to analyse trends between 2005 and 2012, to reflect also on the societal effects of the financial and economic crisis. Time series for this period show that the crisis has resulted in very different employment trajectories. Larger volatility in employment was accompanied by a relatively sizeable change in poverty rates as well. According to our preferred regression model estimates, poverty to employment elasticity has been around 25 percent on average in the EU in the period between 2005 and 2012. The decomposition of poverty changes shows that countries differ greatly in the portion of total poverty changes attributed to changes in the poverty rates of both individuals living in jobless and non-jobless households, as well as in the portion of total poverty changes attributed to the changes in the population share of those in jobless households. We conclude that the success of poverty reduction depends to a large extent on three factors: the dynamics of overall employment growth, the fair distribution of the employment growth across households with different work intensity and properly designed social welfare systems to smooth out income losses for those families who are, for some reasons, unable to generate sufficient income for themselves from the labour markets.

Keywords: individual employment, work intensity, poverty, social policy, financial crisis, EU-SILC, panel regression

JEL codes: J20, I32, I38

1 Introduction and research questions

Employment growth became one of the priorities of the Lisbon agenda in 2000. The strategy envisaged that employment and economic policies should raise the employment rate to as close to 70% as possible by 2010 and, as part of that goal, they should increase the employment rate for women to more than 60% by the same year. In early 2010, the European Commission launched the Europe 2020 Strategy, to support recovery from the crisis and to set out where the EU wants to be by 2020. In order to monitor the progress, the Commission proposed a set of headline targets for the EU, including a new employment target, namely that 75 % of the population aged 20-64 should be in employment by 2020. Within the same Strategy, the European Union also introduced a poverty target, aiming to reduce the number of poor in Europe by 20% by 2020. The indicator of poverty and social exclusion is composed of the share of people living in households with very low work intensity, of people living in households having incomes less than 60 percent of the national median equivalent income, and/or people living in households suffering from multiple deprivation. The setting of the employment target was at least partly also aiming the reduction of poverty (an interaction effect of the three poverty reduction targets).

While many countries failed to meet the employment target, the pre-crisis Lisbon era was generally marked by an increase in employment rates. According to the Eurostat data, the employment rate of the EU-27 working age population (15-64 years) in 2010 was 64.1%, 1.9 percentage points higher than in 2000, but still close to 6 percentage points short of the Lisbon target of 70%. This gap was partly due the unfavourable economic situation observed in almost all countries during 2009 and 2010. If the employment peak of 65.8% from 2008 were used as a benchmark, the gap would be smaller, but would still exist. However, the relative success in employment (especially before the economic crisis) did not bring about corresponding massive drops in poverty rates: on average, in the EU-27 countries the at-risk-of-poverty rate stayed practically unchanged between 2005 and 2010 (16.5%), with a slight increase (from 15.7% to 16.4%) in the EU-15 members states, according to the Eurostat data based on the EU-SILC[1]. This fact provoked studies expressing disappointments regarding the poverty reduction capacity of employment growth and of social expenditure (Cantillon et al. 2014, Marx et al. 2013b, Corluy and Vandenbroucke 2014, Hills et al. 2014).

Cantillon et al. (2014) describe that the disappointing trends of the poverty standstill (no decline or even increase in times of employment growth) can be largely attributed to the deteriorating efficiency of the social protection systems of the European welfare states. Their analysis (based on combined ECHP and EU-SILC data for the period between 1995 and 2008) points out that in the Nordic welfare states the decline of pre-transfer poverty – what followed employment growth – was cancelled out by a decline in the poverty reducing effect of cash transfers. This was also found in most of the continental countries. Job polarization and an increase in the number of persons living in jobless households resulted in an increase of pre-transfer poverty in the Southern European countries. This could not be fully compensated by a small improvement in poverty reduction efficiency of social transfers. In the New Member States, the decreasing poverty trends could by and

[1] There are no consistent figures of at-risk-of-poverty rate for the Lisbon era (2000-2010). The reason for this is the shift in the data source from the European Community Household Panel (ECHP) survey to the EU-SILC in the case of the EU-15 Member States during the first half of the 2000s. The EU-10 New Member States are part of the EU-SILC from its start. Overall, 2005 is the first survey year for which figure are available of all the EU-25 countries (Bulgaria and Romania joining the EU-SILC in 2007).

large be associated with the fact that additional employment (where existed) benefited strongly the work-poor households.

Marx et al. (2013b) also state that employment growth in Europe – despite very strong net employment gains prior to the crisis – did not bring about sufficiently significant declines in poverty and inequality. Among the reasons why job growth may not result in poverty declines they mention three factors. First, as they also point out, job growth may not benefit poor people – it may contribute to an increasing share of multi-earner households instead of decreasing the number of jobless households. Secondly, new jobs may not raise income enough to escape poverty – in-work poverty may prevail despite employment growth. And thirdly, median equivalent incomes – that is, the benchmark levels to compute poverty rates – also shift in association with job growth; hence poverty always remains a moving target.

In their analysis, covering years between 2005 and 2008, Corluy and Vandenbroucke (2014) find that while levels of individual employment rates correlate negatively with post-transfer poverty rates, household joblessness rates show low or very low correlation with post-transfer poverty. Their paper produces an *(i)* analysis of job polarization[2] and an *(ii)* analysis of the translation mechanisms of individual employment into household work intensity, integrated with a *(iii)* decomposition analysis of the determinants of trends of poverty (a genuinely household phenomenon). The different correlations between post-transfer poverty rates and individual employment rate on the one hand and household employment on the other, may be explained by a number of factors – as they stress:

- social spending mitigates post-transfer poverty of jobless households;
- poverty rates of 'non-jobless' households also influence national pre-transfer and post-transfer poverty rates as they have a large weight in the overall poverty record and higher individual employment rates reduce pre-transfer poverty rates both *(a)* because they correlate with household employment and *(b)* because of their positive impact on pre-transfer poverty among the 'non-jobless' segment;
- higher individual employment rates are associated with higher levels of spending on working-age cash benefits, which are associated with a larger extent of poverty reduction through social transfers.

All in all, they find that changes in individual joblessness, household joblessness and household work poverty correlate positively but weakly with changes in poverty rates. They also present that the poverty record of EU Member States during the economic upswing is decomposable in quite different trajectories, partly linked to different policies. Their decompositions show that differences among EU Member States in levels of polarization and household size do play a role in explaining the diversity of configurations of individual employment, household employment and at-risk-of-poverty rates. They also find that the poverty impact of changes in employment polarization across households was limited and disparate (though they had short-term data only). On average and across countries a one-percentage-point increase in polarization (more or less the average increase for the 11 countries studied between 1995 and 2008) structurally adds a one-third percentage point to the proportion of people at risk of poverty.

We intend to follow what the above papers started. Our research question is also about the existence and strength of the relationship between employment and poverty. We also try to

[2] Polarization is defined as the difference between the actual and the predicted household joblessness rate, supposing a random distribution of employment across individuals (Corluy and Vandenbroucke 2014: 99).

contribute to the understanding of the missing links between individual employment rates, household employment patterns and poverty outcomes – relevant only at household level. There are, however, some differences between our analysis and that of the papers referred above. We are fortunate to have longer time series than they had: the data series we use end with the most recent EU-SILC data release, covering the survey year of 2012. Consequently, we are in the position to differentiate between pre-crisis (2005-2008) and crisis and post-crisis (2008-2012) periods – with an advantage of distinguishing between periods with job losses from periods of recoveries (dependent, of course on the actual crisis trajectories of the various EU Member States). Hereinafter, the period between 2008 and 2012 is referred as crisis period.

Beyond simply describing the development of processes in these two differentiating periods, our analysis also aims at investigating whether poverty outcomes respond similarly or differently, when changes in individual employment are positive compared to when they turn in negative. Even with learned lessons from past economic downturns, the relationship between macroeconomic change and the household income distribution, being the relevant factor at the end when the poverty rate is the outcome of interest, is not straightforward. The fact that a recession reduces real income levels in general is only about to raise poverty rates if these are measured in real income terms by using an anchored poverty line. But, when following the at-risk-of-poverty rate out of the EU2020 indicators of poverty or social exclusion, this is not necessarily the case. As in this case the poverty line is a function of the income distribution itself, developments of the poverty rate depend on what impact the economic downturn has on the income distribution, that is, which population groups are affected and where exactly those are located in the distribution. Further, not only the nature of the recession itself, but also policy responses to it shape the income distribution, resulting inequalities and developments in poverty figures. The variance of consequences across countries does hence not only depend on how far and in what ways the economic downturn hits a country, but also on the country's system of social protection, its labour market institutions and the role of automatic stabilizers (Jenkins et al. 2012).

In the focus of our analysis stays the relationship between employment and poverty and the role of social transfers only complements it. Consequently, we refrain from imposing any pre-constructed typologies of countries of welfare regimes, but we start with a classification of actual employment time trends in the individual countries. However, at the end of our paper we make an attempt to classify the various combinations of individual and household level employment patterns and of social expenditure changes with changes of overall poverty rates in the Member States. With this in mind, we also hope to contribute to the development of policy options for better employment and poverty reduction outcomes.

Marx et al. (2013b: 9) notice that the overall relationship between employment and poverty in a cross-country perspective became stronger between 2008 and 2011 than it had been before. We start our analysis with precisely this. After presenting the data and methods in Section 2, we present country by country trajectories of employment and poverty in Section 3. After this, Section 4 is devoted to the analysis of the co-movements between these variables: we set up various regression models to estimate the strength of this relationship. Section 5 is devoted to the decomposition exercise proposed by Corluy and Vandenbroucke (2014), followed by a detailed analysis of the role of social expenditures in poverty alleviation in Section 6. In section 7 we summarize our results on a country by country basis. Section 8 summarizes and interprets the results of the paper.

2 Data and methods

Eight waves of the EU-SILC cross-sectional dataset are used for analysis; i.e. cross-sectional data for survey years 2005 to 2012[3]. This way, income reference periods[4] are available for two distinguishable time periods. The first one reflects a period with steady global economic growth before the international financial crisis began and therefore also before it spilled over to the 'real' economy. The downturn has begun in 2008, but across the OECD countries, 2009 saw the peak of the recession when nominal GDP shrank, unemployment rates rose sharply and public deficits increased due to falling revenue and increased expenditure. In late 2009 and early 2010 several European countries came under pressure from sovereign debt markets, putting the other Member States under considerable strain as well (Starke et al. 2013: 125). Thus, the income reference periods of 2008 (respectively EU-SILC 2009) onwards should display data that is affected by the economic downturn already.

The countries we analyse are the EU-27 Member States, depending on the availability of data[5]. As this paper investigates the relationship between employment and poverty, only the population at working age will be included in the analyses. The core indicator that is being investigated is the at-risk-of-poverty rate after social transfers (AROP, as defined in the box below). This perspective of relative income poverty of course has conceptual and methodological shortcomings (for a critical review, see Decancq et al. 2013). The basic idea is that each household should have at its disposal a minimum income required for participation in the respective society. The EU thus defines the at-risk-of-poverty rate by applying a nation specific poverty line. The term correctly points out that it is not solely low income that leads to poverty, but also additional factors that differ between countries. The share of people with an income below this threshold at 60 percent of the median equivalent income of a population is therefore at risk to fall in poverty, which is an informative and useful measure (Atkinson et al. 2002; Decancq et al. 2013).

The pre-transfer AROP rate (preAROP) is the at-risk-of-poverty rate calculated by deducting all active-age cash benefits (except pensions) from household incomes. This of course raises the issue of the counterfactual. The European Commission illustrates national welfare states' effectiveness in reducing poverty by presenting the gaps between these pre-transfer figures and actual poverty rates (that is, after social transfers), building on the ceteris paribus hypothesis. But one has to keep in mind that if social benefits had not existed, it is unlikely that European societies would not react; individuals would possibly make other decisions, given different opportunities or constraints[6]. Thus,

[3] Versions of these eight waves are as follows: 2005-5, 2006-4, 2007-6, 2008-5, 2009-5, 2010-4, 2011-4, 2012-2. The most recent waves are 2011-4 and 2012-2, released on 01-08-2014. Data for 2011 and for 2012 are still subject to revisions in subsequent releases.

[4] In all countries except Ireland and the United Kingdom, the income reference period is equal to the calendar year preceding the survey year. In Ireland, the income reference period is the twelve months preceding the interview; in the United Kingdom the current income is extrapolated in order to get a figure for the whole year. Notations for dates refer to survey years throughout the paper.

[5] Data for Bulgaria and Romania is available from 2007 onwards; data for Malta is available from 2009 onwards. The validity of data for Germany until 2008 has been questioned as quota sampling was practiced in a transition period until full random sampling was finally established.

[6] The calculation of the effects of 'benefit withdrawal' on poverty rates and, therefore, the poverty reducing effects attributed to the existence (i.e. non-withdrawal) of social expenditures will always remain hypothetical (e.g. Diris et al. 2014). For any 'real world' experiments of this type there could be serious

such an indicator needs to be interpreted with caution. However, the percentage point difference between the preAROP and AROP rates reproduces an actually unknown but this way estimated effect of poverty reduction through welfare states.

While the at-risk-of-poverty rates, both pre and post transfers, are headcount measures and refer to individuals living below a certain standard of living, the basis of these indicators lies on the household level as it is household incomes (and not individual ones) that is drawn upon. Therefore, the present paper primarily considers the household as a relevant level of analysis, the main indicator here being the household's work intensity (see text box for a definition). The underlying assumption for distinguishing between work-poor and work-rich, jobless and non-jobless households is that the work intensity within households provides an indication of their need for social protection, given the ongoing labour market conditions and policies (see also Cantillon et al. 2014: 17). Insufficient work participation, resulting from very short part-time work or short employment spells over the year, is often related to in-work poverty. Therefore, instead of distinguishing between a number of various employment risk groups, work intensity is used as a suitable proxy variable. To distinguish between groups that differ according to this concept, the household work intensity variable is used to create categorical variables, indicating for example that a household is jobless when it has a work intensity that equals zero. Households where all persons at working age have been employed full-time for the full year hold a household work intensity of one, accordingly. To distinguish not only these extreme cases, but using the whole scale, work-rich households are defined to have work intensities of 0.5 and more, therefore also including for example the traditional male-breadwinner model with a full-time working man and a homemaking wife. Correspondingly, work-poor households are defined as those having work intensity below 0.5.

second-order effects of redistribution like those resulting from behavioural adjustment on the contributor side (taxpayers) or the recipients side (social assistance beneficiaries). Some studies are able to show the existence of second order responses to redistribution, the magnitude of which, however, looks to be relatively small (Doerrenberg and Peichl 2012). The measured effects of taxation on labour supply (see studies by Blundell et al 2011, for example) highlight that behavioural elasticities for women are larger both at the decisions about entering the labour markets (extensive margin) and at changing work efforts on the labour markets (intensive margins). For further on studies about first order and second order effects of redistribution, see Förster and Tóth (2015). In addition, the underlying assumption of these comparisons between pre- and post-tax and transfer incomes is that the effect of the welfare state can be clearly distinguished from market outcomes and that the former steps in only after the latter played its role. There are however important structural relations between pre-transfer inequalities and poverty on the one hand and the effect of the welfare state's interventions on the other: after all, employment rates and the distribution of work and wages are surely not entirely exogenously given. Therefore, the interrelationships between pre- and post-transfer incomes should be an intrinsic part of welfare state research (Cantillon et al. 2014).

Text box 1: Central concepts and their operationalization (following Cantillon et al. 2014)

AROP(a) rate = at-risk-of-poverty rate of active age population. Headcount of individuals (aged 20-59) whose income falls below the at-risk-of-poverty threshold established as 60 per cent of median equivalent income of total population. It should be noted that throughout this paper we use the notation AROP(a) instead of AROP, to inform the readers that the population in analysis are those aged 20-59.

Pre-transfer AROP(a) rate (preAROP(a)) = at-risk-of-poverty rate calculated by removing all active-age cash benefits (except pensions) from households incomes.

Absolute poverty reduction = the percentage-point difference between the pre-transfer AROP(a) rate (see above) and the AROP(a) rate (see above).

Employment rate = persons in employment as a percentage of the population of working age (20 - 64 years in this paper). The indicator is based on the EU-LFS, a large individual sample, in which all definitions apply to persons aged 15 years and over living in private households. Persons carrying out obligatory military or community service are not included in the target group of the survey, as is also the case for persons in institutions/collective households such as boarding houses, halls of residence and hospitals. The employed population consists of those persons who during the reference week did any work for pay or profit for at least one hour during the reference week, or were not working but had jobs from which they were temporarily absent.

Households work-intensity (WI) = the average of individual work intensities in a household. The individual work-intensity is the ratio of the number of months worked during the income reference year by a working age household member to the number of months he or she could theoretically have worked. The ratio ranges from 0 (meaning that no-one at active age worked during the preceding year) to 1 (meaning that everyone at active age was full-time full-year employed).

Social transfers = all active-age cash benefits accruing to individuals aged 20 to 59, i.e. unemployment benefits, sickness/invalidity pay, social assistance, family-related allowances and/or housing allowances (pensions excluded). Social transfers refer to the per capita amount of the benefits, originally measured on a household level.

Size = the sum of social transfers (see above) relative to total disposable income as reported in the survey. Size refers to the redistributive effort of social protection schemes.

The amount of public social transfers (received by the households) is the main indicator used here to investigate redistributive capacities of welfare states (see definition in the textbox). The size of benefits refers to the sum of social transfers relative to total disposable income as reported in the survey and therefore captures the redistributive effort of social protection schemes, respectively their depth. By putting social transfers in relation to household incomes, their intensity becomes more visible.[7]

[7] Further details of the definition are explained later in the paper.

3 Trends in employment and poverty, 2005-2012/13

Although employment is an individual level concept, decisions related to labour market participation are often made at household level, jointly with or conditioned on the similar decisions of other household members, and often together with decisions on demographic outcomes, like leaving parental home, cohabitation, marriage, childbearing and care for dependent household members (e.g. Becker 1981, Del Boca 2002). In addition, poverty and social exclusion – as highlighted in Section 2 – are household level concepts, so the link between employment and poverty should be made at household level as well.

When analysing and understanding poverty and social exclusion trends, the way in which changes in individual level employment transform into household level outcomes, therefore, is of primary importance. Depending on how the newly evolving jobs distribute across households according to their work intensity and on the underlying dynamics of this process, changes in the overall risk of income poverty may strongly differ, also depending on the design of and the changes in the welfare benefit system that contribute to variances between member states (Marx et al. 2013b). Corluy and Vanderbroucke (2014) provide an insight into the effects of unequal distribution of employment over households in the EU member states between 1995 and 2008. They find that in most of the countries, the actual household joblessness rate was higher in both 1995 and 2008 than what one would have expected on the basis of a random distribution. This was the case mainly in the Southern countries, but less so in the New Member States, where a more even distribution of employment gain across households was observed. Hereafter, we also consider both levels of analysis by first looking at developments in individual employment and then switching to the household level by distinguishing between work-poor and work-rich, jobless and non-jobless households.

Data on individual employment trends (annual average of employment rate for age 20-64, %, men and women together) and on poverty trends (preAROP(a) and AROP(a) for age group 20-59)[8] are shown in Tables 1 and 2, respectively. Figures 1a to 5a show employment trajectories grouped by the cross country similarity of their time-patterns. In Figures 1b to 5b time series of pre-transfer at-risk-of-poverty rates (preAROP(a)) and of AROP(a) are also shown alongside to the employment trends (as defined above).

First we analyse the employment trends, then we move towards a joint analysis of employment and poverty trends. This section analyses both preAROP(a) and AROP(a). Employment changes affect preAROP(a) rate more directly, however it is a counterfactual measure (implying the caveats mentioned in the previous section), whereas AROP(a) is an immediate observable. We turn back to both of the poverty measures when discussing the effects of transfers and social policies on poverty[9].

[8] For the choice of the age bracket we decided to use 20-64 for employment statistics. This is the closest one to our preferred age bracket for poverty, available in the Eurostat public database.

[9] The various country stories of poverty and inequality are shown in detail by Nolan et al (2014) for the periods 1980–2010. A summary of these country stories in a comparative manner is provided by Tóth (2014). Concluding remarks about the changing inequalities and related policies in rich countries are summarized by Salverda et al. (2014).

Table 1: Employment rate of individuals aged 20-64, annual average (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
BE	66.5	66.5	67.7	68.0	67.1	67.6	67.3	67.2	67.2
BG	61.9	65.1	68.4	70.7	68.8	65.4	62.9	63.0	63.5
CZ	70.7	71.2	72.0	72.4	70.9	70.4	70.9	71.5	72.5
DK	78.0	79.4	79.0	79.7	77.5	75.8	75.7	75.4	75.6
DE	69.4	71.1	72.9	74.0	74.2	74.9	76.3	76.7	77.1
EE	72.0	75.9	76.9	77.1	70.0	66.8	70.6	72.2	73.3
IE	72.6	73.4	73.8	72.3	66.9	64.6	63.8	63.7	65.5
GR	64.6	65.7	66.0	66.5	65.8	64.0	59.9	55.3	53.2
ES	67.2	69.0	69.7	68.5	64.0	62.8	62.0	59.6	58.6
FR	69.4	69.3	69.8	70.4	69.5	69.2	69.2	69.4	69.5
IT	61.6	62.5	62.8	63.0	61.7	61.1	61.2	61.0	59.8
CY	74.4	75.8	76.8	76.5	75.3	75.0	73.4	70.2	67.2
LV	70.3	73.5	75.2	75.4	66.6	64.3	66.3	68.1	69.7
LT	70.7	71.3	72.7	72.0	67.0	64.3	66.9	68.5	69.9
LU	69.0	69.1	69.6	68.8	70.4	70.7	70.1	71.4	71.1
HU	62.2	62.6	62.6	61.9	60.5	60.4	60.7	62.1	63.2
MT	57.4	57.9	58.6	59.2	59.0	60.1	61.6	63.1	64.8
NL	75.1	76.3	77.8	78.9	78.8	76.8	77.0	77.2	76.5
AT	71.7	73.2	74.4	75.1	74.7	74.9	75.2	75.6	75.5
PL	58.3	60.1	62.7	65.0	64.9	64.3	64.5	64.7	64.9
PT	72.3	72.7	72.6	73.1	71.2	70.5	69.1	66.5	65.6
RO	63.6	64.8	64.4	64.4	63.5	63.3	62.8	63.8	63.9
SI	71.1	71.5	72.4	73.0	71.9	70.3	68.4	68.3	67.2
SK	64.5	66.0	67.2	68.8	66.4	64.6	65.0	65.1	65.0
FI	73.0	73.9	74.8	75.8	73.5	73.0	73.8	74.0	73.3
SE	78.1	78.8	80.1	80.4	78.3	78.1	79.4	79.4	79.8
UK	75.2	75.2	75.2	75.2	73.9	73.6	73.6	74.2	74.9

Source: Eurostat Statistical Database.

Table 2 At-risk-of-poverty rates among individuals aged 20-59 (AROP(a) rates), EU-27, 2005-2012 (%)

	2005	2006	2007	2008	2009	2010	2011	2012
BE	11.3	11.6	12.0	11.3	11.5	11.8	12.7	13.2
	0.89	*0.76*	*0.80*	*0.67*	*0.73*	*0.73*	*0.87*	*0.67*
BG	-	-	18.4	16.3	15.3	15.1	17.6	16.7
	-	-	*1.15*	*1.11*	*0.91*	*0.86*	*0.79*	*0.79*
CZ	9.8	8.8	8.7	8.3	7.3	8.0	9.1	9.3
	0.77	*0.53*	*0.51*	*0.49*	*0.45*	*0.44*	*0.49*	*0.52*
DK	11.5	11.3	11.2	11.7	12.2	13.3	13.6	13.8
	0.68	*0.69*	*0.72*	*0.76*	*0.77*	*0.81*	*0.88*	*1.03*
DE	11.8	12.6	14.7	15.1	15.6	15.3	16.0	16.0
	0.40	*0.41*	*0.41*	*0.42*	*0.43*	*0.42*	*0.43*	*0.46*
EE	16.2	15.2	15.4	13.9	14.9	15.3	18.3	17.4
	0.74	*0.65*	*0.67*	*0.64*	*0.70*	*0.72*	*0.79*	*0.72*
IE	14.8	14.6	12.8	12.3	12.2	13.7	14.0	14.9
	0.80	*0.85*	*0.89*	*0.85*	*0.92*	*0.99*	*0.91*	*0.90*
GR	16.4	17.8	18.2	18.1	17.5	18.7	19.7	23.6
	0.77	*0.80*	*0.73*	*0.72*	*0.83*	*0.99*	*0.85*	*1.11*
ES	15.5	15.3	15.9	15.9	16.5	19.5	20.6	22.0
	0.46	*0.48*	*0.49*	*0.54*	*0.55*	*0.59*	*0.66*	*0.63*
FR	11.4	12.1	12.0	11.8	11.8	12.9	13.7	13.7
	0.42	*0.48*	*0.47*	*0.52*	*0.56*	*0.49*	*0.53*	*0.45*
IT	16.1	17.5	17.5	16.2	16.3	17.0	18.8	18.8
	0.52	*0.55*	*0.52*	*0.55*	*0.52*	*0.56*	*0.58*	*0.50*
CY	10.2	9.7	9.3	10.2	9.8	11.2	10.9	11.9
	0.58	*0.58*	*0.59*	*0.69*	*0.74*	*0.74*	*0.72*	*0.64*
LV	17.7	19.3	17.3	18.5	19.3	19.8	20.4	19.2
	0.95	*0.89*	*1.12*	*1.10*	*0.89*	*0.82*	*0.76*	*0.69*
LT	18.6	17.6	14.8	16.0	17.8	21.8	19.9	16.8
	0.79	*0.93*	*0.77*	*0.99*	*0.98*	*1.15*	*1.05*	*0.95*
LU	12.8	13.7	13.0	13.4	14.2	14.2	13.3	14.6
	1.01	*0.95*	*1.03*	*1.10*	*0.97*	*0.88*	*0.85*	*0.86*
HU	13.7	14.8	11.8	12.3	12.2	12.1	13.7	13.6
	0.67	*0.65*	*0.52*	*0.61*	*0.53*	*0.61*	*0.59*	*0.47*
MT	-	-	-	-	11.7	12.2	13.0	12.0
	-	-	-	-	*0.64*	*0.73*	*0.69*	*0.69*
NL	10.1	9.5	9.1	10.0	10.4	9.9	10.6	10.0
	0.61	*0.63*	*0.61*	*1.03*	*0.87*	*0.84*	*0.93*	*0.64*
AT	11.1	11.2	10.8	10.9	10.6	10.6	10.9	13.4
	0.55	*0.59*	*0.55*	*0.65*	*0.58*	*0.58*	*0.61*	*0.67*
PL	20.7	19.1	17.2	16.2	15.8	16.9	17.0	16.4
	0.48	*0.49*	*0.46*	*0.50*	*0.47*	*0.52*	*0.51*	*0.50*
PT	15.4	14.9	14.2	15.5	15.2	15.4	15.7	16.5
	0.87	*0.86*	*0.90*	*0.94*	*0.93*	*0.99*	*0.90*	*0.70*
RO	-	-	20.6	20.0	20.1	19.2	21.6	22.3
	-	-	*1.06*	*1.10*	*1.19*	*1.13*	*1.19*	*0.84*
SI	10.1	9.5	9.6	10.3	9.0	10.6	11.4	12.3
	0.45	*0.35*	*0.41*	*0.42*	*0.39*	*0.45*	*0.46*	*0.47*
SK	12.9	10.7	9.2	9.4	9.6	11.3	12.6	12.5
	0.56	*0.52*	*0.48*	*0.47*	*0.49*	*0.57*	*0.63*	*0.63*
FI	10.4	11.0	11.3	11.7	11.9	12.3	12.8	12.3
	0.39	*0.42*	*0.45*	*0.47*	*0.47*	*0.48*	*0.52*	*0.49*
SE	8.9	11.2	9.9	11.1	11.7	11.8	12.6	13.1
	0.43	*0.52*	*0.44*	*0.46*	*0.51*	*0.48*	*0.52*	*0.53*
UK	15.5	15.3	14.5	14.2	14.2	14.5	13.6	15.1
	0.60	*0.54*	*0.56*	*0.60*	*0.69*	*0.70*	*0.67*	*0.58*

Source: Own calculations based on EU-SILC 2005-2012, most recent wave is 2012-2, released 01-08-2014. Data for 2012 are subject to revisions in subsequent releases. Versions of waves 2005 to 2011 are as follows: 2005-5, 2006-4, 2007-6, 2008-5,

2009-5, 2010-4, 2011-4. Data for Malta are missing for 2005-2008 and observations for Romania and Bulgaria are missing for 2005 and 2006.

Note. Standard errors are shown in italics.

Based on these figures, five distinct country groups can be differentiated, according to the time trends in individual employment patterns (see also Figures 1a to 5a).

- **Group A** (see Figure 1a), includes Greece, Spain, Cyprus, Bulgaria, Ireland, Slovenia and Portugal. These member states are characterized by increasing employment among the active age population in the first half of the period in analysis. After reaching its peak in 2008 (2007 in Spain), a large drop in employment started and continued, with no signs of recovery until 2013 (2012 in Ireland).
- **In Group B** (see Figure 2a), showing trends for Slovakia, Denmark, Italy, the Netherlands, Sweden, Hungary and Finland the employment drop around 2008 was also measurable, however, it did not seem to be followed by a long-term declining trend. The paths these countries followed after 2008 are not uniform though. Some (like Sweden or Hungary, for example) have shown recovery by 2012, others seemed to stagnate (Slovakia or Finland after 2010), some (like Italy) were on a slight decline afterwards.
- **Group C** (Figure 3a) contains the three Baltic countries: Estonia, Latvia and Lithuania. Within this group there is a continued employment growth between 2006 and 2008, followed by a large drop in the two years afterwards. Between 2011 and 2013 a quick recovery of labour markets can be seen, reaching the start levels (2005) by 2013.
- **In Group D** (Figure 4a), showing data for Malta, Poland, Germany and Austria, employment never really declined throughout the period (except the slight drop in Poland between 2009 and 2010). There are, however, differences between these four countries. In Austria and in Poland, a steady employment rise between 2005 and 2008 seemed to have stopped afterwards (though it never really declined), while in Germany and (even more pronounced) in Malta, the 2005-2008 employment growth was continued by a relatively strong further employment growth after 2010.
- Finally, in **Group E** (Figure 5a), comprising of Belgium, the Czech Republic, France, Luxembourg, Romania and the United Kingdom, only slight changes (as compared to the first four country groupings) are observed in employment trends.

Poverty trends seem to show fairly strong co-movement with employment trends in most countries. What follows below is an account of the trends in the various country groups (Figures 1b to 5b: poverty and employment paired in country boxes).

- Poverty rates in countries belonging to **Group A** have shown no change until the breakout of the crisis, but being on the rise right after[10]. Employment and poverty trends seem to co-

[10] Question emerges why the decline in poverty rates in Greece, Slovenia and Bulgaria continued after 2008. Perhaps it is due to the fact that in EU-SILC we have survey years, meaning that the survey year 2008 refers to incomes received by the households in 2007. Alternatively, the explanation can lie in the fact that the effects of the crisis may have reached these countries somewhat later than the other countries.

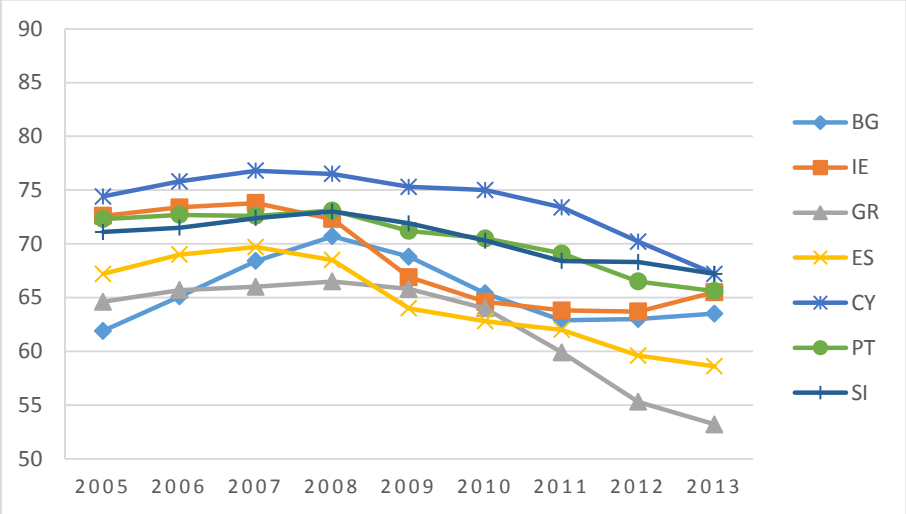
move very strongly in this group. The country by country presentations (Figures 1b) show mirrored trends for these two indicators[11].

- Trends of poverty rates in **Group B** vary to a great extent, although an increasing trend can be observed in all of them but the Netherlands during the crisis period. They were on the rise in Finland, Sweden, and Denmark, showed a U-shape in Slovakia, Hungary and (to some periods) in Italy and they seemed to stagnate in the Netherlands. The mirrored trends of employment and poverty seem to be prevalent here as well (Figure 2b) with the exception of the Finnish data between 2005 and 2008, when both employment and poverty were on the rise.[12]
- Poverty rates are relatively high and fairly volatile in **Group C** (Figure 3b). The volatility in Lithuania is unusually high. In some periods (most notably in 2010 and 2011 in Estonia and Latvia), poverty is on the rise in periods of employment expansion. The most important finding in this group is that the period between 2008 and 2012 witnesses a special non-linearity: employment first declines and then increases within the same period. This warrants care for analysing time trends in two subsequent periods. We suggest for this group the separation of periods 2008-2010 and 2010-2012, when further analysis will be carried out.
- Poverty trends mirror employment trends (see Figure 4b) in Poland, follow employment trends in Germany, and do not seem to change between 2005 and 2011 in Austria (though in the most recent year a large increase was measured by the first release of EU-SILC 2012), when countries **in Group D** are analysed. The Malta series is shorter than the other ones, making it difficult to observe trends.
- For poverty (see Figure 5b), we see diverse trends in **Group E**. In Romania and in the Czech Republic, longer decline spells (2007-2010 and 2005-2009, respectively) of poverty were followed by a sharp increase afterwards (in 2011-2012 and in 2010-2012, respectively). In Belgium, Luxembourg and the United Kingdom, similarly small changes of employment figures were accompanied by only relatively small over time changes of poverty. In France, no change of employment was paralleled by a rising trend of poverty.

[11] Exceptions being poverty rates in Bulgaria in 2011 and in Slovenia 2009. Given the fact that these two data points seem to be bumps in trends, one might rather suspect some accidental phenomena or some data problems.

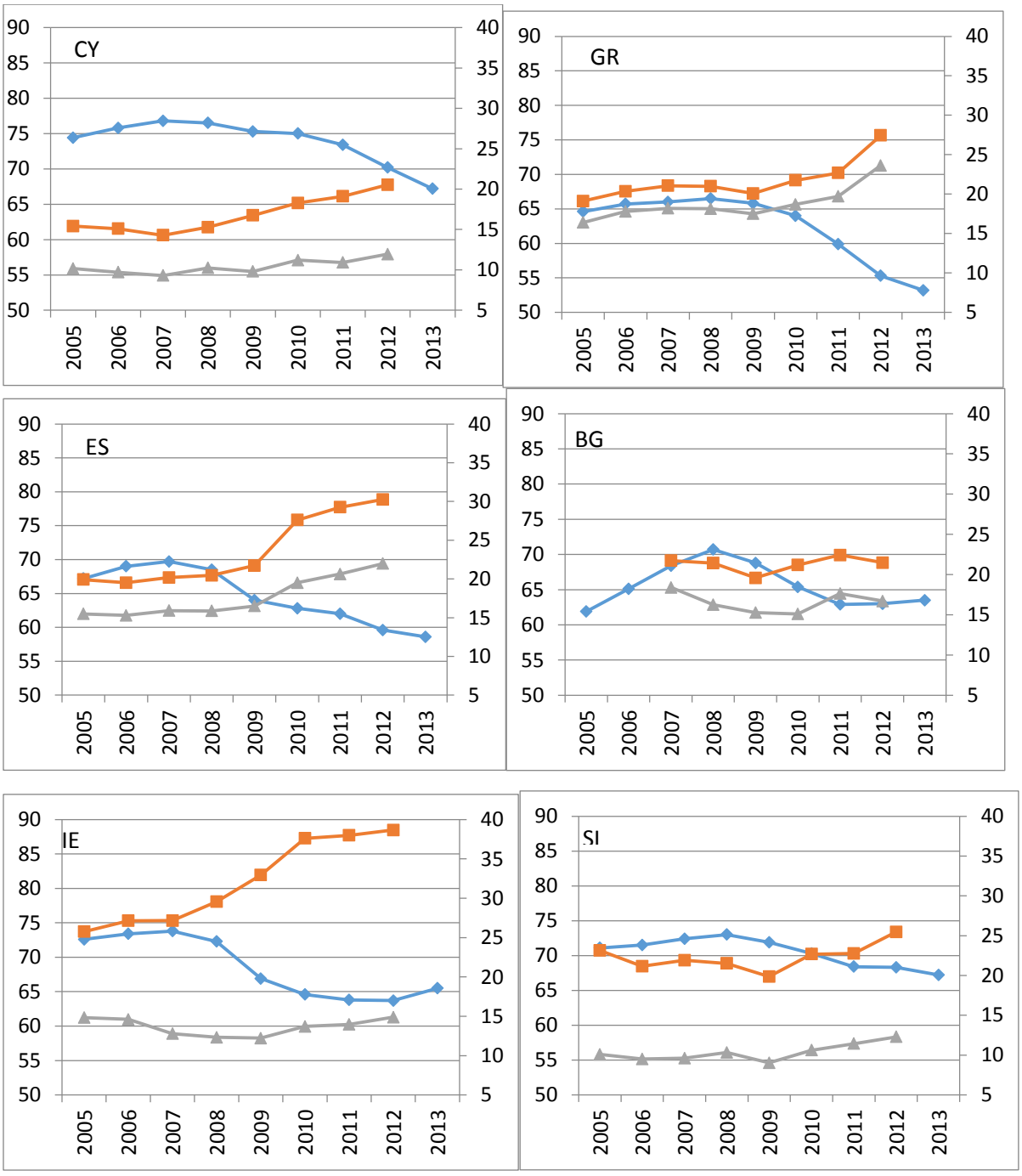
[12] Data problems are to be suspected in 2006 for both Sweden and Hungary.

Figure 1.a. Employment rate: large continued drop after 2008 (Group A), (%)



Source: Eurostat Statistical Database.

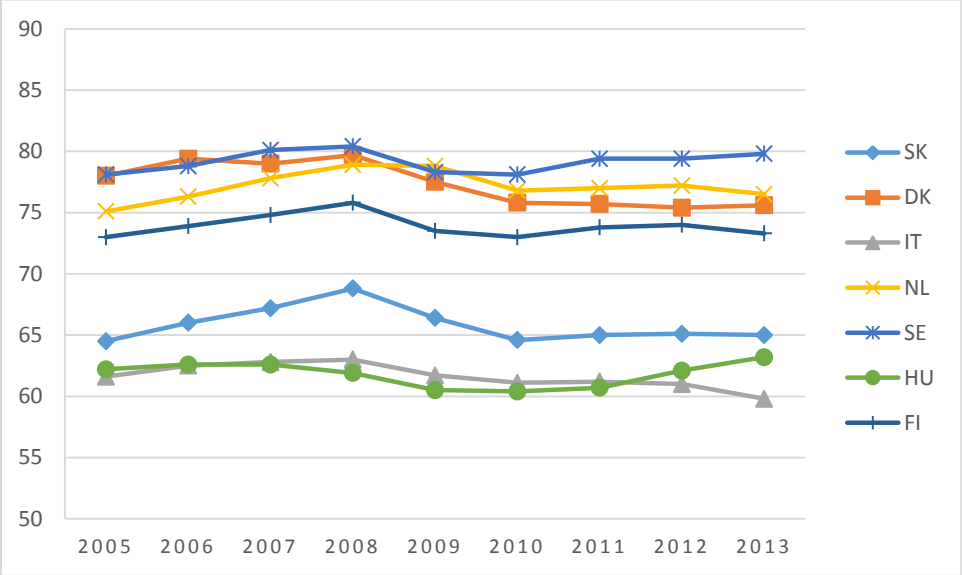
Figure 1.b. Country specific presentations of employment and AROP(a) trends in countries with large continued drop after 2008 (Group A) (orange: preAROP(a), grey: AROP(a), blue: employment), (%)



Source. Employment rate: Eurostat Statistical Database, AROP(a), preAROP(a): own calculations based on EU-SILC.

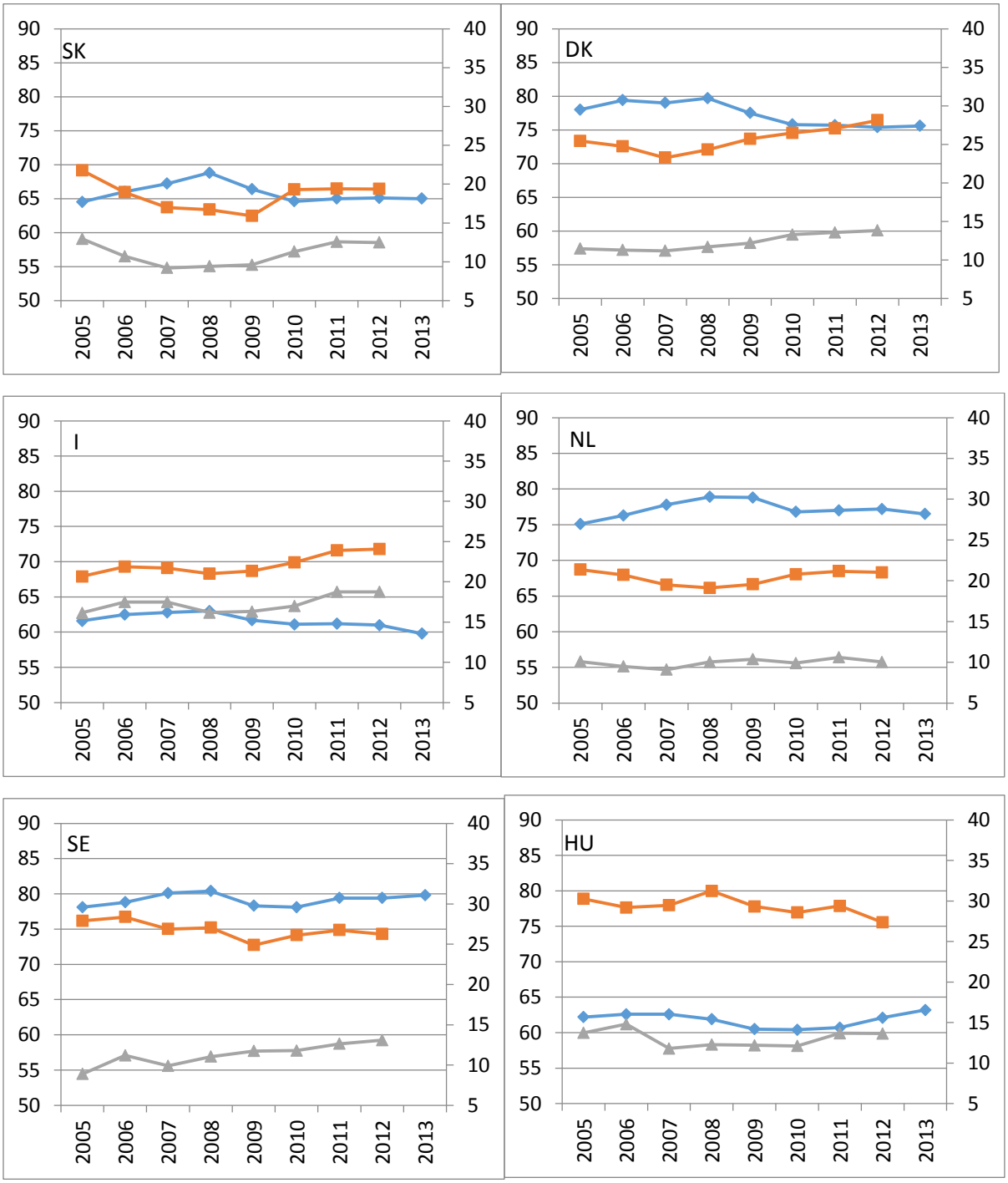
Note. Cross-sectional waves for years 2005 until 2012 were used. Data for 2012 are subject to revisions in subsequent releases; data for Bulgaria and Romania is available from 2007 onwards; data for Malta is available from 2009 onwards. In the EU-SILC, the income reference year is the calendar year preceding the survey year (excepting Ireland and the UK, where the 12 month period prior to the interview consists the reference period). Years displayed in our graphs are survey years, similarly to the Eurostat protocol.

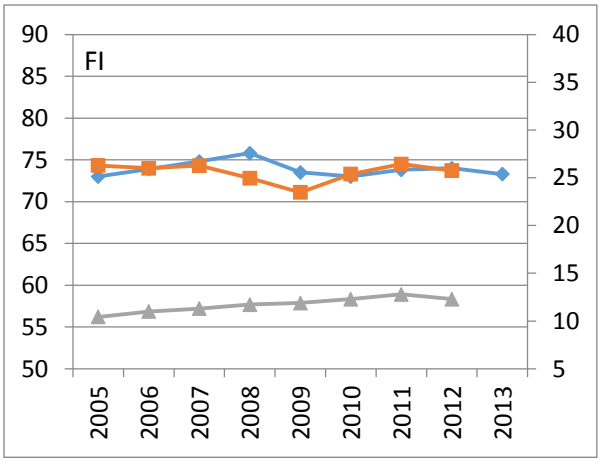
Figure 2.a. Employment rate: slight drop (with or without recovery) after 2008 (Group B), (%)



Source: Eurostat Statistical Database.

Figure 2.b. Country presentations of employment and AROP(a) trends in countries with slight employment drop (with or without recovery) after 2008 (Group B) (orange: preAROP(a), grey: AROP(a), blue: employment), (%)

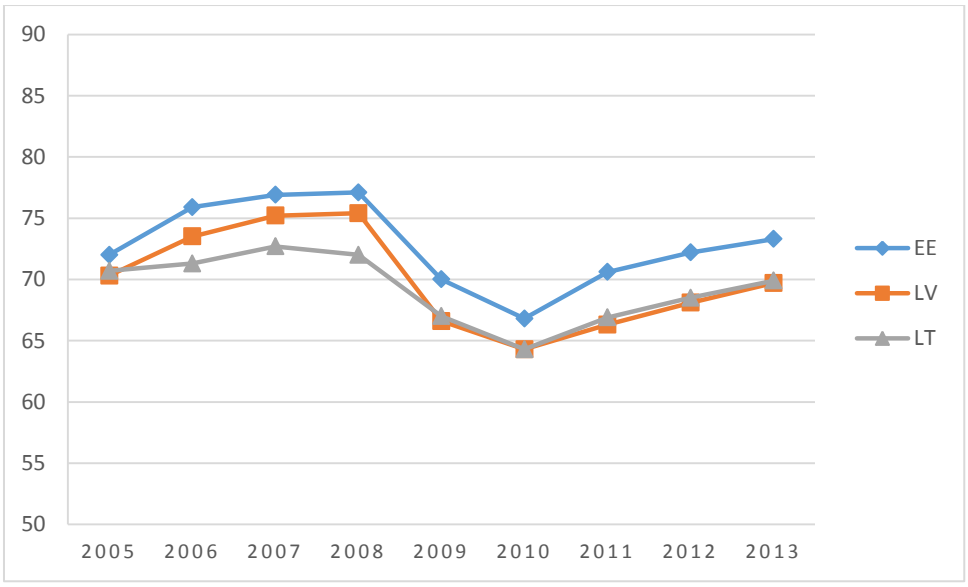




Source. Employment rate: Eurostat Statistical Database, AROP(a), preAROP(a): own calculations based on EU-SILC.

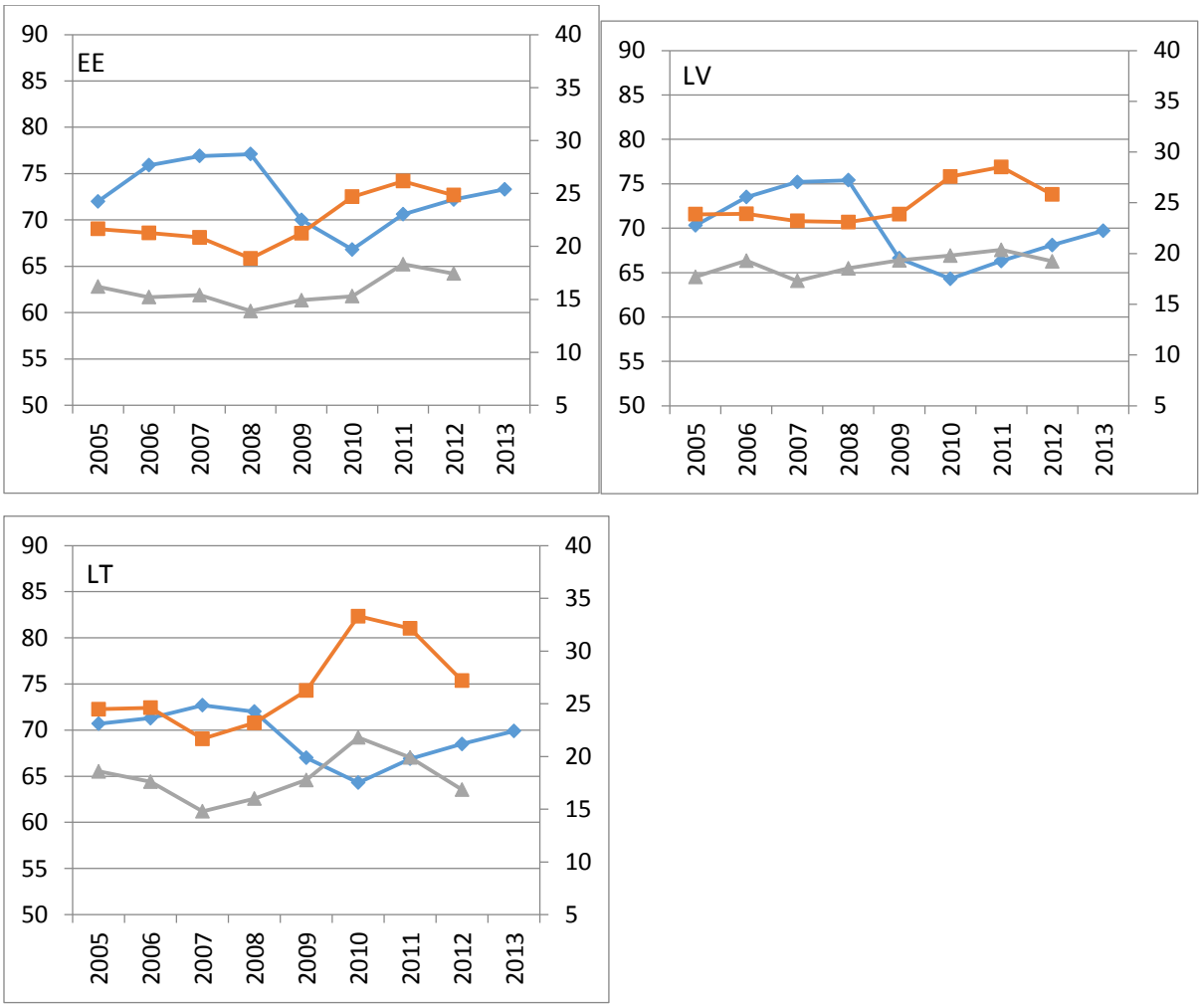
Note. For additional information see the note under Figure 1.

Figure 3.a. Employment rate: large drop and recovery after 2008 (Group C), (%)



Source: Eurostat Statistical Database.

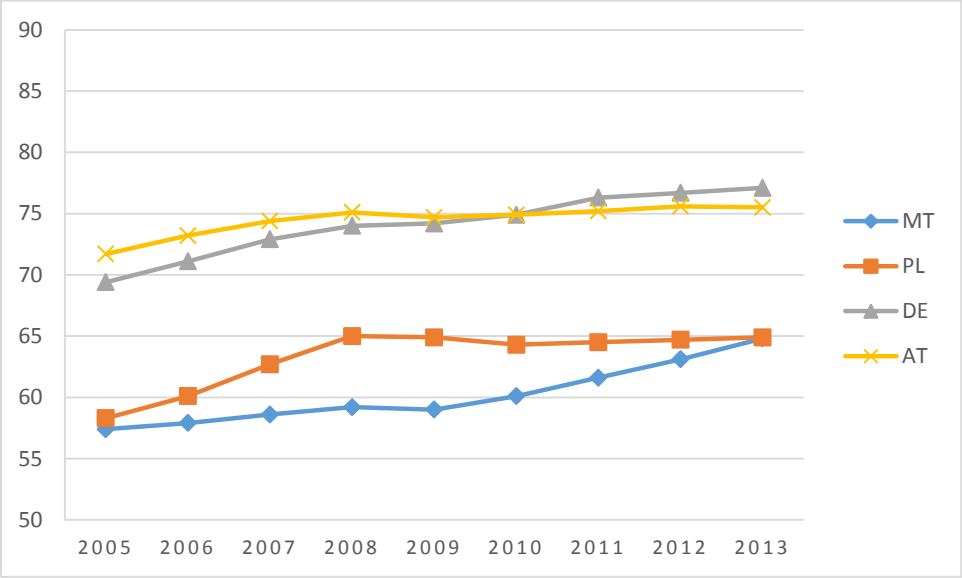
Figure 3.b. Country presentations of employment and AROP(a) trends in countries with large employment drop and recovery after 2008 (Group C) (orange: preAROP(a), grey: AROP(a), blue: employment), (%)



Source. Employment rate: Eurostat Statistical Database, AROP(a), preAROP(a): own calculations based on EU-SILC.

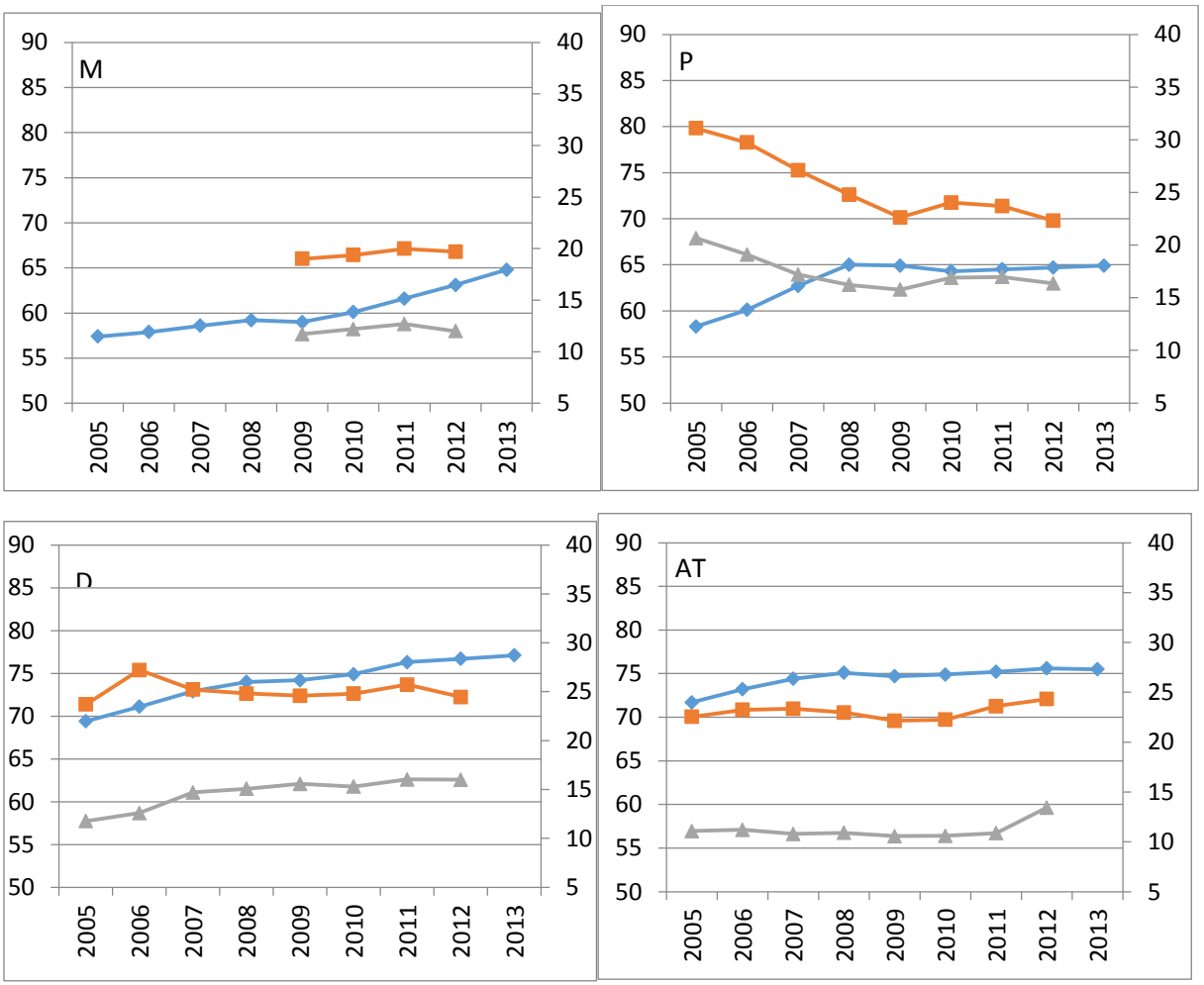
Note. For additional information see the note under Figure 1.

Figure 4.a. Employment rate: longer employment increase periods with no drops (Group D), (%)



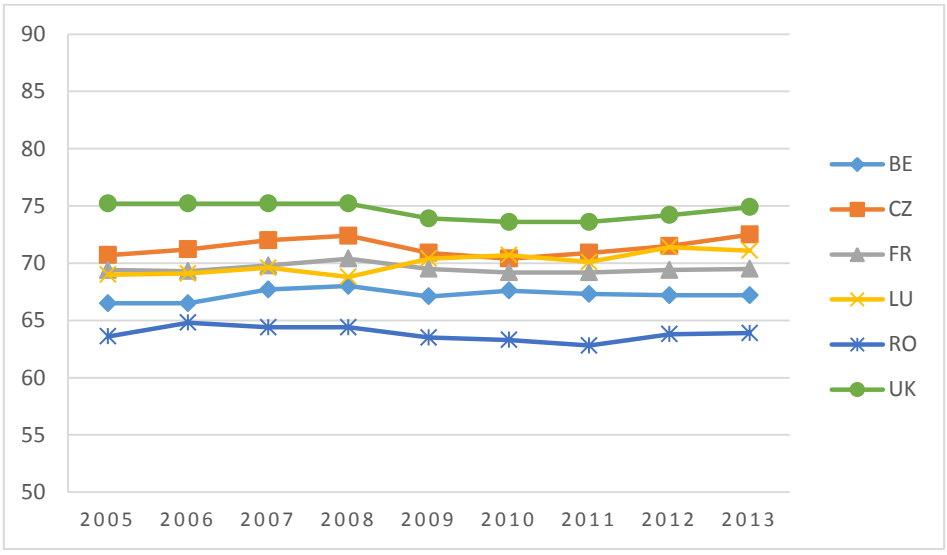
Source: Eurostat Statistical Database.

Figure 4.b. Country presentations of employment and AROP(a) trends countries with longer employment increase periods with no drops (Group D) (orange: preAROP(a), grey: AROP(a), blue: employment), (%)



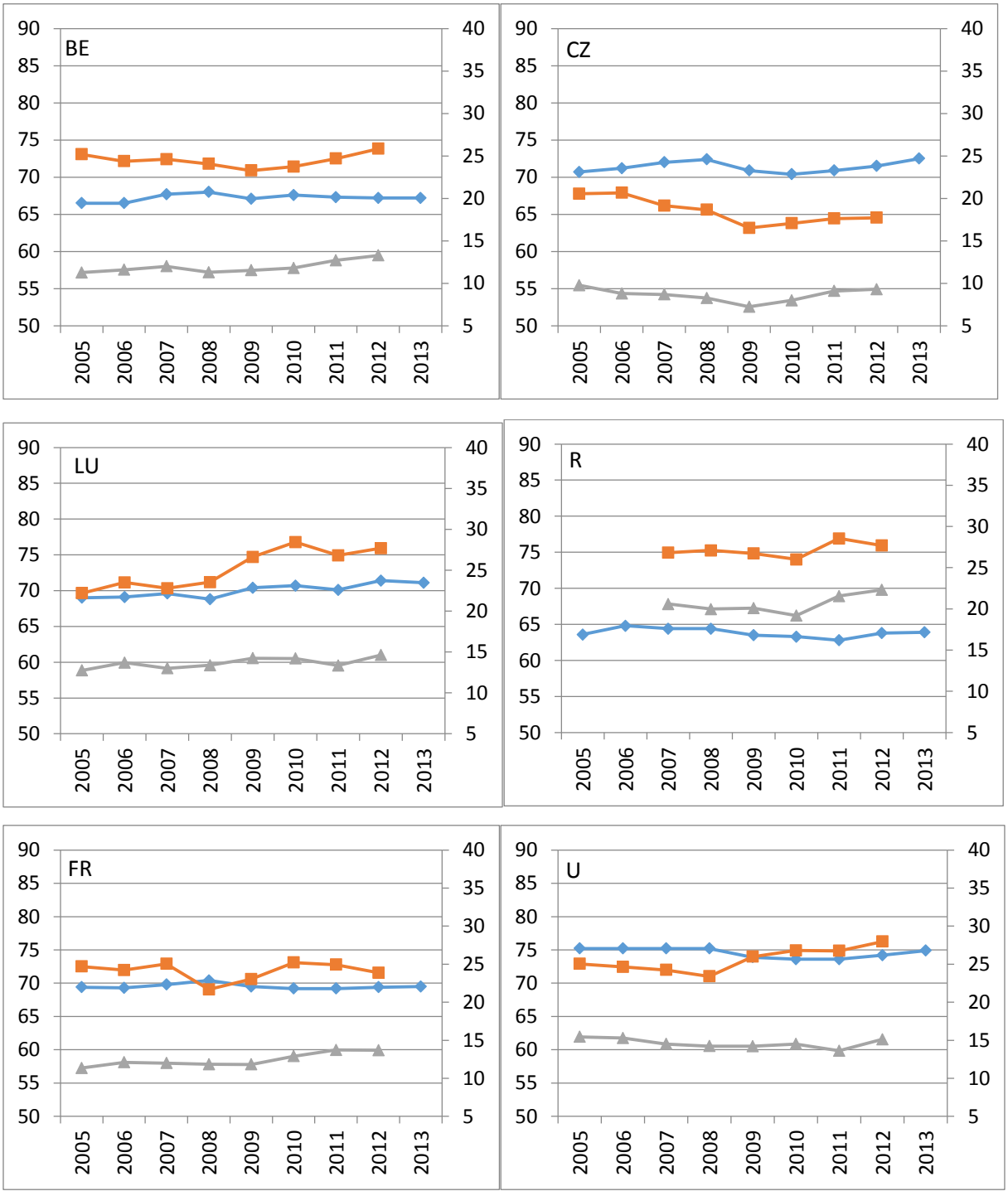
Source. Employment rate: Eurostat Statistical Database, AROP(a), preAROP(a): own calculations based on EU-SILC.

Figure 5.a. Employment rate: no substantial change in employment rate throughout the period (Group E), (%)



Source: Eurostat Statistical Database.

Figure 5.b. Country presentations of employment and AROP(a) trends in countries where there was no substantial change in employment rate (Group E) throughout the period (orange: preAROP(a), grey: AROP(a), blue: employment), (%)



Source. Employment rate: Eurostat Statistical Database, AROP(a), preAROP(a): own calculations based on EU-SILC.

To summarize the above trends differently: we have seen that relatively larger changes in employment seem to have been accompanied with reverse trends in poverty rates – when employment increases, poverty declines in most of the cases. However, trends of poverty under no change in employment regimes turn out to be very heterogeneous – perhaps due to different policies

in labour markets and in social transfers. Also, the elasticity of poverty change to employment seems to vary in different countries. The magnitude of the correlation between employment and poverty is estimated in the next section.

4 The relationship between employment trends and overall poverty change

To go beyond the visual investigation of trends and co-movements of employment and poverty, we carried out a panel regression analysis to quantify the relationship between the variables. We aim at estimating the lagged effects from changes in individual employment on changes in poverty risk. As Section 3 revealed, individual employment affects pre-transfer poverty in a more direct way, while its impact on post-transfer poverty rates is mediated by the effect of related policies in place. To provide evidences on these mechanisms, we regress employment on both preAROP(a) and AROP(a) as dependent variables. The analysis was done on an unbalanced panel dataset for the countries of the European Union (EU-27) for the time period from 2004 until 2013.

Our dependent variables were preAROP(a) and AROP(a) rates for the age cohort 20-59 for the time period between 2005 and 2012. The right hand side (independent) variable was the individual employment rate for the age cohort 20-64 in years 2004-2013.

There are a number of caveats of the dataset to consider. First of all, both preAROP(a) and AROP(a) are household level indicators, estimated for the age cohort 20-59. By contrast, employment rate is measured at individual level for the age cohort 20-64. While we think that the inconsistencies between the age cohort do not cause extremely large distortions, they cannot be ignored either.

Furthermore, the EU-SILC based indicators of poverty, as both preAROP(a) and AROP)a) are in year *t* (the survey year) refers to poverty in year *t-1* (given that this is the income reference year). The regressions were run on an adjusted dataset, where the poverty indicators and the employment rate referred to the same years, 2004-2011. The underlying assumption was that employment loss immediately causes a drop in the incomes of the household, leading to an immediate increase in poverty risk (given the definition that poverty is calculated on the basis of the annual income flow to households).[13]

Finally, the panel dataset was unbalanced as there were missing cases of preAROP(a) and AROP(a) rates in the EU-SILC datasets: observations were missing for Malta for 2005-2008 and for Romania and Bulgaria for 2005 and 2006[14].

Several models were run to assess the relationship between individual employment and poverty prior to and after social transfers, respectively, in the EU in the time period of 2004-2012. For each dependent variable (preAROP(a) and AROP(a)), Models 1, 2 and 3 are pooled OLS regressions to investigate a general association between the levels of the variables across years (in Model 3 year dummies are introduced). Recalling the opposite employment trends in the two (pre-crisis and crisis) periods defined in the introductory part of the paper, we introduced a crisis dummy in Model 2 to

[13] For example, Ayllón and Gábos (2015) in their individual level dynamic analysis found that income poverty and low work intensity are related via current effects instead of feedback effects, which also indicate that effects are immediate within the reference period of the previous year.

[14] Again, it should be also taken into account that the data for 2012 are subject to revisions in subsequent releases. In this paper, the August 2014 release of the 2012 dataset has been used.

estimate if expected poverty is different in times of crisis (during the years 2008-2012 the dummy equals 1) from the pre-crisis period 2004-2007 (when the dummy equals 0), *ceteris paribus*.[15] Further, Models 4, 5, 6 and 7 are first differences (FD) models to assess how changes in employment rates from one year to another are associated with changes in poverty rates (again, Model 6 contains year dummies and there is a crisis dummy in Model 5). Finally, country fixed effects (FE) are introduced in models 7, 8, and 9 (together with a crisis dummy in Model 8 and with year dummies in Model 9), to control for country specificities of the time trends and to observe possible longer-term stable relationships between employment and poverty.

Our results are summarized separately for preAROP(a) and AROP(a) in Tables 3 and 4, respectively. First we describe the results for the pre-transfer poverty rate, and in a second step for the post-transfer poverty rate.

The estimated coefficients of employment in the pooled OLS models are not significant, there is no statistically significant proof of an association between the levels of employment and preAROP(a) rates in the EU during the years of 2004-2011 (Table 3). The pooled OLS with year fixed effects (Model 3) and the introduction of a crisis dummy in the regression give similar, insignificant results. However, the estimated coefficient of the crisis dummy is significant at a 5% level and indicates that in the times of crisis poverty rates prior to social transfers are 1.21 percentage points higher on average, holding other explanatory variables, employment rates constant.

Turning to the results provided by the first difference models, Model 4 shows that a 10 percentage points increase in employment rate between two years, is associated with a 6 percentage points decrease in preAROP(a) on average. The introduction of the crisis dummy (which is not significant) leaves the coefficient of the employment rate unchanged (Model 5). When the time-dummies are included to control for an arbitrary time trend of poverty that is common across all countries (Model 6), the estimated coefficient becomes smaller in absolute terms: in a country where employment rate increases by 10 percentage points between two years, at risk of poverty rate before transfers decreases by 5.4 percentage points on average. The estimated coefficients of the employment rate are significant at a 1% level. The underlying assumption that a change in employment has immediate, short-run effects is supported by the finding that the estimated coefficient of a one-year lag of the employment rate, which could have captured the delayed effects, was not significant.

[15] It can be argued that the crisis dummy we applied, given that it reflects two time periods, irrespective of the economic developments within these periods, may not be the best proxy to approximate the direction of employment changes. In a subsequent version of this paper we plan to tag upward and downward spells to get further insigths into the nature of the employment relationships in boom and bust, separately.

Table 3 Coefficient estimates of regression analyses predicting poverty (preAROP(a)) rates by employment, EU-27, 2005-2012

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Dependent variable: preAROP(a) rate	**OLS pooled**	**OLS pooled**	**OLS pooled**	**FD**	**FD**	**FD**	**FE**	**FE**	**FE**
Employment rate (%)	−0,13	-0,12	-0,10	-0,60***	-0,60***	-0,54***	-0,73***	-0,70***	-0,73***
(S.E.)	(0,12)	(0,12)	(0,13)	(0,08)	(0,09)	(0,10)	(0,12)	(0,11)	(0,14)
Crisis dummy	-	1,21**	-	-	-0,01	-	-	1,24***	-
(S.E.)	-	(0,60)	-	-	(0,21)	-	-	(0,40)	-
Employment*Crisis	-	-	-	-	-	-	-	-	-
(S.E.)	-	-	-	-	-	-	-	-	-
Constant	33,1***	31,8***	32,1***	0,26***	0,26	-0,02	74,8***	72,1***	75,4***
(S.E.)	(8,4)	(8,4)	(8,7)	(0,10)	(0,16)	(0,25)	(8,17)	(7,5)	(9,7)
Time dummies			YES			YES			YES
R-squared	0,03	0,06	0,08	0,38	0,38	0,40	0,47	0,55	0,58
Observations	208	208	208	181	181	181	208	208	208

Source. preAROP(a) rate: own calculations based on EU-SILC 2005-2012, most recent wave is 2012-2, released 01-08-2014. Data for 2012 are subject to revisions in subsequent releases. Versions of waves 2005 to 2011 are as follows: 2005-5, 2006-4, 2007-6, 2008-5, 2009-5, 2010-4, 2011-4. Data for Malta are missing for 2005-2008 and observations for Romania and Bulgaria are missing for 2005 and 2006.

Employment rate: Eurostat Statistical Database, based on EU-LFS, last update: 10. 07. 2014.

Notes. Standard errors are shown in brackets. Coefficients are significant at *** p<0.01, ** p<0.05, * p<0.10 levels. Please note that standard errors are cluster standard errors in the case of pooled OLS, FD, FE models. R-squared is within R-squared in the FE models.

Compared to FD models, FE models look at long-run differences. Based on Model 7, in countries where employment is 10 percentage points higher than the country's long-term country-specific mean, preAROP(a) rate is 7.3 percentage points lower than the long-run country-specific mean, on average. When we include year dummies in Model 9 to control for an arbitrary time trend of poverty that is common across all countries, the estimated coefficient remains unchanged. The introduction of the crisis dummy results in a slightly smaller coefficient in absolute terms: in a country where employment is 10 percentage points higher than the country's long-term country-specific average, the pre transfer at-risk-of-poverty rate is expected to be 7.0 percentage points lower than its long-run country-specific mean. The estimated coefficients are significant at a 1% level. The crisis dummy is significant, which means that in times of crisis the country's poverty rate prior to social transfers is expected to be 1.24 percentage points higher than the country's long term average poverty rate before transfers, holding other explanatory variables constant.

All in all, regression results show that there is a significant negative association between employment and pre-transfer poverty. The higher the employment is, the lower the poverty rate prior to transfers will be. We suggest taking Model 6 (first differences with year dummies) and Model 9 (country fixed effects with year dummies) as benchmarks.

(Model 6) $\Delta Pov_{it} = \alpha + \beta \Delta Emp_{it} + \delta_t + \upsilon_{it}$

(Model 9) $\Delta Pov_{it} = \alpha + \beta \Delta Emp_{it} + \gamma \Delta Emp_{it-1} + \upsilon_{it}$

where δ_t stands for time dummies.

The other panel regression models may serve as robustness checks: the sign of the estimated coefficients for employment is always negative (as expected) and significant at 1% level except in the pooled OLS models. The magnitudes of the coefficients are also similar, the values of the estimated coefficients range from -0.54 to -0.73. It might be a matter of discussion whether this is a large or a small effect. However, little debate is justified as to the existence and positive effect of employment rise on poverty reduction (and vice versa, of employment decline on increase of poverty).

We ran the same type of regressions as specified above, but now also for post–transfer poverty rates (AROP(a)). We found that these regressions yield somewhat different results (see Table 4).[16] The estimated coefficients of the pooled OLS gained significance, there is a statistically significant proof of an association between the levels employment and AROP(a) rates in the EU during the years of 2004-2011. This means that a 10 percentage points higher employment rate goes along with a 3 percentage points lower AROP(a) rate on average (Model 1). The pooled OLS with year fixed effects (Model 3) gives similar results, with an estimated elasticity of 0.29. According to the crisis dummy introduced in Model 2, poverty rates during the crisis are 0.73 percentage point higher on average holding other explanatory variables, employment rates constant. All the estimated coefficients of employment rate in the pooled OLS models are significant at a 1% level.

[16] The same caveats and considerations hold for AROP(a) rates as for the preAROP(a) rates.

Table 4 Coefficient estimates of regression analyses predicting poverty (AROP(a)) rates by employment, EU-27, 2005-2012

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Dependent variable: preAROPA rate	**OLS pooled**	**OLS pooled**	**OLS pooled**	**FD**	**FD**	**FD**	**FE**	**FE**	**FE**
Employment rate (%)	−0,30***	−0,30***	-0,29***	-0,29***	-0,26***	-0,25***	-0,27***	-0,25***	-0,19**
(S.E.)	(0,08)	(0,08)	(0,09)	(0,06)	(0,06)	(0,07)	(0,08)	(0,08)	(0,09)
Crisis dummy	-	0,73***	-	-	0,21*	-	-	0,83***	-
(S.E.)		(0,27)			(0,12)			(0,22)	
Employment*Crisis									
(S.E.)									
Constant	35,2***	34,4***	35,4***	0,20***	0,08	0,28	34,0***	31,1***	28,0***
(S.E.)	(5,9)	(5,9)	(6,2)	(0,07)	(0,12)	(0,21)	(5,5)	(5,3)	(6,1)
Time dummies	-	-	YES	-	-	YES	-	-	YES
R-squared	0,23	0,24	0,25	0,19	0,20	0,23	0,20	0,32	0,39
Observations	208	208	208	181	181	181	208	208	208

Source: AROP(a) rate: own calculations based on EU-SILC 2005-2012, most recent wave is 2012-2, released 01-08-2014. Data for 2012 are subject to revisions in subsequent releases. Versions of waves 2005 to 2011 are as follows: 2005-5, 2006-4, 2007-6, 2008-5, 2009-5, 2010-4, 2011-4. Data for Malta are missing for 2005-2008 and observations for Romania and Bulgaria are missing for 2005 and 2006.

Employment rate: Eurostat, Eurostat Statistical Database, based on EU-LFS, last update: 10. 07. 2014.

Notes. Standard errors are shown in brackets. Coefficients are significant at *** p<0.01, ** p<0.05, * p<0.10 levels. Please note that standard errors are cluster standard errors in the case of pooled OLS, FD, FE models. R-squared is within R-squared in the FE models.

Both the first differences and the fixed effects models show a significant relationship between employment and poverty rate after transfers. An increase between two years in employment rate by 10 percentage points is associated with a decrease in the at-risk-of-poverty rate by 2.9 percentage points on average (or 2.5 when year dummies are included in the model). According to Model 5, the change in poverty rates from one year to another is 0.21 percentage points higher on average in times of the crisis, holding other explanatory variables constant. However the crisis dummy is significant only at a 10% level.

Furthermore, when employment is 10 percentage points higher than the country's long-term country-specific average, AROP(a) is expected to be 2.7 percentage points lower than the long-run country-specific average (when year dummies are included, the estimated coefficient is -1.9). The introduction of the crisis dummy only slightly changes the estimated coefficient of the main explanatory variable (employment rate), the approximate estimation of -2.5 seems robust. The crisis dummy indicates that the expected difference from the country's long term average poverty rate is 0.83 percentage points higher in the times of crisis.

Comparing the two groups of regression models with preAROP(a) and AROP(a), the higher impact of employment on preAROP(a) rates (-0.54 - -0.73 compared to the estimates for employment rate in the AROP(a) models that range from -0.19 to -0.30) can be explained by the moderating role of the welfare state, which counteracts market (and private transfer) income inequalities. This mechanism may come into action via automatic stabilizers or direct government interventions.

Corluy and Vandenbroucke (2014) also find evidence of negative correlation between the levels of individual employment rates and post-transfer AROP(a) rates in years 2005-2008. However, they find that household joblessness rates show no correlation with post-transfer poverty rates for the same years. According to a simulation model of Marx et al. (2011), employment growth does not necessarily result in lower relative poverty shares; the simulation estimates the impact of moving towards the Europe 2020 target of 75 percent employment rate of the working aged population on relative income poverty.

As mentioned earlier, employment rates are measured for individuals in our models, while poverty – as a household characteristic – is more directly associated with the degree to which various households are attached to the labour market. In this sense, the relationship between individual employment rates and household poverty rates can be considered surprisingly high.

The elasticity of the employment-poverty ratio – while it looks sizeable for the whole sample on average, seems to have some variations across countries and periods. As shown in figures 1b-5b, for example, the Belgian poverty rate seems increasing despite no change in employment trends in the last phase of the period. Also, Romanian pre-transfer poverty rates or UK post-transfer rates seem deviating from employment trends, despite small or no changes in employment again. Reasons behind these alterations may lie in policies, labour markets or fiscal and welfare regimes alike.

In what follows later, we try to account for the link between individual employment and income poverty, by first looking at how changes in individual employment are translated into household work intensity, how changes in household work intensity contribute to changes in poverty rates and how the latter is mitigated by social transfers (using preAROP(a) rates as a proxy for poverty risk based on income from employment).

5 Decomposition of labour market trends and poverty changes

This part of the analysis is about how individual employment translates into household work intensity. To identify these elements and to demonstrate how they relate to each other, we follow the methodology proposed by Corluy and Vandenbroucke (2014). To decompose the contribution of various labour market developments to poverty, they suggest the following equation:

(1) $$\Delta pov = \overline{wr_i}\,\Delta pwr_i + \overline{wp_i}\,\Delta pwp_i + (\overline{pwp_i} - \overline{pwr_i})\,\Delta wp_i$$

where

Δpov : change in the AROP(a) rate in the period;
wp : share of individuals in jobless, jobless households, where WI = 0;
wr : share of individuals in non-jobless households, where WI > 0 (wr = 1 – wp);
pwp_i : AROP(a) rate for individuals in jobless households – AROP(a) rate where WI = 0;
pwr_i : AROP(a) rate for individuals in non-jobless households – AROP(a) rate where WI > 0;

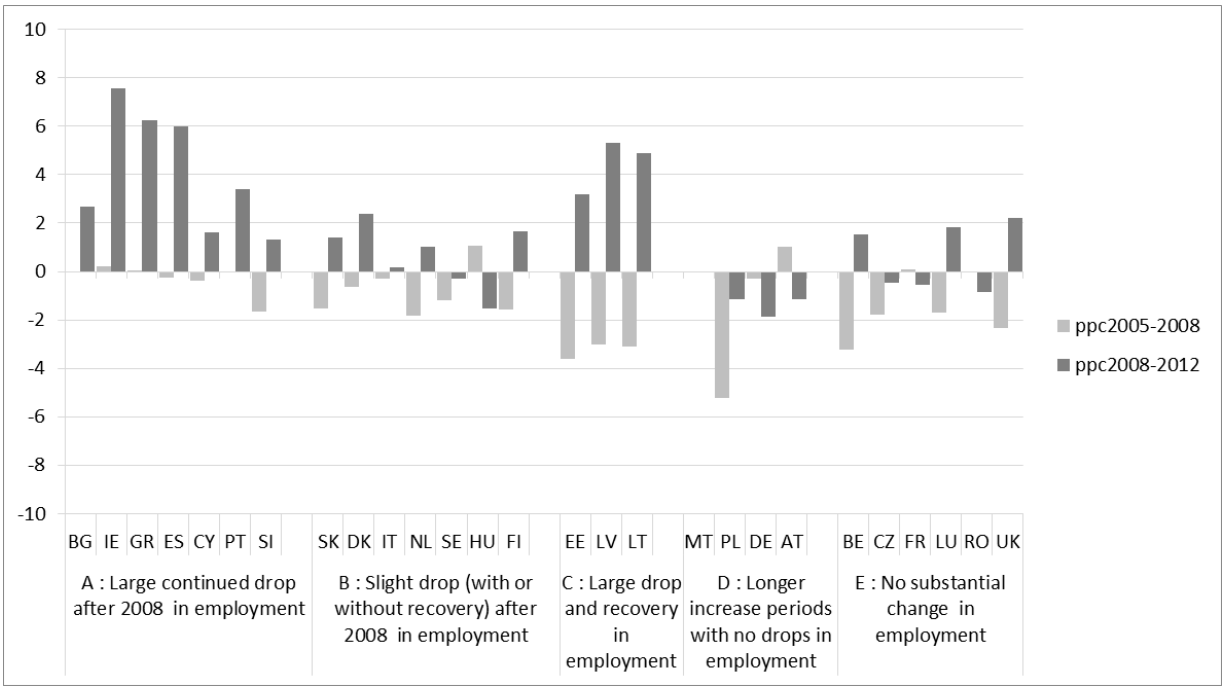
For the decomposition in general, we differentiate between two periods: 2005-2008 and 2008-2012.

We start the analysis with the share of individuals in jobless (wp) and in non-jobless (wr) households (results shown in Figure 6 and Figure 7).[17]

Along with a general improvement in individual employment rates, the first period was characterized by a drop of the share of individuals in jobless households in almost all of the countries (Hungary is an exception, where an increase between 2005 and 2008 was observed), as shown in Figure 6. The largest improvement in the share of jobless households (in percentage points terms) was shown in some of the transition countries, where individual employment increased to a large extent in this period: the three Baltic countries, Poland and Slovakia. Also, significant drops in the share of individuals in jobless households were observed in two old member states: Belgium (with a slower increase in individual employment) and the United Kingdom (with no important changes in individual employment). The second period is very much different: the share of individuals in jobless households increased almost everywhere, except (again) in Hungary, and, to a smaller extent, also in Germany, Poland and Austria. If we look at processes in individual level employment for these countries, we can observe that Germany, Poland and Austria belongs to group D characterized by longer increasing periods with no drops. For Hungary, a light increase in individual employment rate has been accompanied by a drop in the share of active age persons in jobless households. Romania also faced some recovery in employment rate after having touched bottom in 2011.

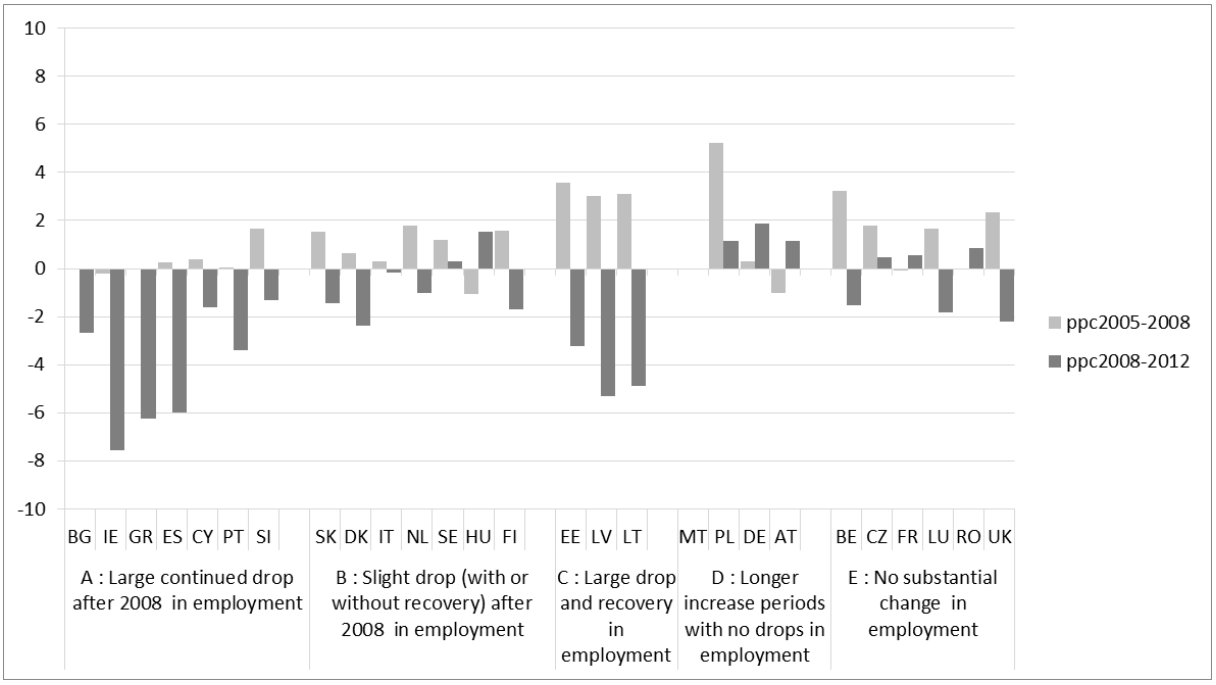
[17] Please note that the sample size is slightly reduced when the working-age population is split up corresponding to the households' work intensity. Those observations with self-declared student status in the age of 20 to 24 are not included in the calculation of the individual work intensity. Regarding the households' work intensity, this can yield missing values when only this subgroup makes up a whole household, i.e. students between 20 and 24 years living together. As this concerns only small proportions (less than 1 percent) and is not a systematic problem of certain countries, this should not lead to biased results compared to figures regarding the whole active-age population.

Figure 6. Change in the share of individuals living in jobless households (WI=0), 2005-2012 (percentage points change)



Source: own calculations based on EU-SILC.

Figure 7. Change in the share of individuals living in non-jobless households (WI>0), 2005-2012 (percentage points change)



Source: own calculations based on EU-SILC.

Given that $wp = 1 - wr$, changes in the share of individuals in non-jobless households shown in Figure 7 are exactly the inverse of what is shown for the share of those living in jobless households in

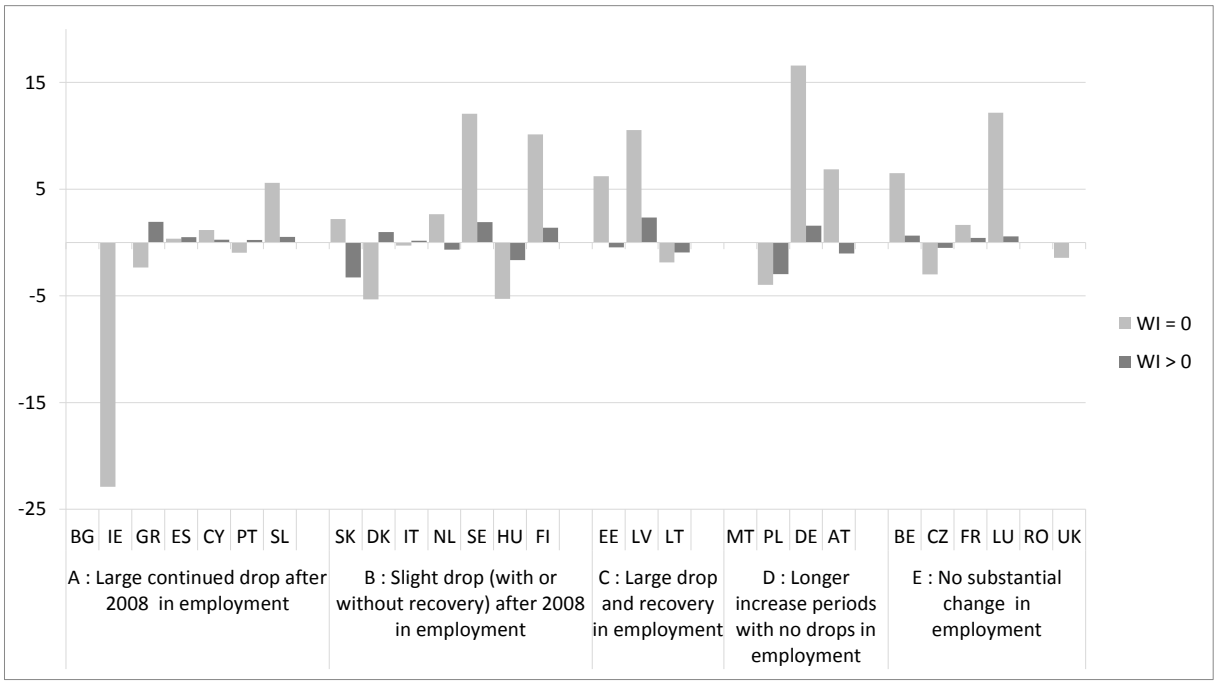
Figure 6. The share of individuals in non-jobless households has increased to some extent in the majority of the countries observed in the period between 2005 and 2008. The largest increase was measured in Poland, followed by the Baltic countries, Belgium and the UK. In the second period, only a smaller number of countries could produce an increase in the share of non-jobless households (Germany, Hungary, Poland and Austria being the prime examples). There were also significant drops in the share of individuals living in non-jobless households in the second period, the largest drops were measured in Ireland, Greece, Spain and the Baltic countries (Estonia, Lithuania and Latvia). In this group, large drops were also experienced in Portugal, Bulgaria and Denmark.

For the decomposition analysis, changes in AROP(a) are differentiated between individuals in households with zero work intensity (WI=0) and others (WI>0). This is shown for the two periods in Figure 8 (2008/2005) and Figure 9 (2012/2008). As presented in these figures, AROP(a) rates for zero WI households were on the rise between 2005 and 2008 in the majority of the countries. The highest increases were experienced in Germany, Luxembourg, Sweden, Latvia, Finland and Austria. In some of these countries, most importantly in Sweden, Finland, Germany and Latvia, AROP(a) rates also increased in the non-jobless households. This means that the poverty rise in the latter four countries did not seem to be differentiated very much by work intensity (i.e., poverty rose across all WI categories we considered in our analysis). Neither was an increase in differentials of poverty rates between WI groups detected in Hungary and Poland, where AROP(a) declined between 2005 and 2008. In some of the countries, however, poverty rates of those living in the two WI categories diverged very much in this period. Consider for example the case of Ireland, where poverty rates of those in jobless households declined strongly, while despite the overall poverty decline a fall of AROP(a) of those with at least some labour market attachment was not experienced. Similarly, but in different direction, AROP(a) of the jobless increased dramatically in Luxembourg, but poverty of those integrated at least to some extent into the labour market did not change much in the same period.

In the second period (2008-2012, see Figure 9), poverty declined only in a few cases: mostly in jobless households in Latvia, the United Kingdom, Cyprus, less in the same household category in Estonia, Bulgaria and Luxembourg. As far as non-jobless households are concerned, AROP(a) declined in Latvia, Finland and Lithuania and to a smaller extent in Ireland, the Netherlands, Portugal and Bulgaria. In most countries poverty was on the rise between the two end years of the period (here we recall, however, that there were significant within-period variations in some countries like the Baltics, for example).

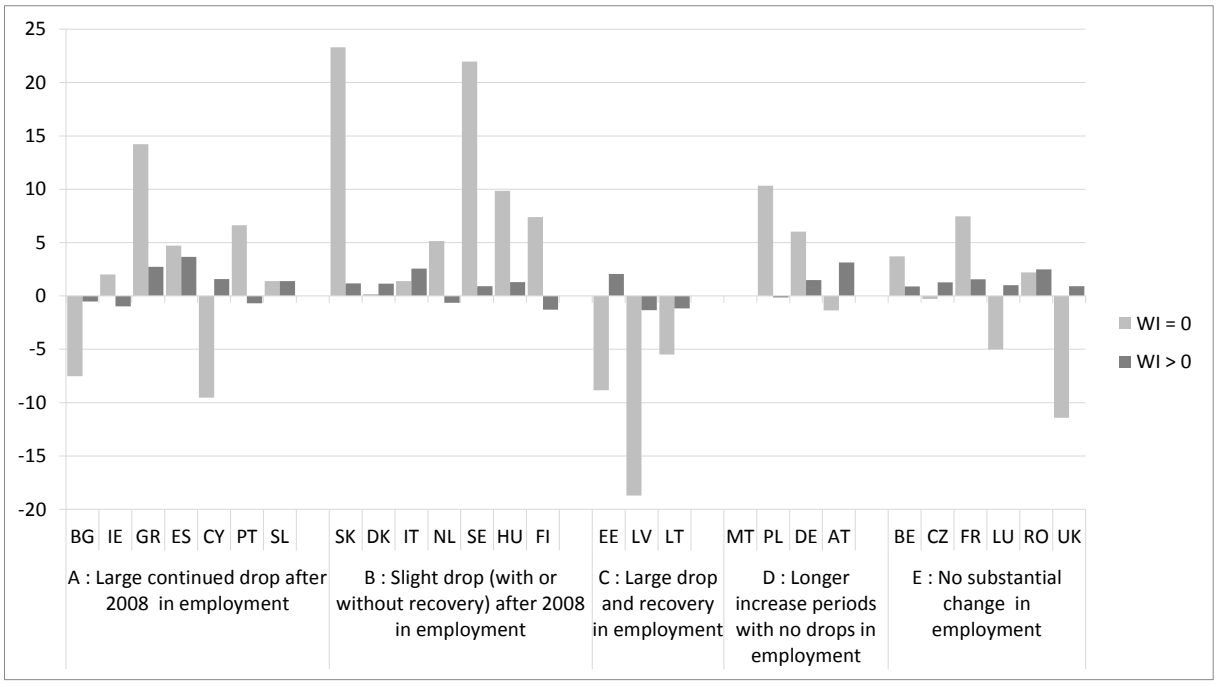
All in all, in some of the countries, the crisis period witnessed a dramatic differentiation across WI categories. For example, in Portugal, the Netherlands, Finland and Poland the risk of poverty among those in jobless households increased, while the poverty risk of the members of the households with positive labour market attachment decreased. In other countries there seemed to have been a convergence between the two WI categories: in Cyprus, Estonia, Luxembourg and UK jobless poverty declined while AROP(a) of the non-jobless increased, indicating some sort of convergence in the incidence of poverty.

Figure 8. AROP(a) trends between 2005-2008, by household work intensity categories (percentage points change)



Source: own calculations based on EU-SILC.

Figure 9. AROP(a) trends between 2008-2012, by household work intensity categories (percentage points change)



Source: own calculations based on EU-SILC.

Equation (1) above specifies how poverty change can be decomposed into a sum of three factors:

- a contribution by the change in the at-risk-of-poverty rate of individuals in non-jobless households ($\overline{wr_i}\,\Delta pwr_i$);
- a contribution by the change in the at-risk-of-poverty rate of individuals in jobless households ($\overline{wp_i}\,\Delta pwp_i$);
- a contribution by the change in the share of the population living in jobless households $(\overline{pwp_i} - \overline{pwr_i})\,\Delta wp_i$.

The first factor reflects the average change in the poverty rate of individuals in non-jobless households with the assumption that there is no change in the population share of those living in non-jobless households. The second factor stands for the average change of the poverty rate of jobless household members, assuming no change in share of persons belonging to jobless households. The third factor reflects the structural change in the society with reference to the share of the jobless households.

Results for this decomposition are shown in Table 5 (period 2005-2008) and in Table 6 (period 2008-2012). Countries (rows) are ranked according to the magnitude of the poverty change within the two periods, separately. Colour codes correspond to the magnitudes of the indicators: red(dish) is for deterioration (poverty increase), while green(ish) is for improvements (poverty decrease). A combined analysis of the two tables reveals the following findings.

- The overall trend in poverty change was a decline or no change in most of the countries (exceptions being Finland, Greece, Sweden and Germany, where poverty increase exceeded 1 percent) in the first period.
- The overall trend in poverty change was an increase or no change in all countries (with no exceptions) in the second period.
- There was a cross-country heterogeneity in both periods in overall poverty change. However, while there were countries with increasing and decreasing poverty rates in the first period, the second period did not produce declining trends[18].
- Countries differ in the portion of total poverty changes attributable to changes in the poverty rates of individuals living in both jobless and non-jobless households, as well as in the portion attributed to the changes in the population share of those in jobless households.
- The decline in the share of persons living in jobless households had a sizeable contribution to poverty rate declines in the first period, for example in Estonia (where the contribution of increasing poverty rates of those in jobless households could not offset the effect of the declining share of this group). Also in the United Kingdom, where the declining poverty rates can be attributable to a large extent to the decline in the share of those living in jobless households. Same tendencies (albeit to a smaller extent) could be traced in Poland and Lithuania. The case of Belgium is of special interest: the overall no-change in AROP(a) was a result of the fact that the beneficial effects of the declining jobless share were completely offset by increasing poverty rates in both jobless and non-jobless households.

[18] We shall, however, recall that in some countries some within period nonlinear trends were also observable: see the example of Latvia in Figure 3b or that of Poland in Figure 4b.

- In the second period, the share of people living in jobless households increased in many more countries, contributing to an overall increase in poverty. Largest contributions of this factor to poverty change were measured in Latvia, Ireland, Lithuania, Spain and Estonia, in all of these countries (except Latvia and Lithuania, where the increase in poverty was not significant) the massive rise of poverty was accompanied to a large extent by an increase of the share of people living in jobless households). It is only Germany where increase of poverty rates most probably would have been much higher, had the share of people living in jobless households do not decline.
- However, it is not only the structural effect that played a role in overall poverty change in the two periods. The increased poverty rate of the jobless was a significant contributor to poverty change in Germany between 2005 and 2008 or in Slovakia between 2008 and 2012. However, an interesting finding is that changing relative poverty of the non-jobless households also matters a lot. In Poland and in Slovakia, for example, a sizeable part of the decline in poverty is accounted for by decreasing poverty rates of the non-jobless households while in Finland, Greece, Sweden and Germany a sizeable part of the increase in poverty is accounted for by increasing poverty rates of the non-jobless households between 2005 and 2008.
- In the second period in Spain, Greece, Estonia, Slovakia, Ireland, Italy, Austria, Romania, Denmark and Sweden, where the rise of poverty exceeded 2 percentage points in the period, the increased poverty rate of those households having at least someone to work has played a role in this increase in most of the cases (exceptions are Ireland, Slovakia, Denmark and Sweden).

It would be very difficult to find any pattern or relationship between our country groupings (organized preliminary by the heterogeneity of the observed employment paths) and the relative contributions of the various factors to poverty change. The really interesting phase is the second period here. One sees large poverty increase in Greece and in Spain, in both countries mainly driven by an increased poverty of the non-jobless households. At the same time, poverty did not increase much in Finland in this period, the change was not significant, mostly because of the decline in poverty rates of the non-jobless households. The analysis could go further for the various groups, without finding systematic patterns at this level of data detail[19].

[19] Please note that our analysis is not yet extended to decompositions of pre-transfer poverty rates. This is a direction into which we could move in the next version of the paper.

Table 5 Decomposition of changes in poverty rates in the EU Member States between 2005-2008; analysis on jobless (WI=0) and non-jobless (WI >0) households (percentage points)

	Change in the at-risk-of-poverty rate of active age individuals		Change in the at-risk-of-poverty rate of individuals in non-jobless hhs		Change in the at-risk-of-poverty rate of individuals in jobless hhs		Change in the share of individuals in jobless hhs	
Country	Δpov = povi1 - povi0		awr * Δpwr		awp * Δpwp		(apwp - apwr) * Δwp	
DE	3,30	***	1,40	***	1,88	***	-0,14	
SE	2,17	***	1,80	***	0,67	***	-0,36	**
GR	1,73	*	1,79	*	-0,17		0,01	
FI	1,29	**	1,27	***	0,75	***	-0,63	***
LV	0,85		2,21	*	0,64	***	-2,02	***
LU	0,62		0,54		0,58		-0,43	**
FR	0,49		0,39		0,12		0,03	
ES	0,38		0,47		0,02		-0,10	
SI	0,23		0,49		0,43		-0,68	***
DK	0,22		0,88		-0,53		-0,25	
PT	0,12		0,24		-0,05		-0,02	
CY	0,07		0,25		0,05		-0,18	
IT	0,05		0,16		-0,03		-0,11	
BE	0,03		0,56		0,82	*	-1,28	***
NL	-0,05		-0,61		0,23		-0,48	**
AT	-0,18		-0,95		0,49		0,36	
UK	-1,23		-0,03		-0,12		-1,11	***
HU	-1,45		-1,51	**	-0,49		0,31	*
CZ	-1,50		-0,46		-0,22		-0,76	**
EE	-2,30	**	-0,42		0,41	*	-2,49	***
IE	-2,52	**	-0,03		-2,39	***	0,10	
LT	-2,58	**	-0,87		-0,12		-1,60	***
SK	-3,53	***	-3,09	***	0,12		-0,49	***
PL	-4,45	***	-2,67	***	-0,38	*	-1,40	***

Source: own calculations based on EU-SILC 2005-2012. Most recent wave is 2012-2, released 01-08-2014. Data for 2012 are subject to revisions in subsequent releases. Versions of waves 2005 to 2011 are as follows: 2005-5, 2006-4, 2007-6, 2008-5, 2009-5, 2010-4, 2011-4. Data for Malta are missing for 2005-2008 and observations for Romania and Bulgaria are missing for 2005 and 2006. These three countries we dropped from the analysis.

Note. Countries are ranked according to the first column, namely by the percentage point changes in poverty rate.

Table 6 Decomposition of changes in poverty risk in the EU Member States between 2008-2012; analysis on WI=0 and WI >0 households

	Change in the at-risk-of-poverty rate of active age individuals		Change in the at-risk-of-poverty rate of individuals in non-jobless hhs		Change in the at-risk-of-poverty rate of individuals in jobless hhs		Change in the share of individuals in jobless hhs	
Country	Δpov = povi1 - povi0		awr * Δpwr		awp * Δpwp		(apwp - apwr) * Δwp	
ES	6,11	***	3,24	***	0,53		2,33	***
GR	5,48	***	2,35	**	2,01	***	1,61	***
EE	3,54	***	1,86	**	-0,81	**	2,16	***
SK	3,07	***	1,06		2,42	***	0,65	***
IE	2,57	**	-0,79		0,37		2,82	***
IT	2,56	***	2,24	***	0,17		0,06	
AT	2,53	***	2,82	***	-0,17		-0,42	*
RO	2,33	*	2,22	*	0,27		-0,22	
DK	2,13	*	0,97		0,03		0,83	**
SE	2,04	***	0,83		2,05	***	-0,14	
BE	1,98	**	0,73		0,61		0,67	*
SI	1,97	***	1,23	**	0,15		0,58	***
FR	1,85	***	1,40	**	0,73	**	-0,20	
CY	1,71	*	1,47	*	-0,68		0,65	***
HU	1,37	*	1,13	*	1,30	***	-0,47	***
LU	1,26		0,94		-0,36		0,52	***
CZ	1,04		1,15	*	-0,03		-0,18	
DE	0,93		1,28	***	0,87	***	-1,10	***
PT	0,93		-0,62		0,61		1,12	***
UK	0,88		0,79		-0,97	***	0,90	***
LT	0,83		-1,02		-0,64		2,37	***
LV	0,69		-1,19		-2,02	***	3,32	***
FI	0,57		-1,15	**	0,72	**	0,83	***
BG	0,46		-0,47		-0,73	*	1,49	***
PL	0,13		-0,13		1,08	***	-0,36	***
NL	0,00		-0,56		0,66		0,32	

Source: own calculations based on EU-SILC 2005-2012, most recent wave is 2012-2, released 01-08-2014. Data for 2012 are subject to revisions in subsequent releases. Versions of waves 2005 to 2011 are as follows: 2005-5, 2006-4, 2007-6, 2008-5, 2009-5, 2010-4, 2011-4. Data for Malta are missing for 2005-2008 and observations for Romania and Bulgaria are missing for 2005 and 2006.

Note. Countries are ranked according to the first column, namely by the percentage point changes in poverty rate.

6 The role of social expenditures

As we indicated right at the outset, poverty rates are jointly determined by employment and by social expenditures. The effect of social expenditures can be captured in different ways, contrasting pre-transfer and post-transfer poverty rates is one of the most widely used methods. The cross-country heterogeneity of the differences between preAROP(a) and AROP(a) rates might indicate differences in the extent to which social policies differ across member states. Changing time trends of these differences, in turn, indicate different reaction-patterns of the social transfer systems over time, especially during the crisis. On the one hand, even when social transfer policies remain unchanged, their automatic stabilizer role step in and may increase poverty reduction effectiveness by providing assistance to an increased number of individuals or households meeting the take-up criteria of the benefits. On the other hand, governments in crisis times might decide to broaden the reach of social policies - via such policy changes the share of recipients in the population may increase. Alternatively, governments might decide to increase the intensity of social subsidies – leading to larger shares of expenditures in the budgets of households.

The main tool welfare states have at their disposal for redistributing income is social protection, including cash transfers through social insurance and social assistance. Schemes for transferring income from privileged groups to those in need have a higher capacity to alleviate income inequality than for example taxation (OECD 2008, 2011). Therefore, in the present paper, social expenditures are captured through (public) social transfers, being the main indicator for investigating redistributive capacities of welfare states.

The used variable captures all active-age cash benefits accruing to individuals aged 20 to 59, i.e. unemployment benefits, sickness/invalidity pay, social assistance, family-related allowances and/or housing allowances; pensions are excluded. This broad definition of social transfers corresponds to the notion that benefit schemes often act interdependently (see also Cantillon et al. 2014). In our analysis, we do not deal with issues concerning how these expenditures are organized (if they are operated in universalistic schemes or perhaps they are designed to be more targeted).[20]

[20] The relationship between width and depth of redistribution and of the poverty alleviation effects is not trivial though. Testing early findings that targeted benefit systems may have achieved less redistribution than more universal ones (the paradox of redistribution, as coined by Korpi and Palme, 1998) Kenworthy (2011) has shown that this inverse relationship between targeting and redistribution has weakened by the mid-nineties and then disappeared by 2000-2005. Marx et al. 2013a highlight that the paradox (that targeted benefit systems may have achieved less redistribution than more universal ones) may not exist any longer. They indicate that the outcomes are not only sensitive to operationalization (i.e. definitions of the counterfactual) and data sources, but also to the country selection. They also argue that differential efficiency of various targeted programs and of different country experiences will have to be further studied to gain a better understanding of redistributive capacities. Similarly, Brady et al. (2013) suggest that the political economy frame of the Korpi and Palme (1998) paradox needs to be revised. Furthermore, the assessment of social spending policies based on ex-post observations should be done cautiously and should take into account that the level and orientation of social spending may change due to an economic downturn or upswing without any alteration in the social policy per se (Vandenbroucke and Vinck, 2013).

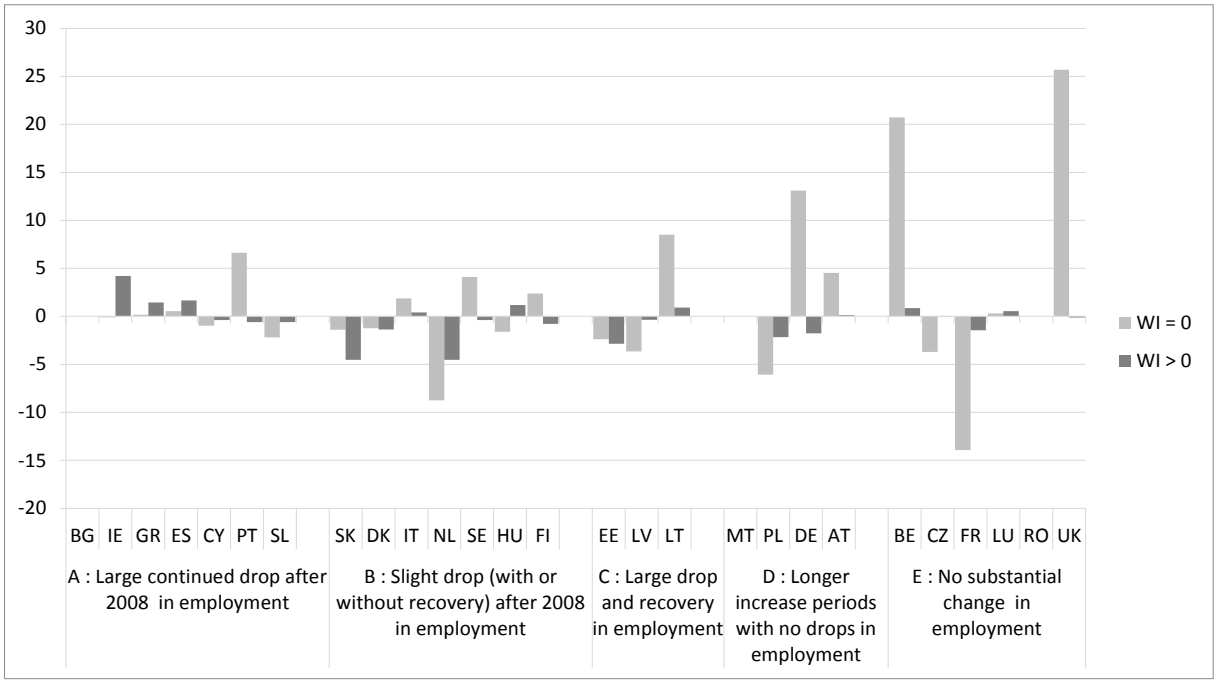
6.1 The extent of social expenditures – as seen from the perspective of households

Unlike a large body of the literature, when analysing the relationship between poverty, employment and social expenditures, we remain at micro level for the analysis of expenditures as well. We analyse how benefit size (defined as the share of social expenditure items received by households in their total income flows) changed over time in the various countries, periods and for the different work intensity categories.

Consider first Figures 10 and 11, showing benefit size for the jobless and the non-jobless, the two figures reflecting the 2005-2008 and the 2008-2012 periods, respectively. Trends in the period between 2005 and 2008 can be summarized as follows.

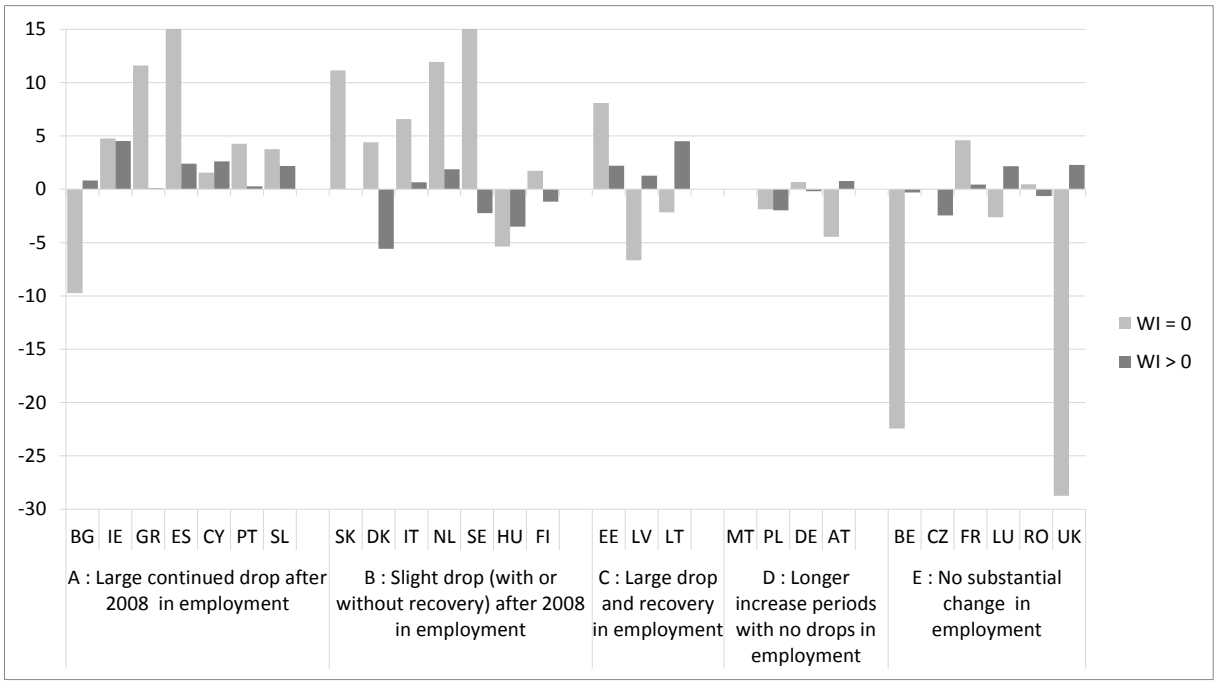
- Benefit size increased for the non-jobless, but did not increase for the jobless in Ireland, Greece and Spain.
- Benefit size increased for the jobless, while it did not (or not significantly) increase for the non-jobless in Germany, Belgium and the United Kingdom.
- There were large or – at least – relatively sizeable reductions in benefit size for the non-jobless households in Slovakia, the Netherlands, Estonia, Poland, Germany, France and Denmark. In some of these countries (most notably in France, Poland and the Netherlands) the benefit size for the jobless also decreased in the period between 2005 and 2008.

Figure 10. Benefit size trends in the EU Member States between 2005 and 2008 by household work intensity categories (percentage points change)



Source: own calculations based on EU-SILC.

Figure 11. Benefit size trends in the EU Member States between 2008 and 2012 by household work intensity categories (percentage points change)



Source: own calculations based on EU-SILC.

Trends in the period between 2008 and 2012 can be described as follows.

- There were only a few countries (the United Kingdom, Bulgaria and Sweden where benefit size significantly decreased) or somewhat decreased (Hungary and Austria) for the jobless. Benefit size for those with non-zero labour market attachment was cut back in Poland, the Czech Republic, Hungary and Sweden.
- In most other countries benefit size increased, most notably in Greece, Spain Italy, Netherlands and Slovakia for the jobless. However, in some of the countries the level of spending for the non-jobless was also raised (quite significantly in Spain, Cyprus, Estonia and Lithuania, but also in the United Kingdom, Luxembourg, Latvia and Slovenia).

6.2 Poverty reduction effect of social expenditures

To consider now the relationship and joint development of AROP(a) rates and preAROP(a) rates , let us turn back to Figures 1b–5b again. A visual analysis allows us to conclude the followings:

- In some of the countries (see Greece or Bulgaria), the differences between AROP(a) rates and preAROP(a) rates are relatively small, while in other countries (like Ireland, or Slovenia, for example) they are much larger. This can be taken as a measure of the extent of the social redistribution in the given countries.
- The distance between AROP(a) and preAROP(a) is not necessarily constant over time. In some countries (like Greece, Bulgaria or Slovenia), the two lines seem to go in parallel, while

in others (like Ireland, Cyprus or Spain) they seem to start diverging after the breakout of the crisis.

What follows here, is a combined analysis of these two indicators.

To measure the distance in the at-risk-of–poverty rate before and after social transfers (excl. pensions), we will apply the standard measure of withdrawal rates, defined as the difference between AROPA and preAROP(a), expressed in percentage of the preAROP(a) rates. This is, as mentioned in Section 2, a counterfactual, symbolizing (but, due to arising endogeneities and behavioural reactions, not 'measuring') the effect of social expenditures in reducing poverty[21]. The following formula is applied,

PRI = (preAROP(a)-AROP(a))/preAROP(a)*100,

where PRI is for Poverty Reduction Index.

The time trend of PRI for the Member States (organized into the structure of our country grouping introduced in Section 2) is shown in Table 7, according to the country grouping introduced in Section 3. As we anticipated earlier, our interest is not only in the overall trends of PRI's, but also in their work intensity group-specific dynamics. Therefore, besides overall figures, the work intensity group-specific PRIs are also provided and discussed, in accordance with the decomposition analysis. Table 7 provides these figures as well.

At the beginning of the crisis (2008), PRI was the highest (above 50%) in the Nordic countries (Denmark, Sweden and Finland), in Belgium, Ireland, Austria, the Czech Republic, Hungary and Slovenia, but also high in France and the Netherlands (between 45% and 50% in 2008, but higher than 50% before). Half of these countries belong to group B (slight employment drop after 2008), but they also represent groups A (large continued drop in employment after 2008) and E (no substantial change in employment), as well as D (longer employment increase periods with no drop), but the latter only by Austria. If we look at the trends for the entire period (2005-2012), the majority of these countries experienced a significant decrease in PRI, with the important exception of Ireland. In some countries, the poverty reduction effect of the social transfers fall between 2005 and 2012 by more than 10% (Belgium, Austria, Finland), or even by 20% or more (like in France or Sweden). In general, this drop in effectiveness was a(n almost) continuous trend (especially in Belgium, Denmark and Sweden), but the crisis made a real difference between dynamics before and after 2008[22]. In some countries, like the Czech Republic, Hungary[23] and Austria, a distinctive U-shape is visible: the pre-crisis period was characterised by a pick-up in PRI values with a significant fall after (otherwise similarly to Slovakia or Poland). Contrarily, in France, Slovenia and Finland (as well as in Germany), the loss in the poverty reduction effectiveness took place in pre-crisis period, while no significant change occurred in the crisis period. We notice here that in Ireland, having one of the highest PRIs in 2008, the distance between AROP(a) and preAROP(a) increased significantly (by 45%) throughout the

[21] See also footnote 8 for further caveats.
[22] Indicated by the two last columns of Table 7.

[23] A suspicious jump in the 2006 Hungarian poverty figures is most likely due to data error.

whole period, mainly due to strong improvement between 2005 and 2008 (38%), followed by a much smaller increase afterwards (5%).

The lowest PRIs in 2008 were observed in the Mediterranean countries (Greece, Spain, Italy, Cyprus and Portugal), in the Baltic States, as well is in some other New Member States (Bulgaria, Poland and Romania), the poverty reduction effect of social transfers being in all these countries near one third or below. According to the individual employment trends, these countries belong mainly to groups A and C (large employment drop and recovery after 2008). Also, one may observe that in many of these member states, the effectiveness of the social transfers improved between 2005 and 2012. This is especially the case of Lithuania (by 58%), Cyprus (24%), Spain (23%), the UK (21%) and Portugal (14%), while in the other member states no significant change between the 2005 and 2012 levels was observed. The Greek case is a specific one, where the poverty reduction index levelled during the whole period analysed at a very low rate: 13-14%.

Looking at PRI trends in the pre-crisis and the crisis period from another point of view, the picture is very mixed. In countries belonging to the groups with clearly negative employment outcomes (A and B), PRIs improved or did not change significantly before the crisis. This holds for all the countries in groups A and B, except the Nordic member states, where PRI decreased in both of the periods. Also, a large drop in PRI was observed in the Netherlands before the crisis, and in Slovakia after the crisis. In countries from groups D and E (good or relatively good employment outcomes between 2005 and 2012), with the exception of Luxembourg and the United Kingdom, the PRI decreased or did not change significantly in either of the periods. We need to mention that there were two countries, Netherlands and, more interestingly, Latvia, where the poverty reducing capacity of social expenditures seemed to deteriorate during the crisis shocks, but then it improved and reached the pre-crisis levels.

Table 7. Poverty Reduction Index of social expenditures in the EU Member States, 2005-2012 (%)

			2005	2006	2007	2008	2009	2010	2011	2012	2008/2005	2012/2008
A	BG	PRI	-	-	15,3	24,3	22,0	28,8	21,3	22,2	-	0,92
		PRI,WI=0	-	-	10,8	14,8	10,5	12,1	13,4	13,4	-	0,91
		PRI, WI>0	-	-	18,3	26,8	25,2	33,2	23,9	25,6	-	0,96
	CY	PRI	34,1	35,8	34,9	33,0	41,4	38,7	42,9	41,8	0,97	1,27
		PRI,WI=0	16,5	22,9	23,0	16,9	35,8	28,2	29,5	34,2	1,02	2,03
		PRI, WI>0	37,6	37,2	37,1	35,7	42,3	41,1	45,3	43,5	0,95	1,22
	ES	PRI	22,2	21,6	21,2	22,4	24,0	29,3	29,5	27,4	1,01	1,22
		PRI,WI=0	26,3	21,1	24,9	26,0	26,2	31,1	26,9	26,5	0,99	1,02
		PRI, WI>0	21,3	22,1	20,6	21,7	23,7	29,0	30,6	27,9	1,02	1,29
	GR	PRI	14,1	12,5	13,6	13,6	12,8	14,0	13,1	13,9	0,96	1,02
		PRI,WI=0	17,3	20,4	17,3	19,7	22,4	20,4	14,9	13,9	1,14	0,71
		PRI, WI>0	13,6	11,0	13,1	12,6	11,4	13,5	12,6	14,1	0,93	1,12
	IE	PRI	42,4	46,2	52,8	58,3	62,9	63,6	63,2	61,5	1,38	1,05
		PRI,WI=0	27,1	28,9	33,9	51,5	53,6	54,6	52,8	48,5	1,90	0,94
		PRI, WI>0	52,2	56,0	63,6	62,1	71,3	72,8	72,1	72,3	1,19	1,16
	PT	PRI	29,1	31,4	31,6	30,7	30,8	36,9	33,9	33,3	1,06	1,08
		PRI,WI=0	27,7	32,4	24,9	31,1	28,3	31,7	29,6	29,6	1,12	0,95
		PRI, WI>0	29,5	31,2	33,0	30,8	31,4	38,4	35,0	34,6	1,04	1,12
	SI	PRI	56,4	55,1	56,18	52,0	54,5	53,2	49,8	52,0	0,92	1,00
		PRI,WI=0	36,3	33,6	35,53	28,4	32,7	29,8	27,3	28,1	0,79	0,98
		PRI, WI>0	63,8	61,6	62,42	59,1	60,5	60,8	57,5	59,1	0,93	1,00

Table 7. Poverty Reduction Index of social expenditures in the EU Member States, 2005-2012 (%) (continued)

			2005	2006	2007	2008	2009	2010	2011	2012	2008/2005	2012/2008
B	DK	PRI	54,9	54,4	51,9	51,9	52,6	49,8	49,8	50,8	0,95	0,98
		PRI,WI=0	50,0	54,7	52,8	53,9	54,1	54,2	56,1	54,5	1,08	1,01
		PRI, WI>0	67,5	61,8	60,1	59,3	58,8	55,8	54,7	56,2	0,88	0,95
	FI	PRI	60,3	57,7	57,0	53,1	49,3	51,5	51,6	52,3	0,88	0,99
		PRI,WI=0	54,1	49,0	47,1	43,4	35,1	37,4	39,5	35,3	0,80	0,81
		PRI, WI>0	67,2	64,6	63,6	59,6	58,1	61,9	60,8	64,7	0,89	1,09
	HU	PRI	54,6	49,3	60,0	60,7	58,4	57,7	53,5	50,0	1,11	0,82
		PRI,WI=0	46,8	39,3	48,9	52,4	50,8	44,5	43,0	41,0	1,12	0,78
		PRI, WI>0	56,9	53,3	64,0	64,3	61,1	61,8	56,8	53,1	1,13	0,83
	IT	PRI	21,9	20,0	19,4	23,0	23,6	24,1	21,5	22,1	1,05	0,96
		PRI,WI=0	11,8	10,8	14,9	15,4	19,7	15,2	18,0	17,6	1,31	1,14
		PRI, WI>0	25,4	22,9	21,1	25,6	24,7	27,4	22,8	23,7	1,01	0,93
	NL	PRI	52,8	54,1	53,3	47,5	46,9	52,4	49,9	52,3	0,90	1,10
		PRI,WI=0	61,1	64,3	65,4	56,4	51,2	62,1	61,6	54,4	0,92	0,96
		PRI, WI>0	49,7	53,5	51,0	47,8	48,8	52,7	47,7	55,0	0,96	1,15
	SE	PRI	68,2	60,5	63,2	59,1	52,8	54,8	52,7	50,1	0,87	0,85
		PRI,WI=0	65,9	66,4	61,4	51,4	45,6	40,9	36,0	30,9	0,78	0,60
		PRI, WI>0	70,9	61,8	66,3	62,9	58,1	62,0	59,6	56,7	0,89	0,90
	SK	PRI	40,5	43,5	45,8	43,7	39,6	41,5	35,3	35,5	1,08	0,81
		PRI,WI=0	38,0	36,0	37,4	39,8	37,3	34,1	28,2	22,2	1,05	0,56
		PRI, WI>0	41,3	45,8	49,1	44,7	40,3	44,0	38,0	40,8	1,08	0,91

Table 7. Poverty Reduction Index of social expenditures in the EU Member States, 2005-2012 (%) (continued)

			2005	2006	2007	2008	2009	2010	2011	2012	2008/2005	2012/2008
C	EE	PRI	25,2	28,5	26,2	26,3	29,8	38,0	30,0	29,8	1,04	1,13
		PRI,WI=0	13,1	15,5	12,4	10,6	18,0	20,9	19,6	20,1	0,81	1,89
		PRI, WI>0	31,6	33,7	31,3	31,9	33,9	44,5	35,0	34,6	1,01	1,09
	LT	PRI	24,1	28,5	31,7	31,0	32,3	34,5	38,1	38,0	1,29	1,23
		PRI,WI=0	23,5	22,2	21,3	28,5	25,3	27,9	28,5	33,6	1,21	1,18
		PRI, WI>0	24,3	30,3	33,4	31,9	34,3	36,7	42,3	40,3	1,31	1,27
	LV	PRI	25,9	19,3	25,5	19,7	19,0	28,2	28,6	25,5	0,76	1,29
		PRI,WI=0	17,8	13,1	14,9	4,6	8,9	17,2	21,4	17,6	0,26	3,84
		PRI, WI>0	29,2	21,3	28,6	23,2	21,9	32,7	31,9	29,2	0,79	1,26
D	AT	PRI	50,8	51,8	53,7	52,5	52,3	52,4	53,9	44,8	1,03	0,85
		PRI,WI=0	41,1	37,3	37,5	37,2	42,1	34,4	36,3	39,7	0,91	1,07
		PRI, WI>0	53,9	57,7	59,7	57,8	56,2	58,9	60,2	46,8	1,07	0,81
	DE	PRI	50,3	53,7	41,7	39,3	36,6	38,3	37,7	34,6	0,78	0,88
		PRI,WI=0	36,0	42,6	34,6	24,9	21,2	22,5	21,6	20,5	0,69	0,82
		PRI, WI>0	60,3	61,7	47,99	50,2	47,6	49,6	48,9	43,5	0,83	0,87
	MT	PRI	-	-	-	-	38,4	37,0	36,5	39,1	-	-
		PRI,WI=0	-	-	-	-	31,6	34,2	32,8	33,7	-	-
		PRI, WI>0	-	-	-	-	41,6	38,41	38,51	41,8	-	-
	PL	PRI	33,5	35,8	36,5	34,6	30,3	29,66	28,40	26,8	1,03	0,77
		PRI,WI=0	34,9	36,0	39,3	37,4	31,4	28,61	28,13	25,3	1,07	0,68
		PRI, WI>0	33,2	35,6	35,8	34,0	30,1	29,85	28,53	27,1	1,03	0,80

Table 7. Poverty Reduction Index of social expenditures in the EU Member States, 2005-2012 (%) (continued)

			2005	2006	2007	2008	2009	2010	2011	2012	2008/2005	2012/2008
E	BE	PRI	55,2	52,4	51,2	53,0	50,4	50,3	48,5	48,6	0,96	0,92
		PRI,WI=0	51,8	41,2	41,5	42,4	42,2	44,4	36,0	39,8	0,82	0,94
		PRI, WI>0	59,4	62,0	59,6	60,1	56,8	54,8	59,3	55,8	1,01	0,93
	CZ	PRI	52,4	57,4	54,6	55,7	56,1	53,1	48,3	47,5	1,06	0,85
		PRI,WI=0	35,9	40,2	38,8	39,4	39,9	39,1	37,5	40,2	1,10	1,02
		PRI, WI>0	60,3	64,9	61,1	61,7	62,3	58,6	52,9	50,4	1,02	0,82
	FR	PRI	54,0	50,1	52,1	45,4	48,6	48,8	45,0	42,6	0,84	0,94
		PRI,WI=0	45,2	39,8	39,7	33,3	35,0	37,9	33,5	27,4	0,74	0,82
		PRI, WI>0	57,5	54,9	57,0	49,5	53,3	54,0	49,1	46,9	0,86	0,95
	LU	PRI	42,5	41,7	42,9	43,2	46,5	50,1	50,2	47,2	1,02	1,09
		PRI,WI=0	47,8	40,5	40,6	36,6	40,1	46,7	47,7	40,1	0,77	1,10
		PRI, WI>0	41,8	42,3	43,5	44,1	47,5	50,6	50,5	48,4	1,05	1,10
	RO	PRI	-	-	23,2	26,3	24,8	26,2	24,5	19,4	-	0,74
		PRI,WI=0	-	-	21,9	22,3	27,2	31,7	28,3	19,9	-	0,89
		PRI, WI>0	-	-	23,5	27,1	24,7	25,1	24,2	19,5	-	0,72
	UK	PRI	38,3	37,9	40,2	39,2	45,3	45,9	49,1	46,0	1,02	1,17
		PRI,WI=0	34,0	30,8	33,3	35,6	34,9	38,5	46,7	47,3	1,05	1,33
		PRI, WI>0	41,1	42,5	43,5	41,5	52,1	51,3	51,5	46,6	1,01	1,12

Source: own calculations based on EU-SILC. Data for Malta are missing for 2005-2008 and observations for Romania and Bulgaria are missing for 2005 and 2006.

Summarizing our findings related to PRI (see Table 8), one may observe that in countries with a high poverty reduction effects of social transfers by 2008, the poverty alleviation capacity of cash benefits either diminished or levelled between 2008 and 2012. Half of the countries with medium PRI, however, did seemingly make larger efforts to compensate the negative effects of the crisis via income redistribution. In these countries poverty trends were mixed: in the Netherlands poverty rate stayed unchanged, in Cyprus and the UK it increased significantly, but not largely. In Estonia and Lithuania the volatility of the poverty rates was very high in this period, as were individual employment rates. In some other countries with medium level of PRI, no sizeable change in the poverty reduction effect of transfers could have been observed. Countries with low PRI level show different patterns in the crisis times: Latvia and Spain increased the effectiveness of poverty reduction, while in Romania and Poland PRI diminished by one-quarter compared to the 2008 levels.

Table 8 EU Member States' classification according to the poverty reduction effects of social transfers

PRI in 2008	Increase between 2008-2012	No sizeable change between 2008-2012	Decrease between 2008-2012
High PRI	-	Ireland, Denmark, Finland, Slovenia, Belgium	Hungary, Sweden, Austria, the Czech Republic
Medium PRI	Cyprus, Estonia, Lithuania, the Netherlands, the UK	Portugal, (Malta), France, Luxembourg	Slovakia, Germany,
Low PRI	Latvia, Spain	Greece, Bulgaria, Italy	Romania, Poland

Source: Own classification based on figures in Table 7.

Note. High PRI: PRI in 2008: >50%, Low PRI in 2008: <25%. Increase between 2008-2012: increase in PRI value by at least 10%. Decrease between 2008-2012: decrease by at least 10%.

As highlighted earlier, analysing PRIs in jobless and working households separately helps us better understanding how welfare systems can moderate the primary effects of changes in individual employment and their transposal to household level work intensity and poverty. Figures in Table 7 indicate that the effectiveness of social benefits is stronger among those living in non-jobless households in the majority of the EU member states. One of the main reasons behind this general pattern is the narrower poverty gap of the non-jobless households compared to the jobless, as the effort to lift them above the poverty line is easier to be made. Policy mixes could also contribute to such outcomes. There are a few exceptions, however. In Greece, Spain, the Netherlands and to a lesser extent also in Poland and Romania, PRI among those in jobless households was higher than among those in non-jobless households, either during the whole period or for the most of the years in analysis.

The crisis affected not only the overall poverty reduction capacity of the social transfers as discussed above, but also their relative effectiveness across work intensity groups. In some countries, the effectiveness of the benefits among non-jobless improved relative to jobless, while in some other countries a reverse process was observed. The former countries (Spain, Greece, Ireland, Portugal, Denmark, Finland, the Netherlands, Sweden and Slovakia) belong either to group A or B as defined in Section 3. Exceptions are Cyprus and Slovenia, where the relative effectiveness of transfers among jobless improved considerably after the crisis, although in a very different way. In the period

between 2005 and 2008 there was no important change in PRI neither among jobless, nor among non-jobless, while after 2008 effectiveness increased in both groups, but at a much larger extent among jobless (PRI among jobless doubled between 2008 and 2012). In Slovenia, however, PRI did not improve in neither of the periods, but after a considerable deterioration in the first period, it levelled after, while remained practically unchanged in the case of non-jobless. In some of the countries (Belgium, Czech Republic, Austria, Luxembourg and the United Kingdom) from groups D and E, changes in PRIs benefited in relative terms those living in non-jobless households. In some other countries belonging to these groups (like Germany, Poland, France, as well as in Lithuania from group C, Hungary and Italy from group D), no significant changes in the relative effectiveness across work intensity groups was observed in these two periods. Latvia from group C represents a very specific case. While the poverty reduction capacity of social expenditures among jobless decreased till 2008 to the quarter of the 2005 value, it quickly recovered till 2012. The same holds for the non-jobless PRI, but these changes occurred at much lower amplitudes.

All in all, it can be concluded that public social expenditures remained an important factor in the fight against poverty, however, the effectiveness of social systems declined in the crisis years in many countries: mostly in those where the poverty reduction index was high before the crisis (like in Austria, the Czech Republic, Hungary and Sweden) but not only there (see for example Poland Romania, where the pre-crisis poverty alleviation performance was low and even decreased between 2008 and 2012).

7 Country profiles

In sections 3-6, we analysed in a cross-country comparative way, the interrelationship between individual employment and post-transfer income poverty and how this is mediated by employment gains and losses at household level and by social transfers. This section is devoted to a summary overview of our results at the level of individual member states. This level of analysis helps understanding the variety of stories on employment and poverty in various societal, policy and institutional contexts. Table 9, which is structured according to the country clusters we identified under Section 3, summarises our previous findings at country level for the two distinct time periods (2005-2008, 2008-2012), along the following indicators:

i. dynamics of individual employment rates
ii. change in the overall poverty rates
iii. change in poverty rates of the jobless
iv. change in the share of people living in jobless households
v. change in poverty reduction efficiency among jobless
vi. change of poverty rates of the non-jobless
vii. change in poverty reduction efficiency among non-jobless

Table 9 is based on meta-data, drawn from figures already presented in previous tables and figures.

At first, we can again realize that poverty rates before crisis were not changing almost at all. Changes in at-risk-of-poverty rate of the active age population were significant only in a few countries, either decreasing or increasing between 2005 and 2008. Contrarily, one could detect significant changes in almost all countries in the crisis period, all of them reporting on an increase in the risk of poverty. The first period does not show any relationship between country groups (defined according to individual employment trends) and poverty outcomes: we can find both positive and negative outcomes in each of the clusters, although the significant cases are few as mentioned earlier. The lack of correlation may basically come from less variation in employment dynamics between the pre-crisis and the crisis period, also shown by the regression analysis. The relationship is present, however, in the second period, when negative poverty outcomes are stronger in countries belonging to groups A and B, compared to those in groups D and E. In what follows, we compare two countries from each group, to see what poverty outcomes through what mechanisms show up, when similar trends in employment are observed.

In group A, Greece and Ireland provide strong stories, very different in the first period, but roughly similar in the second one. While no important changes in the employment rates of individuals aged 20-64 were observed between 2005 and 2008 in these two countries, Greece already experienced an increase in overall poverty, while the Irish poverty outcomes improved slightly in the same period. In Greece, at-risk-of-poverty rate increased due to an important rise in the extent of poverty among those living in non-jobless households, also generated by a fall in the poverty reduction capacity of social transfers among them. In the crisis period, the even worsening outcomes found source from both jobless and non-jobless households. In Ireland, the main factors behind improving poverty outcomes were the decreased poverty risk among jobless, together with an improved poverty reduction effectiveness of social transfers among them. After the crisis, however, the sharp decline in employment rates strongly disadvantaged already vulnerable families, and as a consequence, the share of individuals in jobless households heavily increased, accompanied by a deterioration of the overall poverty rates. In both countries, poverty reduction index among the non-jobless improved during the crisis, however in Greece the increase in the poverty reduction effectiveness could not avoid the further deterioration of poverty rates among the non-jobless households.

Regarding group B, where employment rates slightly dropped after 2008 (with or without recovery later on) Slovakia and Sweden (similarly to the example countries from group A) differ in the period before the crisis, however trends of poverty and its underlying mechanisms are similar during and after the crisis. In the first period between 2005 and 2008 Slovakia experienced a decrease in overall at-risk-of-poverty rate mostly driven by the decrease of poverty among those living in non-jobless households (and despite the increase in the share of individuals living in jobless households). In Sweden on the other hand, all the indicators deteriorated before the crisis already. The increase in overall risk of poverty can be explained by the negative trends among all active aged individuals, irrespectively of living in jobless or non-jobless households. For both types of households, both AROP(a) and the effectiveness of social transfers worsened. The processes were comparable during the crisis in Slovakia, where the increase in overall poverty rate was due to the deteriorating poverty rates and effectiveness of poverty reduction in both jobless and non-jobless segments. In Sweden the crisis caused a further increase in overall poverty, however underlying mechanism indicate that it hit people in jobless households harder, as the risk of poverty increased and PRI decreased intensively among them, while individuals of non-jobless households only faced a worsened effectiveness of poverty reduction.

Table 9 The interrelationship between employment, poverty and social expenditure – a country level analysis, EU-27, 2005-2012

Trends in employ-ment country groups	Country	2005-2008						2008-2012					
		Change in overall AROP(a)	Change in active age pop share	Individuals in jobless hhs		Individuals in non-jobless hhs		Change in overall AROP(a)	Change in active age pop share	Individuals in jobless hhs		Individuals in non-jobless hhs	
				Change in AROP(a)	Change in PRI	Change in AROP(a)	Change in PRI			Change in AROP(a)	Change in PRI	Change in AROP(a)	Change in PRI
A	CY							–	–		+ +	–	+
A	GR	–			+	– –	–	– – –	– –	– –	– –	– –	+
A	ES							– – –	– –			– – –	+ +
A	IE	+		+ +	+ +		+	– –	– – –				+
A	PT						+		– –		–		+
A	SI		–		–		– –	–	–			–	
B	DK						–	–	–				–
B	IT				+ +			– –			+	– –	–
B	HU				+	+	+	–	+	–	– –	–	–
B	NL		–		–				–				+
B	SK	+ +	–			+ +		– –	–	– –	– –		–
B	SE	– –	–	–	– –	– –	–	–		– –	– –		–
B	FI	–	–	–	– –	–	–		–	–	–	+	
C	EE	+	– –	–	–			– –	– –	+	+ +	– –	
C	LV		– –	–	– –	– –	– –		– – –	+ +	+ +		+ +
C	LT	+	– –		+		+ +		– –		+		+ +
D	DE	– –		– –	– –	–	–		+ +	–	–	–	–
D	AT				–			– –	+			– – –	–
D	PL	+ +	– –	+		+ +			+	–	– –		– –
E	BE		– –	–	–			–	–		–		–
E	CZ		–		+							–	–
E	FR				– –		–	–		–	–	–	–
E	LU		–		– –				–		+		+
E	UK		– –						–	+	+ +		+

Source. The table was compiled with inputs from Tables 5-7. EU-LFS and EU-SILC were used as primary sources of the figures. Bulgaria, Malta and Romania are missing.

Notes. Only significant changes are included in this table. Positive or negative signs are applied for each indicator individually, depending on its distribution.

Group C is composed of the Baltic countries, where employment rate slightly increased from 2005 until 2008 and then dropped massively in 2009 and still decreased in 2010, but started to recover from 2011. Despite the similar trends of employment, the extent of changes in poverty indicators varies during the two periods across countries. Estonia and Lithuania experienced an improvement in overall poverty rate prior to the crisis, however in the former country the poverty of individuals living in jobless households deepened parallel to their increasing share in the active age population. The favourable trends in Lithuania are partly explained by the improved effectiveness of social transfers in poverty reduction among individuals in both jobless and non-jobless households. On the contrary, overall AROP change in Latvia was not significant, yet all other indicators, the share of people in jobless households, the at-risk-of-poverty rate and poverty reduction index of both jobless and non-jobless households deteriorated in the pre-crisis period. In the second period trends in the jobless segment were similar across the Baltic countries, poverty rate and the poverty reduction effectiveness of social transfers improved, but the share of people living in jobless households increased. Despite the similarities, the increase in overall AROP(a) was significant only in Estonia, where AROP(a) of the non-jobless increased. On the other hand in Latvia and Lithuania poverty rates of the non-jobless improved almost significantly and the poverty reduction effectiveness of social transfers allocated to the non-jobless also developed, still the positive trends did not result in a significant overall change in at-risk-of-poverty rate.

Countries in group D experienced longer employment increase periods with no drops in the times of crisis. Despite the similar individual employment rate trends, poverty rates changed differently in these countries, especially in the first period (2005-2008). The increase in German overall poverty was driven by the worsening AROP(a) rate and PRI of both the jobless and the non-jobless. Contrarily, in the same pre-crisis period poverty decreased in Poland due to an improvement in the poverty rates of individuals in both jobless and non-jobless households. The second period after the crisis showed less variance across countries: change in overall AROP(a) was not significant either in Germany, nor in Poland. In both countries, the poverty risk and PRI of the jobless worsened. In Germany AROP(a) and PRI of the non-jobless deteriorated as well, whereas in Poland only the PRI decreased for the non-jobless, it did not translate into a poverty increase. An interesting feature of group D (Germany, Austria, Poland) is that the share of individuals living in jobless households decreased in the crisis period (probably as there were no serious drops in employment rate), whereas the majority of the countries experienced a change in the share of opposite sign.

Out of group E, which includes countries where there was no substantial change in the employment rate throughout 2005-2012, the case of Belgium is interesting to be mentioned. In Belgium, the situation worsened for the jobless segment already in the pre-crisis period, however it did not translate into a significant overall poverty change. In the second period overall AROP(a) increased significantly, mostly due to the rise in the share of individuals living in jobless households and the decreased poverty reducing effectiveness of social transfers allocated to both the jobless and non-jobless. France has a somewhat different story, where the first period can be described by a standstill in poverty indicators, except the PRI, which decreased for both the jobless and the non-jobless. Contrary to the pre-crisis times, overall at-risk-of-poverty rate increased in the second period driven by the rise of AROP(a) rate of both the jobless and the non-jobless segment, as the poverty reducing effects of social transfers weakened in the crisis times in the jobless and non-jobless groups as well.

All in all, based on the country level examples, we may observe that the heterogeneity among the country stories on poverty changes is apparent. Even in the crisis period with mostly deteriorating

overall at-risk-of-poverty rates, there is a considerable variance across the countries (independently which individual employment trends based group they belong to) in the changes in at-risk-of-poverty rates and in the poverty reducing effectiveness of social transfers in different (jobless and non-jobless) segments.

8 Summary and conclusions

There is a growing debate on the relationship between employment and poverty in Europe. This is increasingly reflected in various EU-level strategies formulated in the last one and a half decades as well. Though relative shares of importance are debated in the literature, there is no disagreement on the importance of employment, together with the cash transfers of the welfare state in lowering the risk of income poverty. At individual level, earning from getting a job boosts household income and decreases the risk of poverty, while a transition from employment to unemployment would increase the likelihood of entering poverty. At macro level, an increase in individual employment rates is expected to be accompanied by a poverty fall and the reverse is foreseen when employment rates decrease.

Having discussed the findings of the most recent literature on the mechanics of the employment/poverty relationship (Cantillon et al. 2014, Marx et al. 2013b, Corluy and Vandenbroucke 2014, Hills et al. 2014), our paper examined both micro and macro level correlations, with an aim to contribute to a better understanding of how employment change relates to changes in poverty in the European Union's Member States. In addition, we made an attempt at pointing to the cross-country variance of this relationship and to present the factors affecting the transmission mechanisms between individual employment and household level income poverty. Our focus was on the period between 2005 and 2012, within which we differentiated between pre-crisis (2005-2008) and crisis (2008-2012) periods – with an advantage of examining periods with job losses from periods of recoveries. When doing this, we also kept in mind recent research results indicating that the overall relationship between employment and poverty in a cross-country perspective became stronger between 2008 and 2011 than it had been before (Marx et al. 2013b: 9).

Our empirical results can be summarised as follows.

- The crisis has resulted in very different employment trajectories. We have seen that relatively larger changes in employment seem to have been accompanied with reverse trends in poverty rates – when employment increases, poverty declines in most of the cases (and vice versa, when employment declines, poverty will be on the rise). Our results on the negative relationship between individual employment and post-transfer poverty are in line with the results of Corluy and Vandenbroucke (2014: 27). However, trends of poverty under no change in employment regimes turn out to be very heterogeneous – perhaps due to different policies in labour markets and in social transfers.
- The negative correlation between individual employment and poverty was reinforced by our panel regression estimates. Pre-transfer poverty to employment elasticity has been 60 percent, whereas post-transfer poverty to employment elasticity has been around 25 percent on average in the EU in the period between 2004 and 2012. The elasticity of the employment-poverty ratio – while it looks sizeable for the whole sample on average, seems to have some variations across countries and periods. Our estimates show that the

relationship between employment and post-transfer poverty does not differ significantly across the pre-crisis and the crisis periods.

- The decomposition of poverty changes shows that countries differ greatly in the portion of overall poverty change attributed to changes in the poverty rates of both individuals living in jobless and non-jobless households, as well as in the portion of overall poverty changes attributed to the changes in the population share of those in jobless households.
- The declining share of persons in jobless households between 2005 and 2008 played a very important (relative) role in the large poverty drops observed in Poland, Slovakia, Lithuania, Ireland and Estonia. In the latter, for example, a relatively sizeable contribution of the increasing poverty rate of the jobless was significantly mitigated by the declining share of the jobless households in this period. In very few of the countries had there been such a positive effect in the second period, though. In most countries the share of jobless households increased, contributing to an overall increase in poverty. Largest contributions of this factor to poverty change were measured in Estonia and Spain, in both of these countries the massive rise of poverty being accompanied to a large extent by increase of the share of the jobless households.
- However, it is not only the structural effect that played a role in overall poverty change in the two periods. For example, the increased poverty rate of the jobless was a significant contributor to poverty change in Germany between 2005 and 2008 or in Slovakia between 2008 and 2012. However, changing relative poverty of the non-jobless households also matters a lot. In Poland and in Slovakia, for example, a considerable part of the decline in poverty is accounted for by decreasing poverty rates of the non-jobless households, while in Latvia, Finland, Greece, Sweden and Germany a sizeable part of the increase in poverty is accounted for by increasing poverty rates of the non-jobless households. In the second period in Spain, Greece, Estonia, Austria, Italy and Romania, where the rise of poverty exceeded 2 percentage points in the period, the increased poverty rate of those households having at least someone to work has played a role in this increase.
- It would be difficult to find any pattern or relationship between our country groupings (pre-organized on the basis of their observed employment paths) on the one hand and the relative contributions of the various factors to poverty change on the other. For example, in the group of countries where a large and continued drop in employment was observed after 2008, one sees a large poverty increase in Greece, in Spain or in Ireland, but one can see no comparable change in Bulgaria and in Portugal. The change in poverty trends in the former three countries was mainly driven by an increase in the share of those living in non-jobless households. In addition, the risk of poverty among them also increased in Greece, but not significantly in Spain or Ireland. In turn, the risk of poverty among Spanish non-jobless households significantly contributed to rising overall poverty rates. In Bulgaria and in Portugal, in turn, poverty did not increase much, mostly because of the decline in poverty rates of the non-jobless. The analysis in other country groups would further point to heterogeneity of country experiences.
- Active age cash benefits smooth the impact of employment changes on poverty, as also indicated by the elasticities (54-73%) estimated between pre-transfer poverty and individual

employment, which are much larger than those estimated between post-transfer poverty and employment.

- Public social expenditures remained to be an important factor in poverty alleviation, the effectiveness of social systems declined in the crisis years in many countries (in traditionally stronger welfare states as well as in traditionally weaker ones).

If we want to summarize our paper in one sentence, we would conclude that the success of poverty reduction depends to a large extent on three factors: the dynamics of overall employment growth, the fair distribution of the employment growth across households with different work intensity (as found by Corluy and Vandenbroucke 2014 and supported indirectly by our work intensity group-specific results) and properly designed social welfare systems to smooth out losses of income losses for those families who are, for some reasons, unable to generate sufficient income for themselves from the labour markets.

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ImPRovE: Poverty Reduction in Europe. Social Policy and Innovation

Poverty Reduction in Europe: Social Policy and Innovation (ImPRovE) is an international research project that brings together ten outstanding research institutes and a broad network of researchers in a concerted effort to study poverty, social policy and social innovation in Europe. The ImPRovE project aims to improve the basis for evidence-based policy making in Europe, both in the short and in the long term. In the short term, this is done by carrying out research that is directly relevant for policymakers. At the same time however, ImPRovE invests in improving the long-term capacity for evidence-based policy making by upgrading the available research infrastructure, by combining both applied and fundamental research, and by optimising the information flow of research results to relevant policy makers and the civil society at large.

The two central questions driving the ImPRovE project are:

> How can social cohesion be achieved in Europe?
>
> How can social innovation complement, reinforce and modify macro-level policies and vice versa?

The project runs from March 2012 till February 2016 and receives EU research support to the amount of Euro 2.7 million under the 7th Framework Programme. The output of ImPRovE will include over 55 research papers, about 16 policy briefs and at least 3 scientific books. The ImPRovE Consortium will organise two international conferences (Spring 2014 and Winter 2015). In addition, ImPRovE will develop a new database of local projects of social innovation in Europe, cross-national comparable reference budgets for 6 countries (Belgium, Finland, Greece, Hungary, Italy and Spain) and will strongly expand the available policy scenarios in the European microsimulation model EUROMOD.

More detailed information is available on the website http://improve-research.eu.

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