Individual employment, household employment and risk of poverty in the EU

A decomposition analysis

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Monitoring social inclusion in Europe

EDITED BY ANTHONY B. ATKINSON, ANNE-CATHERINE GUIO AND ERIC MARLIER

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15.1 Introduction

Is employment the best recipe against income poverty of people of working age? At the level of individual citizens and the households in which they live, participation in the labour market significantly diminishes the risk of income poverty. However, what seems evident at the level of individuals and households is less evident at the country level.

Prior to the financial crisis, the Lisbon strategy could be regarded as a qualified success in the field of employment, at least if one assumes there to have been causal relationships between the Lisbon agenda and growing employment rates across Europe. On the other hand, though, the Lisbon strategy largely failed to deliver on its ambitious promise concerning poverty and social exclusion. Notwithstanding generally higher employment rates many Member States did not succeed in bringing back their poverty and social exclusion records. We do not observe a general conversion of employment policy success in less income poverty. Hence, it is important to understand the missing links between employment policy success (or failure) and inclusion policy success (or failure). We explore those missing links, relying on EU-SILC and the EU Labour Force Survey (EU-LFS).

In this chapter, we explore (i) if the difference between changes in individual employment and changes in household employment offer an adequate explanation for changes in income poverty and (ii) how we can decompose these different changes in underlying factors, such as polarisation of employment. This hypothesis builds on the argument put forward in Vandenbroucke and Vleminkx (2011) and Cantillon (2011), to wit that the disappointing income poverty trend during the ‘good economic years’ is partly attributable to a failure to reduce the number of individuals living in jobless households, despite increasing individual employment rates. Our time frame for the analysis of income poverty is EU-SILC 2005-2012 (which refer to income years 2004-2011). We study the trajectory of 24 EU welfare states (131) during the ‘good economic years’ and during the ‘crisis period’.

The analysis of the (income) poverty trends proceeds in two steps. The first step considers the distribution of individual jobs over households, thus establishing a link between individual employment rates and the configuration of household employment. Following the work by Gregg, Scutella and Wadsworth (2008, 2010), a ‘polarisation index’ is defined in terms of the difference between, on the one hand, the actual share of individuals living in jobless households and, on the other, the hypothetical share of individuals living in jobless households assuming that individual employment is distributed randomly across households. This

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(131) Bulgaria, Croatia, Malta and Romania were not yet available in the 2005 EU-SILC Wave and are excluded from the trend analysis.
benchmark of ‘random distribution of jobs’ allows us to signal an avoidable suboptimal situation for a welfare state (in case of positive polarisation). Not only is the (skewness of the) relation between individual and household employment of interest for our analysis, but even more important are the changes in this relation.

The second step in the analysis integrates the two missing links we explore (the link between individual employment rates and the configuration of household employment; the link between the configuration of household employment and income poverty) into one single analysis. Therefore, we decompose changes in the income poverty rates on the basis of (i) changes in the poverty risks of jobless households, (ii) changes in the poverty risks of other (non-jobless) households, (iii) changes in household joblessness due to changes in individual employment rates and changing household structures, and (iv) changes in polarisation. In principle, this method would allow assessing the impact on income poverty rates of changes in individual employment rates, all other things being equal, and the impact on income poverty rates of changes in polarisation, again all other things being equal.

The proposed technique yields interesting insights into the trajectories that EU welfare states have followed over the past 10 years. The analysis uncovers a puzzling combination of convergence and disparity within the EU. The configuration of individual and household employment is driven by forces of modernisation that affect all European welfare states in the same direction, such as declining household size, feminisation of labour markets and increasing proportions of tertiary educated individuals. Nevertheless, the configuration remains very different from country to country. Changes in the distribution of employment over households and decreasing household sizes constitute important structural background features for evolving EU welfare states. However, their impact on the explanation of differences in the Member States’ performance with regard to the reduction of income poverty over time is rather limited and disperse, both before and after 2008.

This chapter is organised as follows. Section 15.2 describes the (mathematical) relation between individual and household employment and explores the distribution of jobs over households over the timespan 1995-2012. This empirical analysis is based on EU-LFS microdata and uses an ILO (International Labour Organisation) concept of employment. Section 15.3 integrates the missing links between labour market trends and at-risk-of-poverty changes, introducing EU-SILC estimates. It explores whether the upward convergence towards a more unequal distribution of jobs is a determining factor in the analysis of income poverty evolutions. Section 15.4 concludes.

### 15.2 The distribution of jobs over households

In this chapter, we use an ILO concept of employment. According to this definition, an individual is in work if employed for at least 1 hour in the week before the survey. The household is jobless if no working age adult is in employment, so defined. In this chapter, ‘joblessness’ is the opposite of employment, i.e. it refers both to situations of registered unemployment, invalidity, or inactivity for any other reason. Hence, our concept of a jobless household differs from the EU definition of ‘(quasi-)jobless households’, which is based on a fine-grained measure of the work intensity of adult households members (in most countries during the year before the survey year), and applies a cut-off of ‘very low work intensity’. Different definitions of household employment are discussed in Corluy and Vandebroucke (2013, Section 3 and Appendix 3). For an elaboration on those concepts, see also Chapters 14 and 16 in this volume. As a short cut, we will use ‘household joblessness (rate)’ to refer to the share of individuals living in jobless households (132).

#### 15.2.1 Trends in individual and household employment

We first focus on trends in individual and household joblessness in 11 old EU Member States (i.e. (132) The age reference group is 20-59 years with exclusion of full-time students, both when we count the members of the household who are in employment (to classify the household as ‘jobless’ or ‘not jobless’), and when we define the population for which we calculate the household joblessness rate.)
the Southern, Anglo-Saxon and Continental members of the EU-15, excluding Germany (133) for which EU-LFS data and household variables are available from 1995 to 2012 (see Figure 15.1) (134). Changes are presented separately for the period before and after 2008.

In all countries, the gap between changes in individual joblessness and changes in household joblessness is negative. In those countries where individual joblessness is higher at the end of the period than at the start (Portugal and Greece), increases in household joblessness over the same period are always stronger. In most countries where individual joblessness is lower at the end of the period also household joblessness has decreased, but for the same reason, at a slower pace. Two countries (Spain and Ireland) are confronted with negative changes in individual joblessness and positive changes in household joblessness (when comparing the end of the period with the start). But also here holds the finding that changes in individual joblessness are always bigger than changes in household joblessness. Although the sign of the gap between changes in individual and household joblessness is always negative, the size of the gap shows substantial variation over countries. In three countries (United Kingdom, Portugal and Greece) the gap is small. In all other 11 EU-15 countries, we observe

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**Figure 15.1**: Changes in individual (ind) and household (hh) joblessness for 11 EU countries, 1995-2008-2012, EU-LFS (percentage points)

NB: Countries are ranked in increasing order of the percentage point difference in household joblessness between 1995 and 2012.

Reading note: This figure presents the changes in individual and household joblessness for 11 EU countries over three periods. Yellow bars present changes between 1995 and 2008, light green bars present changes between 2008 and 2012. The blue squares show changes in household joblessness over the entire period 1995-2012.

Source: Authors’ computation, EU-LFS UDB 1995-2012.

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133 German LFS data are only available from 2001 onwards.
134 The years in the text refer to the survey year, both for EU-SILC and EU-LFS. Measures of employment are based on an ILO definition and refer to the identical survey year. Observations of poverty relate to the entire income year prior to the survey year (except in Ireland and in the United Kingdom).
gaps of comparable magnitude, with only Luxembourg being an outsider. Also in Spain the difference between changes in joblessness at individual and household level is rather big.

These trends are in part explainable by a pure ‘mathematical’ effect, reflecting the pooling of individual risks in households. We illustrate this in Figure 15.2 with the Spanish case. Figure 15.2 shows the distribution of Spanish working-age individuals among jobless and ‘full employment’ households (households where all adult members are in employment). Between 1995 and 2008, the actual share of individuals living in jobless households decreased by 6.5 percentage points, while the actual share of individuals living in ‘full employment’ households increased by 24 percentage points. Between 2004 and 2008 ‘household full employment’ was the median situation in Spain. The dotted lines in Figure 15.2 show how the household distribution would have been, if all Spanish households would have consisted of 2 working-age adults and jobs would have been distributed randomly over households. Given the rise in individual employment rates, the decrease in household joblessness would have been 11.2 percentage points and the increase in the ‘full employment households’ share would have been 21.8 percentage points. The spectacular increase in the share of individuals in ‘full employment households’ is in essence the mathematical corollary of the substantial rise in individual employment rates. However, the relatively

Figure 15.2: Distribution of the population by household employment status, Spain, 1995-2012, EU-LFS

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<td>Share of individuals</td>
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<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
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<td>140</td>
<td>150</td>
<td>160</td>
<td>170</td>
<td>180</td>
</tr>
</tbody>
</table>

NB: The proportion of individuals living in jobless and full employment households does not add up to 100, because we do not show the proportion of individuals living in ‘mixed employment households’. In those households a working and non-working adults live together (by definition only possible in households with at least two members).

Reading note: This figure shows the distribution of Spanish working-age individuals among jobless and ‘full employment’ households. In full employment households all adult members are in employment.

Source: Authors’ computation, EU-LFS UDB 1995-2012.
small decrease in household joblessness is only in part explainable as ‘expected’ given the pooling of unemployment risks in households. The gap between the actual decline of household joblessness (6.5 percentage points) and the decline that would have been expected if jobs were distributed randomly over 2-adult households (11.2 percentage points) calls for substantial, additional explanations. This brings us to household size structure and ‘polarisation’. Before 2005 the actual share of Spanish individuals living in jobless households was lower than what one would expect if jobs would be distributed randomly. This is rather exceptional in the EU. Specific individual joblessness rates can be consistent with a range of different household joblessness rates, depending on how employment is distributed. Since 2005 actual household joblessness grows faster than expected household joblessness, causing positive and growing levels of polarisation.

15.2.2 The concept of polarisation

Based on the binary distinction between jobless households and other households we construct and decompose a polarisation index. Later (in Section 15.3.2), we integrate this measure in the decomposition of income poverty rates (using the EU ‘at-risk-of-poverty’ concept; see Chapter 3 in this volume for a definition of the relative approach to income poverty used at EU level).

Gregg and Wadsworth, op. cit., propose a counterfactual to evaluate polarisation in the distribution of employment. Like the benchmark used in the Lorenz curve, the counterfactual or predicted household joblessness rate is the one that would occur if jobs were randomly distributed in the population, given the specific household size structure in a country. Polarisation is defined as the difference between the actual and the predicted household joblessness rate. So it measures the extent to which there are more (or fewer) jobless households than predicted in the case of a random distribution of employment across individuals, given the national household size structure.

All other things being equal, the probability of having no-one in work is higher in a smaller household than in a larger one. Consequentially, if the share of smaller households increases, a given rate of individual joblessness may be expected to lead to higher household joblessness. In what follows, households are distinguished on the basis of size only. Hence, in this analysis, the ‘predicted rate’ of household joblessness is a function of (i) the rate of individual joblessness and (ii) the structure of households in terms of size:

\[
P_i = j_l - j_l^e, \text{ where}
\]

\[
P_i \text{ is the level of polarisation in household joblessness in country } i \text{ in year } t,
\]

\[
j_l \text{ is the actual share of individuals living in household joblessness}
\]

\[
j_l^e \text{ is the expected share of individuals living in household joblessness in country } i \text{ in year } t.
\]

We should emphasise that the expression ‘polarisation’ does not carry a normative meaning for us. We do not consider the benchmark used to define the concept — a random distribution of jobs over households, given the household size structure — as a normative ideal. However, in a context of limited job opportunities ‘positive polarisation’ might be seen as a kind of ‘Matthew effect’. It reflects a concentration of additional advantage (say, a second job for the partner of someone who is already employed) for those who already have some advantage (compared with a household where both partners are jobless). ‘Negative polarisation’ might be appreciated as a form of solidarity, i.e. a fair distribution of scarce employment opportunities. However, we do not suggest that either ‘negative polarisation’, or the benchmark of ‘randomly distributed jobs’ serve a normative ideal.

15.2.3 Trends in the distribution of individual employment over households

In Figure 15.3, actual (x) and predicted (y) household joblessness rates are presented.

If employment is randomly distributed, then the predicted and actual household joblessness rates are identical. So, the level of polarisation is zero and the country estimates appear on the diagonal. Countries above the diagonal encounter negative
Individual employment, household employment and risk of poverty in the EU.
A decomposition analysis

Figure 15.3: Actual (X) and predicted (Y) household joblessness, 1995 and 2012, EU-LFS (%)

Reading note: This figure presents actual (X) and predicted or counterfactual (Y) household joblessness for 1995 and 2012. If employment is randomly distributed then the predicted and actual household joblessness rates are identical, so that the polarisation rate is zero and the country estimates appear on the diagonal. Countries above the diagonal display negative polarisation and those under the diagonal positive polarisation. The distance to the diagonal reflects the magnitude of the cardinal measure of polarisation.

Source: Authors’ computation, EU-LFS 1995 and 2012.

polarisation and those under the diagonal positive polarisation. The distance to the diagonal reflects the magnitude of the cardinal measure of polarisation. At the start of the sample period, all Southern European countries (most saliently Spain) as well as Luxembourg had negative polarisation rates. Negative polarisation of work is consistent with theories of the gender division of non-work (Danziger and Katz, 1996) and added worker theories (Cullen and Gruber, 2000). All other old Member States exhibited limited positive polarisation, with only the UK displaying strong positive polarisation. In all countries, with exception of the United Kingdom, polarisation became more positive over time, meaning that the distribution of employment grew more unequal. The United Kingdom, Belgium and Ireland display the highest levels of polarisation, with household joblessness respectively 3.27, 3.87 and 4.12 points higher than would be the case if work were evenly distributed across households. Southern European countries and Ireland encounter increasing household joblessness rates in combination with increasing levels of polarisation.

Why should changes occur in the level of polarisation? At any point in time, the observed household joblessness rate diverges from the predicted rate if, within certain household size subgroups, the rate of household joblessness is higher or lower than what one would expect on the basis of a random distribution. Over time, these divergences can decrease or increase in one or more household subgroups. This type of change is referred to as ‘within-household polarisation’. There may also be a structural shift towards household subgroups where polarisation is relatively higher, without change in the subgroup degree of polarisation itself. This is referred to as ‘between-household polarisation’.

Combining this insight with earlier assertions about the determinants of ‘predicted household employment rates’, the observed changes in the actual household joblessness rate can be decom-
posed into four terms: (i) changes in the individual non-employment rate that affect the predicted rate; (ii) changes in the household size structure that affect the predicted rate; (iii) within-household polarisation and (iv) between-household polarisation.

Such a shift-share analysis is presented in Table 15.1. The decomposition has the following form (from Gregg and Wadsworth, 2008):

\[
\Delta j_l = \sum K \Delta n^k [0.5 \pi_{k,t} + 0.5 \pi_{k,t+1}] \quad \text{(i)} + \sum K \Delta n^k [0.5 \pi_{k,t} + 0.5 \pi_{k,t+1}] \quad \text{(ii)} + \sum K \Delta n^k [0.5 (j_l - n^k) + 0.5 (j_l - n^k)] \quad \text{(iii)} + \sum K \Delta (j_l - n^k) [0.5 \pi_{k,t} + 0.5 \pi_{k,t+1}] \quad \text{(iv)}
\]

with

- \( n \) = individual non-employment rate of working-age adults
- \( k \) = household size (number of working age adults)
- \( K \) = maximal size of households in a country

\( \pi_k \) = share of working-age adults living in a household with size \( k \)

\( j_l \) = observed household joblessness rate of working-age adults in households with size \( k \).

The first and the second term in the decomposition add up to changes in the ‘predicted’ rate of household joblessness (column 3). The third and fourth term determine total changes in polarisation.

Over the period 1995-2012, household joblessness should have fallen in almost all countries (except for Portugal and Greece), given the rising individual employment rates in each country (column 3). Changes towards smaller household structures exert upward pressure on household joblessness rates (column 4). The impact of changing household structures on the predicted household joblessness is much smaller than the influence of declining individual joblessness. But, in the United Kingdom and Spain more than half of the expected decrease in household joblessness due to decreasing individual joblessness is offset by the emerging share

<table>
<thead>
<tr>
<th>Country</th>
<th>actual change</th>
<th>total predicted change</th>
<th>of which: predicted change (unconditional)</th>
<th>total polarisation change</th>
<th>of which: polarisation between households</th>
<th>within households</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>due to ( \Delta ) non-employment</td>
<td></td>
<td>between households</td>
<td>within households</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>due to ( \Delta ) household shares</td>
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<tr>
<td>Netherlands</td>
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<td>0.4</td>
</tr>
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<td>1.2</td>
<td>0.5</td>
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<td>-4.3</td>
<td>1.9</td>
<td>1.7</td>
<td>-0.3</td>
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<tr>
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<td>0.9</td>
<td>0.2</td>
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<td>-2.6</td>
<td>1.1</td>
<td>1.3</td>
<td>0.2</td>
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<td>2.5</td>
<td>2.8</td>
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</tr>
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<td>1.1</td>
<td>1.1</td>
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<td>6.7</td>
<td>4.2</td>
<td>3.1</td>
<td>1.1</td>
<td>2.5</td>
<td>0.3</td>
</tr>
</tbody>
</table>

NB EU-11 countries are EU-15 countries minus Denmark, Germany, Finland and Sweden. Countries are presented in increasing order of actual changes in household joblessness.

Reading note: Actual change = total predicted change + total polarisation change (column 1 = column 2 + column 5). Total predicted change = change due to changes in non-employment rate + change due to changes in household shares (column 2 = column 3 + column 4). Total polarisation change = between-household polarisation + within-household polarisation (column 5 = column 6 + column 7).

Source: Authors’ computation, EU-LFS UDB 1995 and 2012.
of singles. In most countries, the contribution of polarisation to the change in the jobless household rate is larger than the household structure component. This means that most of the divergence between household and individual joblessness stems from an increasingly skewed distribution of employment across households. In Ireland and Spain, changes in household size structure and changing levels in polarisation entirely offset (small) improvements in individual employment rates. So despite better outcomes at the individual level, outcomes at the household level deteriorated. Most polarisation is within household types. Only in the United Kingdom changes in polarisation are negative over time, due to more equally distributed employment within households and notwithstanding the growing share of household types already undergoing high polarisation.

Table 15.2 provides an overview of the results of the decomposition for a shorter period. Restriction of the period under consideration to 2000-2012 allows an increase of the number of countries to 23 (the EU-28 minus Denmark, Croatia, Malta, Finland and Sweden). Between 2000 and 2012 individual non-employment decreased in most countries, except for those where economic downturn hit strongest, i.e. Southern European countries (Greece, Portugal, Spain and Cyprus) and Ireland and Romania. However, in all countries except Latvia and Romania, diminishing average household size reduced the impact of the decreasing non-employment rates on household jobless rates. Polarisation of jobs over households had a divergent impact. In the United Kingdom and most of the new Member States (except Cyprus, Lithuania and Romania), changes in observed household joblessness are larger than predicted changes because changes in polarisation have the same sign. In old European countries (and most strongly in Southern European countries) predicted changes in household joblessness are offset by changes in polarisation. Combinations of the different trends of the components in this decomposition of actual changes in household joblessness offer five emerging clusters of countries for the period 2000-2012 as shown in Table 15.2.

15.2.4 Has the distribution of jobs become more unequal over time?

In the 11 countries examined we observe an upward convergence of the levels of polarisation. The pattern is one of both beta-convergence (a catch-up process) and sigma-convergence (a reduction in the dispersion of values). In 1995, the average value of the polarisation index was 0.40, with a particularly large positive value in the United Kingdom and negative values in Luxembourg, Spain, Italy and Greece (see Figure 15.4). By 2012 the average value of the polarisation index increased to 1.96. In the United Kingdom, positive polarisation diminished. In Luxembourg and Italy, negative polarisation characterising the beginning of the period was reduced close to zero. Spain, Greece and Ireland are confronted with steep increases in the level of polarisation, with most substantial changes in the period 2008-2012. Ireland and Belgium end up with the highest levels of positive polarisation in 2012. For all 11 EU countries considered in this analysis (hereafter EU-11) we observe a consistent, upward trend in polarisation, without a fundamental shift in patterns around 2008 (see also Duyver, 2013).

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Beta-convergence is identified by a negative correlation of -0.83 between the initial values in 1995 and the changes over the period 1995-2012; sigma-convergence is identified by the standard deviation decreasing from 2.16 to 1.26. The sigma-convergence is quite sensitive to outliers, unlike the beta-convergence. Omission of the UK reduces the decline of standard deviation from -0.86 to -0.50; it also reduces the negative correlation from -0.82 to -0.67.
Table 15.2: Decomposition of changes in household joblessness rate, 2000-2012, EU-23, EU-LFS (percentage points)

<table>
<thead>
<tr>
<th></th>
<th>actual change</th>
<th>total predicted change</th>
<th>of which: predicted change (unconditional)</th>
<th>total polarisation change</th>
<th>of which: polarisation</th>
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<td>-1.55</td>
<td>-2.14</td>
<td>-2.63</td>
<td>0.49</td>
<td>0.59</td>
</tr>
<tr>
<td>Netherlands</td>
<td>-0.33</td>
<td>-1.06</td>
<td>-1.47</td>
<td>0.41</td>
<td>0.73</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>-0.36</td>
<td>-1.93</td>
<td>-2.71</td>
<td>0.78</td>
<td>1.57</td>
</tr>
<tr>
<td>Slovenia</td>
<td>-0.29</td>
<td>0.43</td>
<td>-0.25</td>
<td>0.68</td>
<td>-0.72</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>-0.28</td>
<td>0.44</td>
<td>0.16</td>
<td>0.29</td>
<td>-0.73</td>
</tr>
<tr>
<td>Belgium</td>
<td>0.05</td>
<td>-0.45</td>
<td>-1.10</td>
<td>0.65</td>
<td>0.50</td>
</tr>
<tr>
<td>Italy</td>
<td>0.16</td>
<td>-1.18</td>
<td>-2.97</td>
<td>1.79</td>
<td>1.34</td>
</tr>
<tr>
<td>Romania</td>
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<td>1.52</td>
<td>1.94</td>
<td>-0.42</td>
<td>0.02</td>
</tr>
<tr>
<td>Cyprus</td>
<td>1.55</td>
<td>0.52</td>
<td>0.10</td>
<td>0.41</td>
<td>1.03</td>
</tr>
<tr>
<td>Lithuania</td>
<td>3.18</td>
<td>0.83</td>
<td>-1.73</td>
<td>2.56</td>
<td>2.35</td>
</tr>
<tr>
<td>Portugal</td>
<td>4.82</td>
<td>4.04</td>
<td>2.99</td>
<td>1.05</td>
<td>0.78</td>
</tr>
<tr>
<td>Spain</td>
<td>7.46</td>
<td>3.72</td>
<td>1.91</td>
<td>1.80</td>
<td>3.75</td>
</tr>
<tr>
<td>Greece</td>
<td>7.63</td>
<td>5.80</td>
<td>4.40</td>
<td>1.40</td>
<td>1.82</td>
</tr>
<tr>
<td>Ireland</td>
<td>7.74</td>
<td>4.75</td>
<td>3.92</td>
<td>0.83</td>
<td>2.99</td>
</tr>
</tbody>
</table>

NB: EU-23 countries are EU-28 countries minus Denmark, Croatia, Malta, Finland and Sweden. Countries are presented in clusters with similar decomposition terms.

Reading note: Actual change = total predicted change + total polarisation change (column 1 = column 2 + column 5); Total predicted change = change due to changes in non-employment rate + change due to changes in household shares (column 2 = column 3 + column 4); Total polarisation change = between-household polarisation + within-household polarisation (column 5 = column 6 + column 7).

Source: Authors’ computation, EU-LFS UDB 2000 and 2012.
If one restricts the period under consideration to 2000-2012, the number of countries can be increased to 24 (the EU-28 minus Denmark, Croatia, Finland and Sweden). Between 2000 and 2008, one again observes beta and (albeit less robustly) sigma-convergence, both for the group of 24 EU Member States and for the 11 for which data availability stretches back to 1995. There is no real upward convergence in the levels of polarisation across the 24 EU Members: the average value of the polarisation index for the group under review increased from 1.62 in 2000 (with a standard deviation of 1.76) to 1.95 (with a standard deviation of 1.17). In the smaller group of 11 countries for which data are available from 1995 onwards, the upward movement is more evident: in 2000 the average value of the polarisation index for these Member States was 0.73 (standard deviation 1.88) increasing to 1.98 (standard deviation 1.26) by 2012. This trend seems to have been driven mainly by the declining size of households and the rising female participation in the labour markets of Spain, Italy and Greece. The ten new Member States under examination were characterised by high levels of polarisation in 2000 (with an average polarisation index of 2.72); in this

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**Figure 15.4: Level of polarisation (P), 1995-2000-2008-2012, EU-24, EU-LFS**

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NB: Countries are presented in increasing order of levels of polarisation in ‘old’ and ‘new’ Member States clusters. ‘New’ Member States are those countries that joined the EU in May 2004 or after.

Reading note: In this figure we present levels of polarisation for ‘old’ and ‘new’ Member States for 4 different years. EU-24 countries are EU-28 countries minus Denmark, Croatia, Finland and Sweden.

respect their starting position in the beginning of the Lisbon era was very different from that of Spain, Italy and Greece, which were still characterised by negative polarisation in 2000 with extended families still pooling unemployment risks.

The choice of the first year of this shorter period, 2000, is dictated primarily by data availability. However, it appears that 2000 is a useful cut-off in describing the evolution of polarisation for some countries. For instance, in Spain and Ireland, the increase in polarisation accelerated after 2000; in Belgium, and to a lesser extent France, the year 2000 marked the beginning of a deceleration or even a standstill in polarisation. Hence, if one takes account of the timing, there appears to be no uniform pattern of evolutions across the EU, apart from the general trend of upward convergence. The difference in pace at which women entered the labour market offers part of the explanation.

A first approach to gaining an understanding of the underlying societal trends that affect polarisation consists in the construction of 'conditional counterfactuals'. We construct a variety of counterfactual household employment rates and allow individual employment rates to vary by gender, age and educational level of working-age household members. One can then compare the 'unconditional polarisation' index (the counterfactual being based on household size only) with various 'conditional polarisation' indices (see Gregg et al., 2010). Subsequently one can calculate the share (as a percentage) of the absolute level of the unconditional polarisation index that is explained by gender, age, education, etc., or by combinations of those factors. Applying this approach shows that the level of polarisation is predominantly explained by gender. A second approach applies regression techniques. A simple regression for the EU-11 over 1995-2012 shows that the changes in the ratio of female and male employment rates have a significant and substantial impact on changes in the unconditional polarisation index, while changes in the structure of educational attainment of the population seem to have no significant impact.

These findings reflect fundamental societal trends in Europe, some of which follow a clear pattern of convergence, whereas others — surprisingly — show no prima facie convergence at all. The ratio of female and male employment rates displays very strong beta and sigma-convergence in the EU-11 over these years. However, there is neither beta-convergence nor sigma-convergence with regard to the proportion of the population with post-secondary education (International Standard Classification of Education (ISCED) levels 5-6) in the EU-11 over this period (the correlation between starting values and change is actually positive, and the dispersion increases); with regard to the proportion of the population with lower than secondary education (ISCED levels 0-2), the correlation between starting values and change is mildly negative, but the dispersion is not reduced.

Other results show that ‘increased homogamy’ (increased matching of couples on the basis of educational attainment of the partners) is not an explanatory factor for increasing polarisation since 1995, that is, there is no increasing gap between the degree of homogamy one sees in reality in couples and the degree of homogamy one would expect if couples are formed at random.

15.3 Relationship between changes in labour markets and poverty risks

15.3.1 Relationship between poverty risk and employment rates

On a cross-country level, national rates of individual and household employment calculated on the basis of EU-SILC correlate in a different way with national poverty risks. Table 15.3 shows that both individual and household joblessness correlate positively with pre-transfer poverty (risk) rates over the entire period 2005-2012. The correlation is strongest when employment is measured at the household level. Looking at post-transfer poverty (risk) rates, individual joblessness correlates positively over the entire period, whilst household joblessness correlates only positively from 2009 onwards. Here, the correlation is strongest at the individual level. As expected, household ‘full employment’ rates correlate negatively both with pre- and post-transfer...
Individual employment, household employment and risk of poverty in the EU. A decomposition analysis

Table 15.3: Cross-sectional correlations of post- and pre-transfer poverty risk and individual and household concepts of employment, 2005-2012, EU-24, EU-SILC

<table>
<thead>
<tr>
<th>Correlations of post-transfer poverty risk rates and …</th>
<th>… employment</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Δ 05-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>… individual joblessness</td>
<td></td>
<td>0.58</td>
<td>0.51</td>
<td>0.48</td>
<td>0.40</td>
<td>0.61</td>
<td>0.62</td>
<td>0.65</td>
<td>0.72</td>
<td>0.46</td>
</tr>
<tr>
<td>… ‘jobless’ households</td>
<td></td>
<td>0.09</td>
<td>0.00</td>
<td>-0.04</td>
<td>-0.04</td>
<td>0.22</td>
<td>0.30</td>
<td>0.37</td>
<td>0.48</td>
<td>0.56</td>
</tr>
<tr>
<td>… ‘mixed employment’ households</td>
<td></td>
<td>0.59</td>
<td>0.52</td>
<td>0.54</td>
<td>0.50</td>
<td>0.55</td>
<td>0.55</td>
<td>0.56</td>
<td>0.61</td>
<td>-0.20</td>
</tr>
<tr>
<td>… ‘full employment’ households</td>
<td></td>
<td>-0.62</td>
<td>-0.53</td>
<td>-0.53</td>
<td>-0.48</td>
<td>-0.60</td>
<td>-0.62</td>
<td>-0.64</td>
<td>-0.70</td>
<td>-0.30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Correlations of pre-transfer poverty risk rates and …</th>
<th>… employment</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Δ 05-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>… individual joblessness</td>
<td></td>
<td>0.36</td>
<td>0.27</td>
<td>0.37</td>
<td>0.53</td>
<td>0.52</td>
<td>0.62</td>
<td>0.53</td>
<td>0.58</td>
<td>0.79</td>
</tr>
<tr>
<td>… ‘jobless’ households</td>
<td></td>
<td>0.73</td>
<td>0.62</td>
<td>0.69</td>
<td>0.75</td>
<td>0.76</td>
<td>0.77</td>
<td>0.74</td>
<td>0.79</td>
<td>0.89</td>
</tr>
<tr>
<td>… ‘mixed employment’ households</td>
<td></td>
<td>-0.13</td>
<td>-0.15</td>
<td>-0.06</td>
<td>0.05</td>
<td>0.05</td>
<td>0.12</td>
<td>0.04</td>
<td>0.14</td>
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</tr>
<tr>
<td>… ‘full employment’ households</td>
<td></td>
<td>-0.09</td>
<td>-0.02</td>
<td>-0.13</td>
<td>-0.28</td>
<td>-0.29</td>
<td>-0.40</td>
<td>-0.29</td>
<td>-0.39</td>
<td>-0.63</td>
</tr>
</tbody>
</table>

NB: EU-24 countries are EU-28 countries minus Bulgaria, Croatia, Malta and Romania. In mixed employment households working and non-working adults live together.

Reading note: In this table we show the relation between at-risk-of-poverty rates (both pre- and post-transfers) and employment rates (both at individual and household level). These correlations do not imply causality, nor significance; they merely serve to structure our data.


poverty rates, but the correlation is substantially larger for post-transfer poverty rates.

Given our earlier assertion that one should study the link between employment and poverty through household employment, it may be rather surprising that, levels of individual employment rates correlate negatively with post-transfer poverty rates, whilst household joblessness rates show no correlation with post-transfer poverty rates during the ‘good economic years’. During the economic downturn an increasing positive correlation emerges between household joblessness and post-transfer poverty rates. The stronger relation between household joblessness and post-transfer poverty during the economic downturn is entirely caused by those countries that were confronted with a strong unemployment crisis (causing increasing levels of pre-transfer poverty) and that lack a sufficient welfare state structure to reduce post-transfer poverty (137).

Different factors explain this prima facie counterintuitive result (138). First, household joblessness correlates positively with pre-transfer poverty, but the impact of household joblessness on post-transfer poverty is mitigated by social spending. Second, national pre-transfer and post-transfer poverty rates are also influenced by the poverty rates prevailing in ‘non-jobless’ households, which carry a large weight in the overall poverty record of many countries. Higher individual employment rates are associated with lower levels of pre-transfer poverty among the ‘non-jobless’ households. The ‘non-jobless’ segment in a country encloses two groups of individuals, i.e. those living in ‘mixed employment’ households and those living in ‘full-employment’ households. When individual employment improves, the relative proportion of ‘full employment’ households increases in the non-jobless segment (see also Section 15.2.1). Be-

(137) Elimination of Southern European countries from the correlation matrix brings correlation between proportion of individuals living in jobless households and post-transfer poverty around zero, also during the period of economic downturn.

(138) This observation contradicts an earlier result by the OECD (2001, pp. 59-61), that no significant correlations are found between aggregate employment rates and poverty measures. This result may have inspired Gregg and Wadsworth (2008), Dickens and Ellwood (2002) and Nickell (2004) to focus on household joblessness. The OECD’s result relates to a different sample of countries (European Community Household Survey (ECHP) countries and Canada and the USA), a different database (ECHP) and a different time than the correlations displayed in Table 15.3.
cause individuals in ‘full employment’ households have lower poverty risks compared to individuals living in ‘mixed employment’ households, the pre-transfer poverty of the non-jobless segment decreases with improving individual employment rates. Hence, higher individual employment rates reduce pre-transfer poverty rates both because of their impact on household joblessness (individual and household employment correlate with each other) and because of their impact on pre-transfer poverty among the ‘non-jobless’ segment. Finally, higher individual employment rates are associated with higher levels of spending on working-age cash benefits. Higher levels of spending are associated with a larger extent of poverty reduction through social transfers, both within the jobless and the non-jobless segment of the population. Together, all these elements explain why in a cross-country comparison post-transfer poverty correlates with individual joblessness but not (or to a smaller extent) with household joblessness.

With regard to changes in at-risk-of-poverty rates between 2005 and 2012, both individual and household joblessness correlate positively with changes in poverty rates, as can be inferred from Table 15.3 (a correlation coefficient of 0.46 for changes in individual joblessness and 0.56 for changes in household joblessness). These macro-level correlations ask for more in-depth analysis. In the next section we apply a decomposition analysis to disentangle the relation between changes in employment and changes in poverty for EU-28 countries separately.

15.3.2 Integrated decomposition of labour market trends and poverty risk changes

In Section 15.2.4 we described an ‘upward convergence in polarisation’ with regard to the distribution of jobs over households. This ‘upward convergence’ had a substantial impact on the evolution of household joblessness, certainly in relative terms. The question now is whether polarisation is also an important factor in the analysis of poverty risk trends.

We examine this question by decomposing changes in the poverty risk rates on the basis of (i) changes in the poverty risks of jobless households, (ii) changes in the poverty risks of other (non-jobless) households, (iii) changes in household joblessness due to changes in individual employment rates and changing household structures and (iv) changes in polarisation. We integrate the two missing links we explore in this chapter (the link between individual employment rates and the configuration of household employment; the link between the configuration of household employment and poverty) into one single analysis. In principle, this would enable us to assess the impact of changes in individual employment rates on at-risk-of-poverty rates, all other things being equal, and the impact on at-risk-of-poverty rates of changes in polarisation, again all other things being equal. In practice, data challenges make such an integrated analysis not easy (\textsuperscript{139}).

Formally, the second step in this integration exercise proceeds as follows. The at-risk-of-poverty rate can be written as a weighted average of the at-risk-of-poverty rate of individuals in jobless households and the at-risk-of-poverty rate of individuals in the non-jobless households. The poverty risk of individuals in jobless households ($j_l$) is much higher than the poverty risk in other households ($njl$) in all EU Member States. Labelling these other households as the ‘non-jobless’ (the share of individuals in non-jobless households $njl = 1 - j_l$), we can write:

\begin{equation}
\text{pov}_{it} = j_l p_{jl} + njl p_{njl}
\end{equation}

with $p_{jl}$ the at-risk-of-poverty rate for individuals in jobless households

and $p_{njl}$ the at-risk-of-poverty rate for individuals in non-jobless households

Changes over time can be decomposed as:

\begin{equation}
\Delta \text{pov}_{it} = \Delta j_l p_{jl} + \Delta p_{jl} + (\Delta p_{jl} - \Delta p_{njl}) \Delta j_l
\end{equation}

with, for a change from $t = 0$ to $t = 1$,

\(139\) First, the differences between the moment of observation for employment (survey year) and for poverty (survey year — 1) may cause an unintended bias between both indicators.

Second, as shown in Section 15.2.3, the changes in the index of polarisation are driven by changes in demographic, structural and cultural balances. Hence, this indicator only changes slowly over time. EU-SILC data series are rather short to incorporate substantial changes in levels of polarisation.
\[ \Delta p_{ov} = p_{ov,1} - p_{ov,0} \]
\[ j_l = 0.5j_l,0 + 0.5j_l,1, \text{ etc.} \]

In this way, the change in the overall poverty risk is decomposed into three subcomponents or contributory factors:

- a contribution by the change in the at-risk-of-poverty rate of individuals in jobless households;
- a contribution by the change in the at-risk-of-poverty rate of individuals in non-jobless households;
- a contribution by the change in the share of the population living in jobless households.

This mechanical approach should be interpreted with due caution (see also de Beer, 2007). It simply calculates by how much a decomposable variable changes if one of the factors informing the decomposition changes, all the other factors being equal. It is only an accounting device, which does not imply any causality. Moreover, changes in one subcomponent may be intrinsically linked to changes in other subcomponents of the decomposition. For instance, reducing the share of people living in jobless households may be achieved by means of a deliberate policy of increasing the poverty risk of people in jobless households through stricter conditionality and less generosity in unemployment benefits. Or increasing employment may push up the median income, to the effect that a decreasing share of jobless households and higher poverty rates go hand in hand. Conversely, jobless households may become non-jobless because their members accept jobs that are at the lower end of the pay scale, thus marginally increasing the average risk of poverty of the non-jobless group. Diverging evolutions in household size structure between the jobless and the non-jobless, implying changes in the relative median poverty risk gap (see Chapter 3 in this volume for definition) between the two categories, may also be at play. These examples do not invalidate the decomposition as such, but rather illustrate a general *caveat* concerning its interpretation.

Using equations (1), (2), (3) and (4), it is possible to integrate the decomposition of changes in household employment and changes in poverty on the basis of the following equation:

\[ (5) \]
\[ \Delta p_{ov} = \overline{j_l} \Delta p_{nj,l} + j_l \Delta p_{nj,l} + (\overline{j_l} - j_l) (\Delta j_l + \Delta p_l) \]

This requires that the data used to decompose changes in individual and household employment and changes in poverty are consistent. Since we have to rely on EU-SILC to establish a link between employment and income, it is only possible to pursue this integrated decomposition from 2005 onwards. For some countries, there are considerable differences between individual and household employment data obtained through EU-LFS and EU-SILC (also discussed in de Graaf-Zijl and Nolan, 2011). Hence, circumspection is called for when connecting this analysis based on EU-SILC with the employment analyses presented in the previous sections based on EU-LFS. In order to allow some comparison on a conceptual level, in this section we apply the same ILO definition of joblessness (as defined in Section 15.2) and the same age reference group as in the EU-LFS analysis, even though EU-SILC makes it possible to define joblessness on a retrospective basis for the 12 months prior to the survey.

Figure 15.5 summarises the integrated decomposition of changes in household joblessness and poverty risks over the period 2005-2012. The underlying estimates (with statistical significance of the decomposed changes) and a further division in two periods before and after the economic downturn are presented in Table 15.4.

The poverty record of EU Member States during the period 2005-2012 is decomposable in quite different trajectories, which seem in part linked to different *policy* trajectories and in part related with the effects of the economic downturn.
Southern European welfare states (but also Denmark and Slovenia) are confronted with increasing household joblessness rates. Individual joblessness rose sharply after 2008 and improvements in individual employment prior to 2008 are entirely offset. The rise in household joblessness is also partly driven by growing levels of polarisation over the entire period. Also decreases in poverty rates within jobless and non-jobless households prior to 2008 are wiped out by substantial increases in subgroup poverty risks after 2008. Over the period 2005-2008 all separate components increased translating in growing overall at-risk-of-poverty rates. In continental welfare states household joblessness did not change over time. Despite (limited) growing levels of polarisation (not affected by the economic crisis) the net change in individual joblessness is negative (but also small). Decreases in individual joblessness prior to the crisis are only marginally affected by (some) small increases during the economic downturn. However, both before and after 2008, poverty grew in jobless and non-jobless households. These subgroup increases in poverty risks also drive country level increases in poverty, most explicitly in Germany (\(^{(*)}\)) and Sweden. In Belgium, the relative contribution of increasing poverty in the jobless household segment to overall changes is the largest. Ireland (and to a certain extent also Lithuania) are confronted with huge challenges in their labour markets. Prior to the crisis they re-

\(^{(*)}\) We have doubts concerning the quality of the German EU-SILC data, which yield a picture that is very different from that provided by the German SOEP data for crucial components of this analysis. (See also Frick and Krell, 2010.)
corded decreasing individual joblessness and decreasing poverty rates, but after 2008 both levels of polarisation and unemployment increased. But contrary to Southern European countries, increasing household joblessness is offset by the strong generosity of social protection. Decreasing poverty risks of both jobless and non-jobless households counterbalanced changes in the labour market and translated in fairly stable poverty records over the entire period under study. However, decreasing poverty rates in the jobless subgroup stem mainly from the period before 2008. In most of the new Member States (notably Hungary, Estonia, Cyprus and Latvia) economic growth in the period before 2008 led to substantial increases in individual employment rates and decreases in household joblessness (helped by decreasing polarisation, except in Estonia and Latvia). This contributed to significant improvements in overall poverty risks in the 20-to-59 age cohort. After 2008, these effects have eroded due to increasing individual joblessness. Moreover, poverty risks for the elderly increased in these countries, sometimes very substantially. So, their trajectory is not only employment and growth-based, but also shows an intergenerational shift. In other new Member States (Poland, Slovakia and Czech Republic, but also in the Netherlands) decreasing levels of polarisation translated in decreasing household joblessness. Together with decreasing at-risk-of-poverty in non-jobless households, overall poverty rates decreased significantly over the entire period 2005-2012.

On the basis of this analysis, we can begin to verify one of the hypotheses put forward in Vandenbroeck and Vleminckx (2011) and Cantillon (2011) to explain the disappointing poverty trends in the EU. They state that this disappointing outcome is partly attributable to a failure to reduce the number of individuals living in jobless households, despite increasing individual employment rates. We find that differences among EU Member States in levels of polarisation and household size do play a role in explaining the diversity of configurations of individual employment, household employment and at-risk-of-poverty rates. But, in a rather short time frame, one may conclude that the impact of changes in employment polarisation in explaining changes in poverty rates was very limited and disparate. In some countries the factor of polarisation as such added slightly to the decline in poverty realised over the given period (Poland, the Netherlands, Czech Republic and Slovakia). In others, most notably Spain, Greece and Ireland polarisation deteriorated an already very challenging situation of increasing poverty due to rising unemployment and eroding protection of the jobless households. Also in Germany, polarisation apparently added to growing poverty (but important doubts exist concerning the German EU-SILC figures).
### Table 15.4: Decomposition of changes in poverty risks, 2005-2012, EU-24, EU-SILC

| Individual employment, household employment and risk of poverty in the EU. A decomposition analysis |

This table provides the detailed breakdown of changes in poverty risks for 2005-2012 in EU-24 countries using EU-SILC data. It highlights the impact of changes in individual and household size structure, as well as employment rates, on poverty risk.

**Key Points**
- The table categorizes countries into clusters based on the sign of decomposition terms.
- In the cluster with positive changes in poverty risk and underlying decomposition terms, countries include Denmark, Slovenia, Italy, Spain, and Greece.
- In the cluster with negative changes in poverty risk and underlying decomposition terms, countries include Belgium, Luxembourg, Austria, France, Germany, and Sweden.

**Source**
- Authors' computation, EU-SILC UDB 2005 (version 5) and 2012 (version 2).
15.4 Conclusions

The configuration of individual employment rates and household employment rates proves to be relevant for differentiating EU welfare states. In this chapter, we used a binary concept to structure data on household employment, i.e. ‘household joblessness’ based on an ILO definition of employment. This measure allows a decomposition on the basis of evolutions in individual joblessness, household size structure, and polarisation between and within households. The configuration of individual and household employment is driven by forces of modernisation that affect all European welfare states in the same direction, such as declining household size, feminisation of labour markets and increasing proportions of tertiary educated individuals. Nevertheless, the configuration remains very different from country to country. Further research is necessary to understand these cross-country differences (see Corluy and Vandenbroucke, 2015, for a more thorough analysis of the Belgian case, both from a cross-country and an intertemporal perspective).

At the start of the Lisbon era, the individual/household employment configuration was rather different in Spain, Greece and Italy from most other EU Member States, including new Member States. The level of polarisation was negative in Spain, Greece and Italy — a corollary of the pooling of non-employment risks in extended families — and became gradually less negative evolving towards positive polarisation at the end of the period studied in this chapter. Until 2008, their welfare states were still in a process of taking over from familial solidarity, but after 2008 losses in individual employment translated in stronger increases in household joblessness (especially in Spain and Greece). In all EU-11 Member States (no household data are available for Scandinavian countries) we observe a consistent, upward trend in polarisation of employment. The pattern in the new Member States after 2000 was very different. Gains in individual employment rates were enhanced by decreasing polarisation of jobs over households, i.e. by a more even distribution of jobs over households, thus additionally decreasing welfare state dependency. Experience in the United Kingdom suggests that the prevalence of jobless households, and thus the extent of ‘positive’ polarisation, can be influenced by policy: the drive to diminish the number of jobless lone parents during the New Labour government was both influenced by analyses on polarisation in the British labour market, and contributed to its reduction.

However, changes in the share of jobless households cannot explain very much of the diversity in the changes in national at-risk-of-poverty rates, both during the period of economic upswing and the downturn. Or, to put it differently, it would be incorrect to attribute disappointing poverty trends during the employment boom years solely to the modest conversion of individual employment successes in household employment successes, or more specifically to ongoing polarisation of jobs over households. But that does not reduce the importance that national and EU policymakers should attach to the presence of high numbers of jobless households and polarisation, as possibly problematic conditions for welfare states. The multidimensional Europe 2020 social inclusion target (see Chapters 1 and 3 of this volume), which includes the reduction of people living in (quasi-)jobless households, may find a justification here.

The decomposition of changes in poverty risks on the basis of ‘household joblessness’ suggests that the convergence in at-risk-of-poverty rates is the combined result of different evolutions. A number of countries recorded an overall poverty standstill, mainly because of opposite evolutions in overall poverty (and within household subgroups) before and after 2008. Some countries with historically low poverty rates (such as Sweden and Germany) followed a clearly inegalitarian trajectory (with increasing poverty rates among jobless households over the entire period 2005-2012). In contrast, Anglo-Saxon Member States successfully managed to reduce poverty during the economic upswing and kept poverty records more or less constant during the economic downturn, yet with a different policy emphasis in the United Kingdom (successful activation) and Ireland (much enhanced social protection generosity). Finally, Southern European Member States struggle with increasing at-risk-of-poverty rates, as a result of an unemployment crisis combined with less intra-family protection leading to increasing levels of polarisation and eroding protection of jobless households.
Economic and socio-demographic convergence was a dominant background condition, but the policy trajectories with regard to public social spending on working-age benefits (including child benefits) were quite different. These conclusions point simultaneously to the need to refuel economic convergence in the EU, to allow the new Member States to reconnect on a sound basis with the ‘good years’ in terms of growth and employment creation, and to the necessary complementarity of employment creation and income poverty reduction through social transfers and inclusive labour market policies.

References


