



Can higher employment levels bring down relative income poverty in the EU? Regression-based simulations of the Europe 2020 target

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Abstract

At the European level and in most EU member states, higher employment levels are seen as key to better poverty outcomes. What can we expect the actual impact to be, however? Up until now shift-share analysis has been used to estimate the impact of rising employment on relative income poverty. This method has serious limitations. We propose a more sophisticated simulation model that builds on regression-based estimates of employment probabilities and wages. We use this model to estimate the impact on relative income poverty of moving towards the Europe 2020 target of 75 percent of the working-age population in work. Two sensitivity checks are included: giving priority in job allocation to jobless households and imputing low instead of estimated wages. This article shows that employment growth does not necessarily result in lower relative poverty shares, a result that is largely consistent with observed outcomes over the past decade.

Keywords

Europe 2020, employment, low wages, poverty, simulation

The idea that employment growth and poverty reduction are natural and inseparable allies has long been central to the EU's strategic agenda. This notion was particularly central to the Lisbon Agenda and it remains at the core of the Europe 2020 Agenda,

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although there seems to be an implicit recognition now that higher levels of employment may not automatically bring better social inclusion outcomes (Marlier et al., 2010).

Past experience teaches us that employment growth does not always affect the distribution of work across households in such a way as to reduce poverty. In many of the best performing countries in terms of employment growth, relative poverty rates for the working-aged population have increased or remained stagnant (Cantillon, 2011; Vandenbroucke and Vleminckx, 2011). It is for that reason not self-evident that future employment growth will translate into better poverty and social inclusion outcomes, especially since those segments that have yet to be included have weaker profiles.

The main objective of this article is to gauge the likely impact on relative income poverty (according to the EU's own definition) of taking employment levels to 75 percent of the active population. We present results from simulation models that employ more sophisticated methodologies than have thus far been employed in the literature (Whiteford and Adema, 2007; Fritzell and Ritakallio, 2010). Our purpose is in part substantive, in part methodological. Substantively, we are interested in getting estimates for a range of EU countries of the possible impact on poverty of employment growth to 75 percent of the active population, as envisaged by the EU. We also want, however, to contrast and assess alternative approaches to simulating those scenarios. Specifically, we want to assess the added value of regression-based (RB) approaches over earlier used shift-share methods.

This article starts with an overview of EU employment and poverty objectives. Next, we turn to the empirical evidence on the observed links between employment growth and poverty reduction. We then proceed to explain the methodology used in this article and we highlight how this differs from the methods used in previous studies, which we also replicate. The results section contrasts the findings from the different methodologies and includes two further sensitivity tests. The final section considers the limitations of our method and suggests ways forward.

EU employment and poverty objectives

The EU's employment strategy

Prior to the Treaty of Amsterdam, community employment policy was restricted to individual measures in the spheres of structural, social, education and youth policy. At the Amsterdam European Council in June 1997, a Title on Employment was included in the EC Treaty as well as the promotion of coordination between national employment policies as a new community task. In November 1997, the Luxembourg European Council added further substance in the form of annual employment guidelines, national employment action plans and a joint employment report (Luxembourg Process). Following the Special meeting of the European Council in Lisbon in March 2000, member states agreed on the strategic goal of making the EU the most competitive and dynamic knowledge and innovation-based economic area in the world by 2010.

A clear and substantial increase in the employment level was one of the main aims of the Lisbon Strategy. Employment levels in the EU were to increase from 61 percent in 2000 to 70 percent by 2010. Women's employment level was to grow from 51 percent to more than 60 percent and the employment rate for older men and women (between 55 and 64 years old) to 50 percent. In November 2003 an Employment Taskforce headed by former Dutch Prime Minister and chief architect of the famous Polder Model, Wim Kok, submitted its report entitled 'Jobs, jobs, jobs'. The Task Force was established by the European Heads of State and Government in response to concerns that Europe was failing to reach the Lisbon objectives. The Report re-established the case for giving overriding priority to employment growth, not just as an objective in its own right but also as a means for strengthening social cohesion. In 2005, a mid-review of the European Employment Strategy (EES) and a re-launch of the Lisbon Strategy took place, resulting in a first set of Integrated Guidelines.

In 2011, and despite a failure to reach the Lisbon targets in most member states, ambitions remained unabashed. First among the headlines targets formulated in the Europe 2020 strategy is the objective of

reaching an employment rate of 75 percent by 2020. Some countries have set even more ambitious national targets within this framework.

The EU's anti-poverty strategy

The principle of subsidiarity has played a particularly important role in the domain of social policy. Policies to combat poverty were and remain first and foremost the responsibility of EU member states. For a long time, social policy at the EU level consisted mainly of declarations of principle on the one hand and limited-budget (relative to country level social spending) targeted actions on the other, for example, the Regional Development Fund and the Social Fund.

The 1989 Community Charter of Fundamental Social Rights was the first real attempt at EU level social policy. Even the Social Chapter – minimalist as it was in the context of what already existed in the more advanced welfare states in the EU – ran into difficulties, however. A new impetus was given to EU social policy at the Nice Summit in December 2000. There it was decided to advance social cohesion on the basis of an open method of coordination at the EU level. Within this framework, a pivotal role is given to so-called social indicators. These are a set of well-defined empirical measures that help to ascertain whether and to what extent progress has been made on the social policy front. At the time of the Nice Summit the idea of setting an ambitious poverty reduction target was floated, but also quickly abandoned.

It was at the Laeken Summit in 2001 that the Commission proposed seven indicators (Atkinson et al., 2001). Prominent among these were indicators pertaining to the distribution of income and poverty. In the meanwhile, the indicators have been amended and complemented, but the proportion of people living in relative income poverty (measured as the share of individuals that have an equivalent household income lower than 60 percent of the median equivalent household income) remains a prime indicator, albeit that its validity in the enlarged EU context is increasingly questioned, with calls for additional measures of absolute or material deprivation (Goedemé and Rottiers, 2011; Nolan and Whelan, 2011).

The Europe 2020 Strategy that has recently come into force, sets, for the first time, a specific target to be reached by 2020: '20 million fewer people at risk of poverty and social exclusion'. This target, however, is not exclusively defined in terms of the number of people living in relative poverty. It also includes the number of people living in very low work intensity households and the number of people who are materially deprived. Thus countries can, for example, opt to focus on increasing work intensity at the household level rather than on reducing relative poverty. However, if an increase in the number of people in low work intensity households were to result in an increase in the number of people living in relative poverty no progress will have been made towards reaching the target.

Employment and poverty

For a long time, and especially under the Lisbon Agenda, a strong complementarity between employment and social cohesion objectives was assumed. This belief had its ideological roots in such doctrines as the 'Third Way' or the 'Active Welfare State' (Hemerijck and Visser, 1999; Giddens, 2000; Kenworthy, 2008).

Employment and unemployment rates in the EU-15 improved significantly between 1997 and 2007, when a major financial crisis prompted a wider economic recession. However, rising employment during the pre-crisis period did not bring lower poverty. Strikingly, some of the top performers in terms of employment growth actually experienced rises in their relative poverty rates, the Netherlands being a notable case (Marx, 2007). As the Organisation for Economic Co-operation and Development (OECD) (2009) shows for a wide set of countries, marked increases in employment rates between the mid-1990s and mid-2000s went in many countries accompanied by rising or stagnant poverty rates for the working-age population. Cantillon (2011) also shows this to be the case for the EU-15 over the 'Lisbon' decade.

There are two principal reasons why past job growth has not produced poverty declines: (a) because past job growth has not sufficiently benefited poor

people; and (b) because a job does not always pay enough to escape poverty. Let us consider both factors in a bit more detail.

First, most at risk of poverty are people living in workless or near workless households (Organisation for Economic Co-operation and Development, 2009; De Graaf-Zijl and Nolan, 2011). They face the highest poverty rates by far and they also tend to experience the most severe financial hardship (including their dependent children). The concentration of non-employment within the same households may be due to many factors (Gregg and Wadsworth, 2001, 2008; Gregg et al., 2010). A correlation between the employment statuses of household members may reflect a tendency for individuals who share common characteristics to live together. Since people with fewer educational qualifications typically experience higher unemployment and non-employment rates, households whose members all have a low level of educational attainment are likely to be over-represented among workless households. Household members are usually looking for work in the same local labour market and a depressed labour market will have a common impact on them. In addition, household members often have similar levels of education attainment. The disincentive effects of tax and benefit systems can also play a role. It is often the case that if one person gets a benefit, another person is punished if he or she accepts a job. To get out of this dependency trap, all members of the household must find a job simultaneously, which may be particularly hard if both partners have low educational attainment. This problem may be more severe in countries with extensive means-testing of welfare benefits based on family income.

In this light, it is perhaps not altogether surprising that employment growth has not produced commensurate drops in workless household rates. Job growth has in many countries resulted in more double- or multi-earner households, but only to a very limited extent in fewer no-earner households (Vandenbroucke and Corluy, *in press*). This 'Matthew effect' in the benefits to job growth may have had the added effect of pushing up median income, and hence relative poverty thresholds, widening the distance between the stagnant bottom and the rising median.

A second reason why employment growth does not necessarily result in less poverty is that a job may not pay enough to escape poverty (Andreß and Lohmann, 2008). What poor jobless people often require is not just a job, but a job that pays significantly more than their benefit. In the case of non-employed poor people living in a household with already one earner the additional income required to escape financial poverty may be quite limited. Indeed, a small part-time job may suffice (Maitre et al., 2012). For sole breadwinners the required income gain is often quite substantial. From an anti-poverty perspective, the issue is not just 'making work pay' (that is, tempting people to move out of dependency), but to make work pay sufficiently to make sure that a move from dependency to work also implies a move from poverty to an adequate living standard. The living standard of poor households with weak or no labour market attachment is often so far below the poverty threshold (especially in the case of single parents and child rich households) that it is quite possible that a job that pays significantly above the minimum wage will not suffice to lift them from poverty (Immervoll, 2007; Marx et al., 2012).

Long regarded as predominantly if not exclusively an 'Anglo-Saxon' problem, linked to weak labour market regulation, decentralized wage setting and low replacement benefits, in-work poverty has now become an EU-wide concern. Recent comparative empirical studies confirm in-work poverty to be a pan-European problem (Andreß and Lohmann, 2008; Organisation for Economic Co-operation and Development, 2009; Crettaz, 2011; Fraser et al., 2011). Workers in countries such as Germany, France, Sweden or Spain are as likely to be confronted with household financial poverty as those in Britain or Ireland. According to the Statistics on Income and Living Condition (SILC)-based EU Social Inclusion Indicators, the extent of in-work poverty in 2008 ranges from a low of 4–5 percent in countries such as Belgium, Denmark, Finland and the Netherlands, up to 11–12 percent in Spain, Latvia, Poland and Portugal, 14 percent in Greece and 18 percent in Portugal. As many as a quarter to a third of working-age Europeans living in poverty are actually already in work.

Methodology and data

Earlier studies have used shift-share analysis to gauge the potential impact on poverty of labour market participation shifts. It implies that the poverty rates of population groups are reweighted following changes in the shares of these groups. In an 11-country study, Fritzell and Rittakalo (2010) show that a majority of OECD countries would have considerably lower poverty rates if they had a household labour participation (and socio-demographic) structure similar to Sweden's, which is the best performing country. Interestingly, however, the impact of boosting labour participation – especially double earnership – levels to Sweden's would have widely varying impacts, with some countries, such as Germany or Canada, ending up with higher hypothetical poverty rates. A similar exercise by Whiteford and Adema (2007) relating to child poverty yields similar results; the poverty reduction payoff to increased double earnership would be generally favourable, but the effect ranges from very strong in some countries to negligible elsewhere. De Beer (2007) uses another approach to disentangle the effect of employment growth in a Lisbon scenario (that is, 70 percent of working-age population) on poverty rates in which he decomposes poverty, taking into account the differing poverty rates of work-rich and work-poor households.

Shift-share analysis is simple to perform because only poverty rates and the share of the subpopulations are necessary inputs. However, this type of analysis has its limits when using a relative poverty measure because it effectively assumes a constant poverty threshold. The likely increase in incomes due to the increase of the share of workers is not taken into account. Indeed, when more people are at work, the resulting median will most likely be higher, which corresponds to a higher poverty threshold. Moreover, in shift-share analysis there is no allocation mechanism to indicate which unemployed or inactive people are more likely to be employed in the new scenario. This makes it impossible to find out how jobs resulting from a shift in employment would be distributed between and within households. In what follows we conduct a similar shift-share analysis, by increasing the employment rate for 23 EU

countries for which the employment rate falls below the Europe 2020 target, to the level of 75 percent of the working-age population (20–64 years old) using EU-SILC data from 2008. Although EU-SILC is widely used for cross-country comparisons of living standards, we need to be well aware that EU-SILC draws on a variety of sources. Lohmann (2011) shows this to have a demonstrable impact on measured outcomes, especially if it comes to percentages of working and non-working poor.¹ From the 27 European countries that take part in the EU-SILC 2008 survey, only four reach the Europe 2020 target (Iceland, Norway, Estonia and Sweden) and are left out of the analysis. The poverty rate in case of the Europe 2020 target is constructed as follows: for 75 percent of the working-age population, the original poverty rate of working individuals is used. The fraction of the working-age population needed to reach the target is taken from the share of unemployed people and the remaining part – if there is any – is subtracted from the inactive population. For what is left of these subgroups, the original poverty rate is used. In sum, the original poverty rate is reweighted using the Europe 2020 target. We use the following definitions:

- Person at work: in part time or full-time work.
- Unemployed person: indicates not to be working at the time of the interview, that he/she is available for work in the next 2 weeks and finally he/she has actively been looking for work in the last 4 weeks.
- Inactive (other) person: all people not at work or unemployed.

In this article, the static results of the shift-share analysis are compared with those from a more sophisticated method that is RB. With this approach we take account of the various factors that determine an individual's job chances. Our results will reflect the fact that, for example, less-educated people have fewer job opportunities in the labour market and that they command lower earnings if and when they get a job. With the interaction terms in the regression we capture the fact that configurations of determining factors matter, as has been demonstrated by the literature. For example, the impact of education level

on employment chances and earnings generally differs for men and women.

The RB model estimates participation probabilities as well as labour incomes for the share of jobless people at working-age needed to reach the Europe 2020 target. The allocation of simulated jobs comes from a labour supply function estimated on the working-age population in each country. We adopt multinomial logit to estimate the probability of working full time, part time or staying out of the labour market for a working-age individual who is currently not working. For those without work a two-step Heckman selection model (Heckman, 1979) is used to simulate the labour incomes separately for part-time and full-time work. In the multinomial logit we use the following independent variables: gender, age, age squared, a dummy for the presence of a partner, the number of children, the logarithm of all other incomes in the household apart from the labour income of the individual, the highest education obtained (in four categories), a dummy for the country of birth (EU as reference) and a dummy for limitations in daily activities (yes/no). To capture the variance of the dependent variables for men and women, we incorporate interaction terms between sex, age, the presence of a partner, the number of children and the country of birth.

In a second step, the logarithm of gross part-time and full-time wages is regressed separately on age and education dummies, again for individuals at working-age. Gross wage would ideally be captured as an hourly wage, after which we should simulate the number of hours a jobless individual is likely to work. In EU-SILC, however, it is arduous to construct an hourly wage for most countries, and even impossible for others. Therefore, we define the gross wage as the earnings from employment during the income reference year (that is, 2007) and refer to the monthly statement whether work was full or part time.² This allows us to use the same model for all countries and the distinction between part- and full-time work can still be taken into account. For both the part-time and the full-time wage estimation, we apply a Heckman selection correction using the same right-hand side variables as in the multinomial model. We predict gross part-time wages for jobless individuals and allocate these wages to the highest

(with respect to part-time outcome) ranked jobless individuals at working-age in the labour supply multinomial logit estimation. The same is done for full-time work. The number of jobs needed to reach the Europe 2020 target is country specific and determines the number of simulated gross wages in each country.

To determine the real net income change, it would be ideal to use a tax benefit microsimulation model that takes into account how changing incomes affect taxes and benefit entitlements. Figari et al. (2010) simulate a decrease of employment using EUROMOD. However, it is currently not possible to do this for all 23 countries and, moreover, EUROMOD is not yet ready to simulate unemployment benefits with sufficient accuracy. Thus we choose to subtract all individual social benefits from gross income when an individual is simulated to get into a job. This means that all unemployment, old age, survivors', sickness and disability benefits are set to zero when a jobless individual receives a simulated gross wage. The calculation from gross to net wages follows an OLS regression using employee gross wages as dependent and the number of children, marital status (divorced, widowed, partner in household, other) and the presence of other jobs in the households as explanatory variables. The predicted difference between the net wage and the lost benefits is summed up to the household income. Household income is distributed over all household members and equivalized using the modified OECD scale. We call the RB model M1.

Relative income poverty is measured following the European convention, that is: all individuals who have an equivalent household income less than 60 percent of the median equivalent household income are considered to be at risk of poverty. Throughout this paper we use the term 'poverty' instead of 'at risk of poverty'. The cross-sectional weights from EU-SILC have been used for all calculations. Poverty rates are calculated using both a fixed (that is, based on incomes before employment growth) and a floating (that is, based on the new income distribution) poverty line. When applying a fixed poverty line we look at the first-order impact of increased employment on income, assuming that society's view on poverty has not changed. With a floating

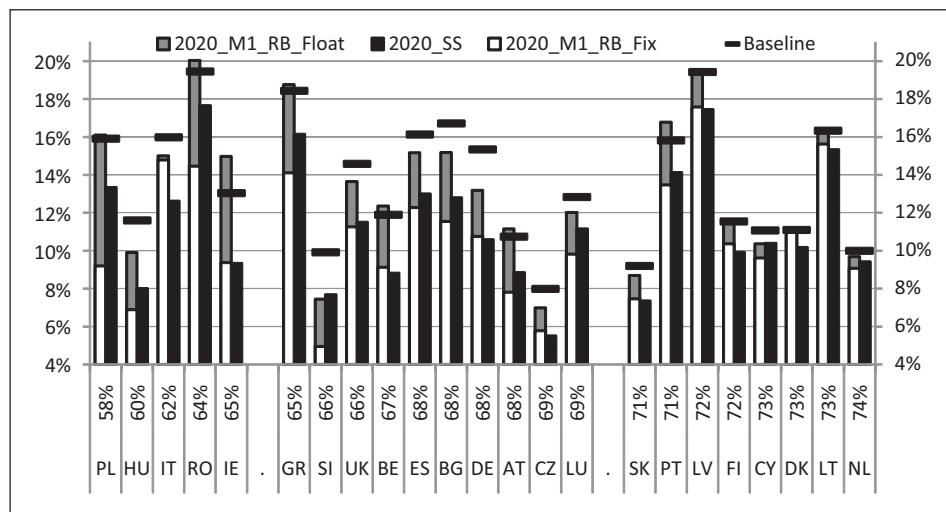


Figure 1. Poverty rates before and after increase of employment to 75 percent using shift-share and RB approach (fixed and floating poverty line), active age population. Baseline: current poverty rates; 2020_SS: poverty rates after increase of employment rates with shift-share methodology; 2020_M1_RB_Fix: poverty rates after increase of employment rates with RB methodology and poverty line fixed; 2020_M1_RB_Float: poverty rates after increase of employment rates with RB methodology and poverty line recalculated. Countries are ranked from low to high current employment rates. Source: authors; calculations on EU-SILC 2008.

poverty line, one in a way ‘respects’ the relative character of the poverty line and allows for incorporating the potential shift in median income following the change in the income distribution. Presenting results with both poverty lines provides a complementary picture, as it allows a distinction to be made between the direct poverty impact of increased employment and the indirect effect on the entire income distribution.

The RB model reveals what the partial effect of an employment rise would be for relative poverty in European countries that do not (yet) reach the Europe 2020 target. The effect is partial because the employment rise we simulate is an outcome dependent on the available current labour supply determinants of the country. In other words, we assume that the yearly earnings of the simulated jobs are determined in the same observable way as the earnings of existing jobs. Furthermore, we allow the labour supply probability to allocate the simulated jobs to the entire working-age population. This effectively implies that the current structure of the labour market is being replicated, thus reinforcing the dominance of

for example, job-rich and job-poor households. Ideally, we would also want to model some second round effects that are associated with job growth, but that is clearly beyond the scope of this analysis. With those limits, the results we present are a first, but substantial, attempt to go beyond a simple shift-share analysis to review empirically how rising employment translates into relative poverty, also because of the added sensitivity analysis.

Results

The impact of job growth on poverty: a comparison of different approaches

First, we compare the poverty effect on the active age population of simulating an increase in job growth to 75 percent using different approaches (see Figure 1). However, since employment growth causes poverty lines to shift in our RB models, the whole of the population is affected. Thus we also report results for the entire population, which can be found in Figure 2.

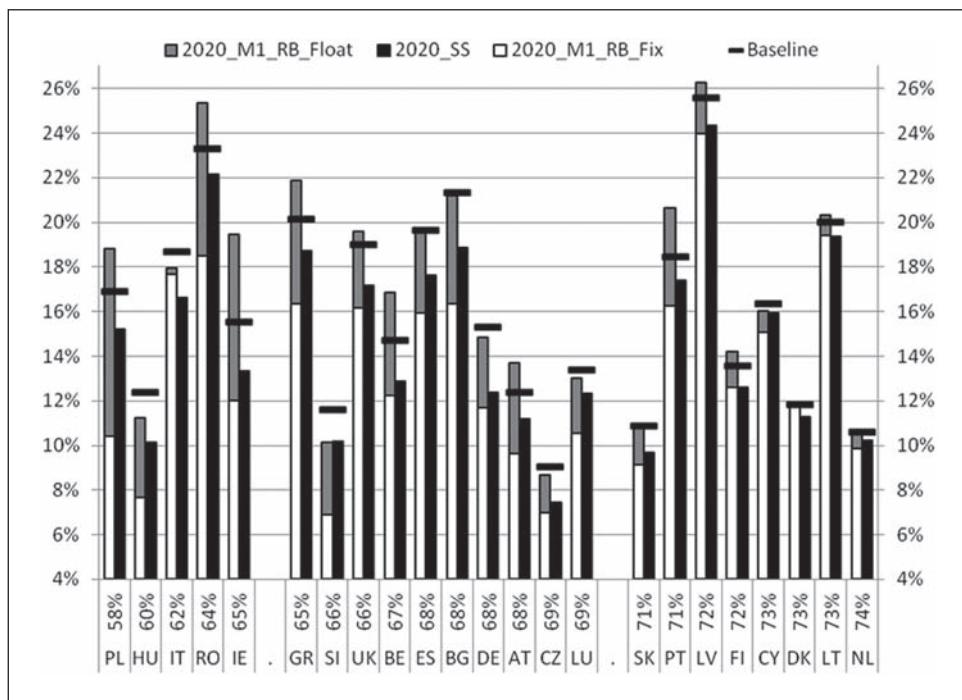


Figure 2. Poverty rates before and after increase of employment to 75 percent using shift-share and RB approach (fixed and floating poverty line), entire population, poverty line at 60 percent of median equivalent income, 2008. Baseline: current poverty rates; 2020_SS: poverty rates after increase of employment rates with shift-share methodology; 2020_RB_Fix: poverty rates after increase of employment rates with RB methodology and poverty line fixed; 2020_RB_Float: poverty rates after increase of employment rates with RB methodology and poverty line recalculated. Countries are ranked from low to high current employment rates. Source: authors' calculations on EU-SILC 2008.

Let us first look at the change in the poverty rate resulting from the increase in employment by reweighting, that is, the shift-share analysis (2020_SS compared with the baseline). Overall, poverty decreases in all countries when the weight of the working population is increased. As can be expected, countries with a current employment rate that is already close to the Europe 2020 target experience the smallest drop in poverty (for example, the Netherlands, Lithuania and Denmark). In the Czech Republic, Germany and Hungary, poverty decreases most strongly (a relative decrease of about 30 percent); Hungary is a country with a very low employment rate, whereas Germany and the Czech Republic are situated in the middle of the league. Overall, however, these results would lead us to the conclusion

that increasing employment is a good anti-poverty strategy. However, the shift-share analysis does not take account of a number of factors, such as the characteristics of the currently inactive population.

These characteristics are explicitly considered with the RB methodology. With this method, individuals with the highest probability of having a job are given priority when assigning the status of being employed (part time or full time), as well as an income from work (see the fourth section). In a first instance we keep the poverty line fixed in order to be comparable with the shift-share analysis. As with the shift-share analysis, overall poverty drops in all countries, with small changes for high-employment countries. In most countries, the decreases are, however, more pronounced with this methodology.

Especially in Poland and Hungary, poverty rates drop dramatically following the increase in employment. These two countries are the ones with lowest current employment rates, and apparently, with the RB method a considerable number of individuals are lifted out of poverty. This is mainly related to the fact that with the RB approach individuals who are most likely to work are given priority in the job allocation mechanism. These are in general individuals with an earnings potential that is higher than the average non-working individual, and thus they are more likely to escape poverty.

Using a fixed poverty line, however, disregards the change in the median income and thus in the poverty threshold that may occur when employment rises. Switching from social transfers (or no income) to income from work, changes the relative income position of the individuals concerned, and may also cause the poverty line to shift if it is recalculated on the newly simulated income distribution. The change in the poverty line is most pronounced in Poland and Romania, with rises there of more than 20 percent.³ Increases of between 10 and 20 percent occur in Hungary, Ireland, Greece, Slovenia, Spain, Bulgaria and Austria. In Denmark, Lithuania and the Netherlands, the poverty line is hardly affected, mainly because in these countries changes in employment (and hence income) are very small. With this floating poverty line, results are far less pronounced: in most countries, poverty rates for the active population go down, but to a lesser extent than when a fixed poverty line is used. The largest decreases occur in Hungary, Slovenia, Germany and the Czech Republic, which are countries with low to average employment rates. In countries with a high employment rate, poverty hardly changes. In some countries, for example, Ireland and Portugal, poverty even goes up, as a result of the upward shift of the poverty threshold.⁴

Figure 2 shows poverty rates for the overall population, also including households that are perhaps not affected by a change in employment, but see their relative income position change following the simulated employment growth. With the floating poverty line, overall poverty in almost half of the countries drops, whereas in almost half of the countries poverty even increases. For instance in Poland,

poverty increases by about 25 percent, which is mainly due to the strong upward shift in the poverty line, worsening the relative position of groups such as pensioners. Much depends here on where the hypothetically newly employed find themselves in the income distribution. In Hungary, by contrast, the simulated rise in employment does result in lower poverty because the upward shift in the poverty threshold is less pronounced.

Looking at our results more closely, we observe some interesting dynamics, which also help to understand why past increases in employment have not produced the hoped-for reductions in poverty. A first important observation is that even in the fixed poverty line scenario the simulated increases in employment do not result in commensurate drops in poverty. This is simply because the non-employed people with the highest employment probabilities tend not to live in poverty in the first place. For the most part they are non-employed partners in households with relatively well-earning breadwinners. Yet consistent with the widely held belief that 'a job is the best protection against poverty', people living in poverty who in our simulations make the transition from non-employment to work do escape financial poverty in large part. This is most strongly the case in the fixed poverty line scenario, but it is also the case in the floating poverty line scenario. In the latter scenario, however, the upward shift in the poverty line does cause the relative position of other groups to deteriorate, for example, those people living on benefits who were just above the poverty line prior to the hypothetical increase in employment.

Changing the allocation mechanism of the new jobs

In the third section (on methodology and data) we discussed briefly why past increases in employment rates did not go accompanied with drops in relative poverty. Empirical analysis points to one important factor: rises in employment do not tend to produce commensurate drops in the share of households with no person in work. This is important because these households are most at risk of poverty and ought to be the first beneficiaries from job growth if this is to have a poverty reducing effect.

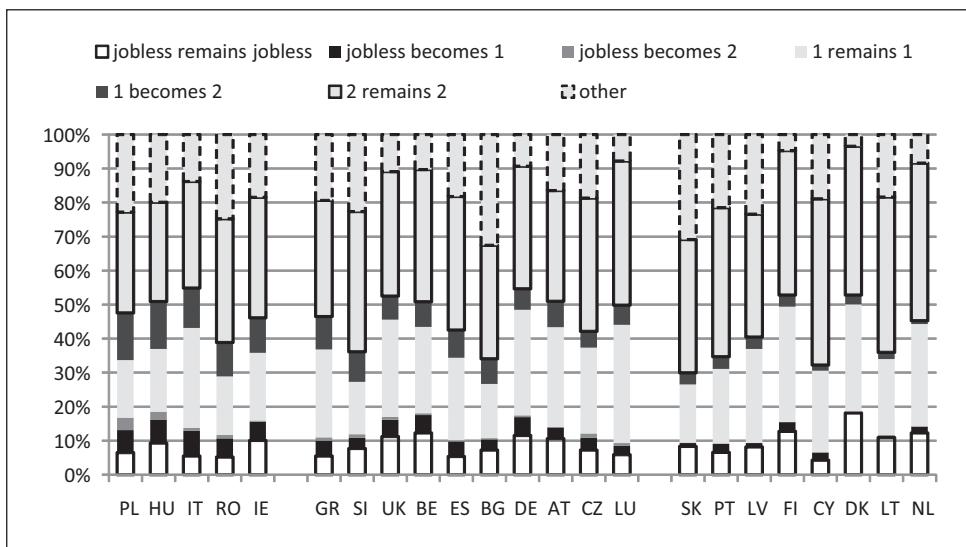


Figure 3. Changes in household work intensity following job growth to 75 percent employment rate, Countries are ranked from low to high current employment rates. Source: authors' calculations on EU-SILC 2008.

Partly for this reason, the Europe 2020 Agenda sees the reduction of jobless households as an important objective in its own right. It is therefore relevant to consider what our simulation of the 75 per cent employment target produces in terms of changes in employment patterns at the household level. According to our simulation, the share of jobless households that moves to one-earnership is rather limited (see Figure 3); moves from jobless to two earners are even less frequent. Most of the changes are moves from one to two earners in the household. Poland and Hungary are the countries in which most changes among originally jobless households take place; these are also the countries with the biggest simulated job growth.

Given these patterns, poverty outcomes may be dependent on the job allocation mechanisms explained in the fourth section (the results). Hence, we test the sensitivity by applying an alternative mechanism, namely by giving priority to individuals in jobless households (and from low- to high-work intensity if there are still jobs to be allocated after priority has been given to the jobless). Figure 4 gives the results for this simulation, which we will call S1. The results show that in the case of 14 counties, the S1 approach results in lower poverty rates compared

with the RB (M1) approach. This is true for both the fixed and the floating poverty line. The largest improvements in poverty outcomes are recorded in low-employment countries, such as Poland, Hungary, Romania and Greece. For other countries we even see a small rise in poverty rates when the S1 approach is used, which is most pronounced in Germany. Depending on the different characteristics of the simulated working population, simulated wages vary with a direct effect on poverty rates and an indirect on the poverty line when it is allowed to change. These results indicate that, apart from the job allocation mechanism, also the wage simulation mechanism plays an important role: many simulated workers seem to escape poverty, whether they are ranked according to the RB model's outcome (M1) or according to work intensity of the household (S1). We test the sensitivity of the results for changes in the simulated wage level in the next section.

Changing the level of simulated wages

Imputed wages for individuals that are predicted to get a job in our model are based on a Heckman estimation in M1 for full-time and part-time simulated workers separately. In Figure 5, we present average

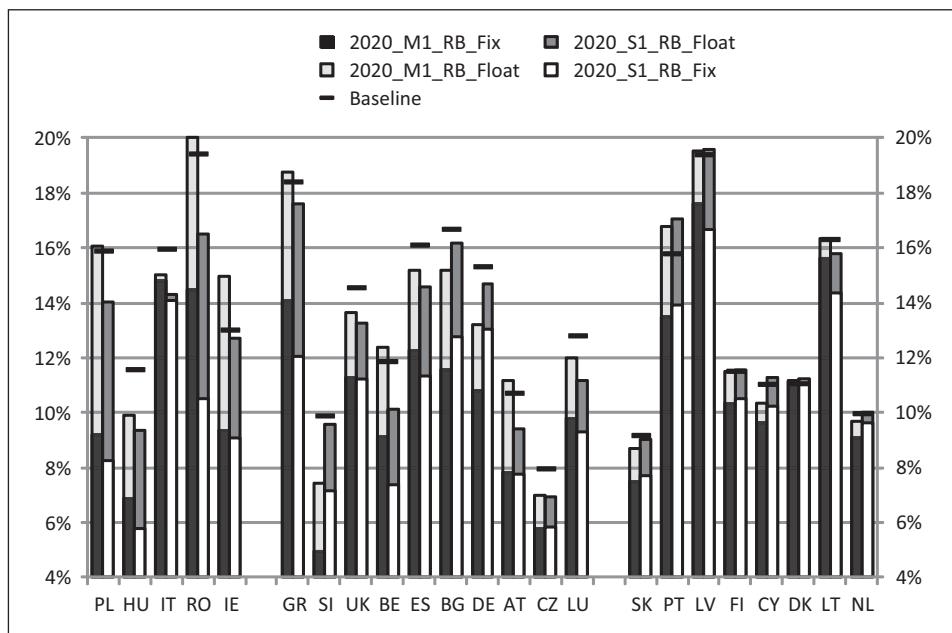


Figure 4. Poverty impact of employment growth to 75 percent, sensitivity test for job allocation mechanism, active age population. The lower end of each bar depicts the result using M1 and a fixed poverty line, while the top of the bar indicates the result using M1 and a floating poverty line. Countries are ranked from low to high current employment rates. Source: authors' calculations on EU-SILC 2008.

wage levels for the original workers and for the simulated workers in M1. For most cases, simulated wages tend to be smaller than the wages of the original working population. This does not come as a surprise, since non-employed individuals tend to have personal characteristics that make their simulated wages lower than the average worker.

Given these differences we test the sensitivity of our results to changes in the imputed wage level (S2). Instead of imputing the econometrically estimated wage level, we opt for a low wage. We choose a wage level that is commonly used as the benchmark to define a low wage, namely two-thirds of the median full-time wage (Lucifora and Salverda, 2009). For all countries, this low pay measure is (far) below the average simulated and original wage, as is shown in Figure 5.

Consequently, with a fixed poverty line this alternative wage imputation (S2) results in poverty rates that are slightly higher or similar to those reported in M1 (see Figure 6). Only in Poland and Bulgaria

larger increases in poverty can be found. However, with a floating poverty line, the poverty results are significantly affected in some countries. Imputing lower wages prevents the poverty line to shift upwards to the same extent as is the case with econometrically estimated wages, resulting in more favourable poverty outcomes. Compared with scenario S1, however, poverty reductions are less important, suggesting that the job allocation mechanism (that is, giving priority to individuals in jobless households) has a somewhat larger impact on poverty reduction than providing a wage that is well above a relatively low wage.

Conclusion

The idea that employment growth and poverty reduction are inseparable effectively, naturally complementary objectives remains by and large central to the EU's social and economic policy strategy

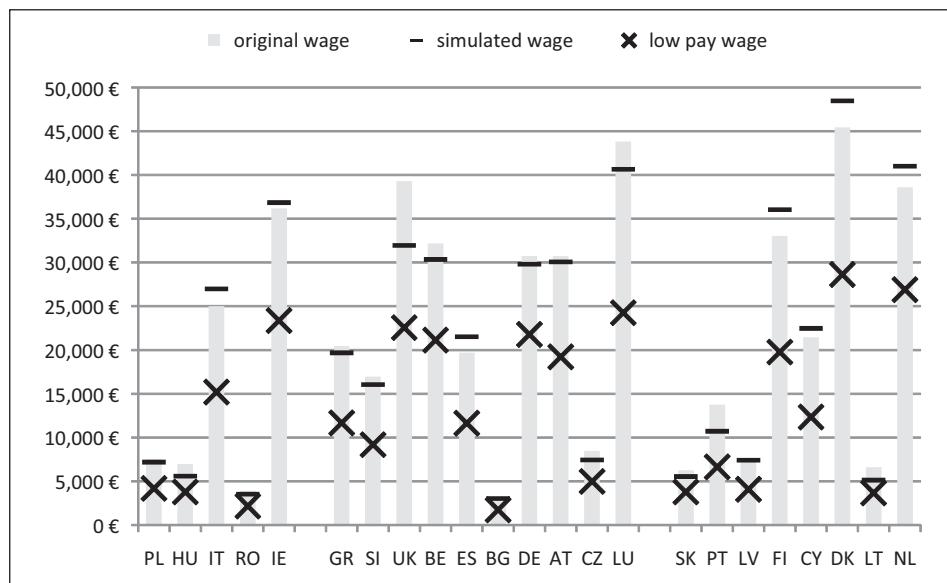


Figure 5. Average original, simulated (M1) and low pay gross annual wages Monthly wages have been multiplied by 12. Countries are ranked from low to high current employment rates. Source: authors' calculations on EU-SILC 2008.

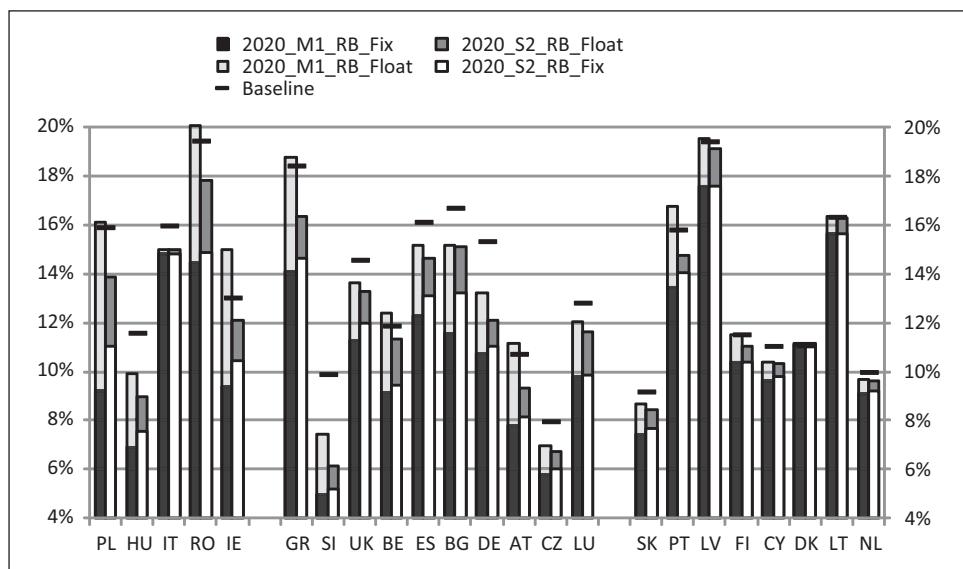


Figure 6. Poverty impact of employment growth to 75 percent, sensitivity test for changing the imputed wage level (RB approach, floating poverty line), active age population. The lower end of each bar depicts the result using M1 and a fixed poverty line, while the top of the bar indicates the result using M1 and a floating poverty line. Countries are ranked from low to high current employment rates. Source: authors' calculations on EU-SILC 2008.

Europe, 2020. Yet we now know that in the recent past employment growth has not produced the hoped for drops in poverty.

This article supports the finding that relative poverty rates are difficult to predict when employment increases and that the impact is not necessarily a beneficial one. In this article we develop and compare various methods to simulate the impact on poverty headcount measures of countries achieving the Europe 2020 headline target of 75 percent of the population at working-age in work. Shift-share analysis – the reweighting of poverty rates method that has thus far been used in the literature – tends to result in positive effects of employment growth on poverty. This article confirms this. With very few exceptions countries are projected to see strong reductions in headcount poverty levels. However, a RB approach that takes account of employment probabilities and potential earnings yields more mixed results.

A crucial factor here is whether a fixed or floating poverty line is used. When we use a regression model to simulate the income distribution following a rise in employment and we hold the poverty threshold constant, the poverty reducing impact is a very strong one. It tends to be even stronger than with the shift-share method because the RB method effectively favours those with relatively high employment probabilities and earnings potential.

Income poverty as it is measured in the EU and in most studies builds on a relative notion of poverty. Thus the poverty threshold needs to be sensitive to changes in the level and distribution of income as employment changes. Note, however, that even in a fixed poverty line scenario, the increases in employment never result in proportional drops in poverty because people with the highest employment probabilities tend not to live in poverty in the first place. By accounting for possible changes in the poverty line, we go a step beyond static first round effects, thus distinguishing between the direct impact of increased employment and the indirect effect on the entire income distribution, an insight that is not provided by shift-share analysis at all. In almost all of the countries analysed, poverty decreases, but much less than could be expected taking into account the

large employment shifts. In some countries, the poverty headcount effectively increases compared with the baseline scenario of no change in employment. Interestingly, most poor individuals that actually get a job in our simulations move out of poverty. However, due to changes in the poverty line, overall poverty rates do not necessarily follow suit. Employment growth improves the income position of some individuals, especially those that actually get jobs, but it also causes the *relative* position of others to deteriorate. Much depends on where in the overall income distribution the newly created jobs end up, and that is not always predominantly in the bottom half of the distribution. This fact is also reflected in our finding that rising employment does not produce commensurate drops in household non-employment. To test for the sensitivity of our RB outcomes, we have introduced two alternative specifications. First, we change the allocation mechanism, diverting the simulated jobs to work poor households first. Second, we alter the wage estimation by imputing a low pay wage. The second alternative does not change results to a large extent, while the first alternative causes relative poverty to decrease more strongly.

It is clear that while taking a step forward in modelling the impact of employment growth on poverty, the RB method remains subject to limitations and caveats. The impact of employment growth on household incomes and the level of the poverty thresholds is estimated as a partial second-round effect. This is unrealistic since employment growth of the magnitude we simulate may well be unfeasible except when accompanied by macro-economic policies such as overall wage moderation. On the other hand, tightened labour markets may boost wage demands. Many other second-round effects, including on labour supply, family formation, and so on, are thinkable and, in effect, plausible. General equilibrium type modelling in this area is the ideal to be aimed for but clearly the challenges remain quite formidable. Yet what this first attempt at sophistication shows is that the impact of employment growth on relative poverty rapidly becomes more complex and in some cases more counterintuitive once one moves beyond the reweighting techniques hitherto used in the literature.

The analysis presented in this paper can realistically be improved in a number of ways. As already indicated, micro-simulation modelling can result in more refined gross-to-net transitions, as well as a more detailed calculation of the effects of changes in labour income on the tax-benefit position of the household. As micro-simulation models such as EUROMOD are being expanded to more countries and more benefits (more specifically unemployment benefits) prospects are promising.

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Notes

1. It seems that register data are better at picking up small earnings, resulting in more people being classified as 'in work' if above one-euro earnings are taken as the basis for the definition of employment status. In keeping with common practice in current poverty research, including in EUROSTAT publications, we define employment status on the basis of current employment status information.
2. Because gross wage is not available for the same year as current labour market status, we only use the information of gross wages earned by current workers and simulate gross wages for all individuals currently not working.
3. More details on these changes in the poverty line are documented in Marx et al. (2011).
4. It can be argued that increasing the share of employed people to 75 percent at once is maybe too big a switch. Therefore, we have also tested the poverty impact for increases up to 65 percent, 70 percent and 75 percent employment rate for those countries that have an employment rate below 65 percent. We have also calculated marginal changes (1 percent) in employment growth. Results for these sensitivity analyses can be found in Marx et al. (2011).

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