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Poverty developments in the EU after the crisis: a look at main drivers

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Introduction

The 2008 crisis and the protracted period of instability and stagnation that ensued came with an increase in poverty across the EU. In the Member States most severely hit by the crisis in particular, the prospects for the most vulnerable parts of the population are a serious source of concern.

The aim of this paper is to review the major poverty trends in EU countries since the crisis and to shed light on the main macroeconomic drivers of poverty.

Poverty is a multidimensional concept relating not only to the lack of income and wealth in a society but also on how resources are distributed and the extent to which members have equal access to public goods, services, social interactions (social exclusion). As different indicators provide information along various dimensions, these may fail to provide immediately a clear and unambiguous picture, and it may actually happen that, for the same situation, different poverty indicators show opposite trends.

The present analysis focuses both on the concept of *material* poverty (expressed by the Eurostat indicator of severe material deprivation) and *relative* monetary poverty (as measured by the Eurostat at risk of poverty or the anchored at risk of poverty indicators). The analysis looks at the situation in EU Member States in the period before and after the current economic crisis (from 2005 to 2011-2012, depending on data availability).

The analysis in the paper attempts to disentangle the direct effect of the crisis, mostly linked to the fall in per-capita income and increased joblessness, with the more indirect effects arising from a changed behaviour of policy authorities. As a result of the deterioration in government budgets ensuing from the crisis, fiscal consolidation measures were put in place to ensure debt solvency, with implications for aggregate demand and economic activity.[1]

[1] For an example of a recent study trying to assess the effects of fiscal consolidation on output, employment and inequality, see Ball et al. (2013).

Summary

This brief reviews developments in poverty across EU countries after the crisis and analyses their main macro drivers. Poverty increases were recorded mostly in terms of severe material deprivation and low work intensity rates starting from 2010 and were concentrated in those countries most severely hit by the crisis (Spain, Greece, Ireland and Italy, with the exception of Portugal).

Econometric estimates suggest that while relative poverty measures such as the risk of poverty rate does not appear to have clearly identifiable drivers, income per capita and unemployment exhibit a significant explanatory power for the severe material deprivation and anchored at risk of poverty rates. In particular, the share of long-term unemployment on total unemployment stands out as the most significant driver. The analysis also shows that social expenditure contributes to curb the rise in poverty, and that this type of expenditure after the crisis did not fall on top of what explained by standard determinants.

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At the same time, policy action following the crisis also concerned the composition of revenues and expenditures, with implications not only for aggregate income but also for its distribution (e.g., via a different degree of progressivity of the taxation system, revised generosity and eligibility conditions for government transfers, etc.) as well as structural reforms to favour adjustment and growth, which also had some redistributive impact. In the following analysis there will be an attempt to shed light on these indirect effects coming from a changed behaviour of policy authorities, focusing on the type of policy with the likely most direct impact on poverty outcomes, namely, social protection expenditure. [2]

The remainder of the brief is structured as follows. The next section discusses poverty measurement. The subsequent section reviews main developments in poverty after the crisis across the EU and correlated them with possible macro drivers. Subsequently, poverty macro drivers are assessed by means of panel regressions. The last section concludes.

Measuring poverty

Poverty measurement requires: (i) defining a variable representing the living standard of individuals (generally income); (ii) defining a threshold for such a variable that permits to distinguish which individuals are poor; (iii) constructing synthetic indicators measuring how much poverty is an issue in a given society (country, region,..).[3] The definition of individuals' income is also non-obvious, as poverty measurement require assessing the situation of individuals that are not supposed to gain own income because not in working age or not employable. To this purpose, the relevant unit of observation is the household, and the relevant income concept is the equivalised disposable income, i.e., the income (after taxes and transfers) of the whole household imputed to its members.[4]

Since poverty is a multidimensional concept which relates to overall economic conditions, income distribution and social exclusion, a number of indicators are available, providing complementary information along different dimensions and according to different definitions of poverty.

In the economic literature a general distinction is made between *absolute* and *relative* standards of poverty: absolute poverty thresholds are defined with reference to minimum standards of living, expressed for instance in terms of a reference monetary budget required to afford a minimum consumption basket, or in terms of self-reported inability to afford a given set of goods and services. Such standards can be defined consistently both over time and between countries. In the case of *relative* poverty standards the threshold is instead defined with reference to the relative position of individuals with respect to some moment of the income distribution. Such a threshold therefore changes in time and space and is linked to income inequality. Various synthetic indicators can be constructed against these different concepts.

In the EU surveillance framework, a battery of indicators has been agreed for the monitoring of poverty developments and the assessment of progress towards Europe 2020 poverty targets.[5] The main measures are the following:

The *at-risk-of-poverty rate (AROP)* is defined as the share of individuals whose equivalised disposable income falls below a given threshold (the standard threshold being 60% of the median income). It provides a measure of relative poverty, and in this respect it should be considered as a statistic describing the income distribution. In interpreting the evolution of this indicator over time, variations in the threshold's level following developments in average incomes need to be taken into account: it is not uncommon that during recessions mean and median incomes are also affected, potentially causing the at-risk-of-poverty rate to *decrease*.

[2] See, e.g., OECD (2011) and European Commission (2012) for a review and discussion of the redistributive effects of government transfers, in-kind benefits and publicly provided services.

[3] See Coudouel at al. (2002) for a discussion on poverty measurement and analysis.

[4] Households' disposable income is converted into *equivalised* income to account for differences in household size and composition, according to a standard equivalence scale. The scale adopted at European level is the "modified OECD" scale, which assigns a value of 1 to the first household member, 0.5 to all other member aged 14 and above, and 0.3 to each child member under 14.

[5] Among the examples of indicator-based assessment frameworks developed at EU level are the "Employment Performance Monitor" produced by the Employment Committee, the "Social Protection Performance Monitor" adopted by the Social Protection Committee, the "scoreboard of key social and employment indicators" published with the Commission-EPSCO Joint Employment Report, the auxiliary indicators used in the Alert Mechanism Report on the Macroeconomic Imbalances Procedure produced by the Commission.

The *severe material deprivation rate* is defined as the enforced inability to pay unexpected expenses or to afford certain goods or services considered to be desirable and necessary to lead an "adequate" life (with reference to life standards of advanced economies). More specifically, the indicator is defined as the share of individuals in the population who are unable to afford at least four out of nine such items (to pay the rent, mortgage or utility bills; to keep the home adequately warm; to face unexpected expenses; to eat meat or proteins regularly; to go on holiday; to buy a television set; a washing machine; a car; a telephone). As the set of items used to define the EU indicator is predefined and common to all countries, the severe material deprivation rate has a more absolute character than the at-risk-of poverty which relates to national median incomes. By measuring poverty in terms of the capacity to meet certain expenditures (output measure), it differs from *monetary* indicators of absolute poverty which are based on incomes (input measures).[6]

The *work intensity* of a household is the ratio between the number of months – corrected by part-time work – worked by all working-age members of the household in a year, and the total number of months that household members could have theoretically worked. The indicator of *persons living in households with low work intensity* is given by the share of people living in households with work intensity below the threshold value of 0.20. This indicator is closely related to the evolution of labour market outcomes such as inactivity, unemployment, part-time and temporary work, but it also factors in differences in household composition and the possible varying distribution of job losses across and within households.

The headline indicator to monitor the EU 2020 Strategy target on poverty is the *at risk of poverty and social exclusion (AROPE) rate*, which is defined as the share of people in the overall population that are *either* at risk of poverty, *or* severely deprived *or* living in a household with very low work intensity (jobless or quasi-jobless households). It is therefore a combination of the three indicators described above, each one relating to a specific social condition.

For a comprehensive analysis, additional indicators are needed to complement the EU 2020 headline poverty indicator and its components, such as:

- labour market indicators (total, youth and long-term unemployment, employment and activity rates, migration flows, share of part-time and temporary employment, discouraged jobseekers, etc.);
- additional poverty and inequality indicators (in-work poverty, anchored at risk of poverty, poverty gap, persistence of poverty, mean and median equivalised disposable income, Gini index, financial distress indicators, etc.); and,
- measures of availability and affordability of public goods and services (public expenditure for social protection, education, healthcare, childcare and labour market policies, self-reported unmet needs for medical examination, early school living rates, etc.).

Moreover, looking at various breakdowns of the population according to selected economic and socio-demographic characteristics **(**such as age, gender, migrant status, household composition, geographical region and labour market status) helps further refining the analysis. For example, the breakdown by age and family composition provides information on poverty outcomes for children, the elderly, or single-parent households. Similarly, the breakdown by labour market status permits to assess the incidence of in-work poverty as well as the conditions feared by the unemployed or the retirees.

Main poverty trends

The EU labour market situation deteriorated considerably since the beginning of the crisis.[7] In particular, from a level of 7% in 2008, the EU unemployment rate experienced rapid increases in two distinct stages, first in 2009 in the wake of the financial crisis and then in 2011, as GDP growth slowed down and turned negative again amid bond market tensions. Having reached 10.8% in 2013, the EU unemployment rate is forecasted to stabilise in 2014 and decrease only slowly in 2015, notwithstanding the expected pick up of the economy.[8]

The downward trend started in 2005 for the EU 2020 headline poverty indicator halted in 2009 (graph 1), with the at risk of poverty and social exclusion rate stabilising and reverting back to its 2007 levels. The rise in at risk of poverty and social exclusion (AROPE) after the crisis was driven by

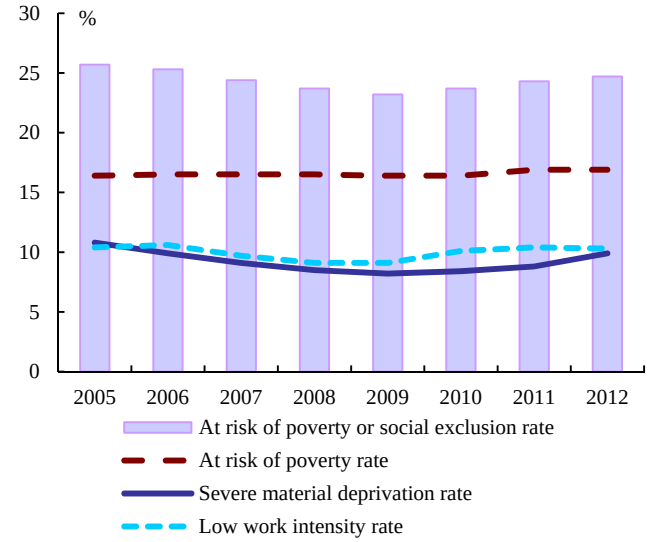
[6] In some Member States, absolute poverty can be defined also in monetary terms, with thresholds derived from reference budgets on the basis of minimum consumption baskets according to country-specific methodologies. No such type of indicator currently exists at EU level.

[7] For an in-depth analysis of labour market and social developments, see European Commission (2013, 2014a).

[8] See the winter 2014 European Economic Forecast (European Commission, 2014b).

increases in severe material deprivation and in the share of people living in low work intensity households.

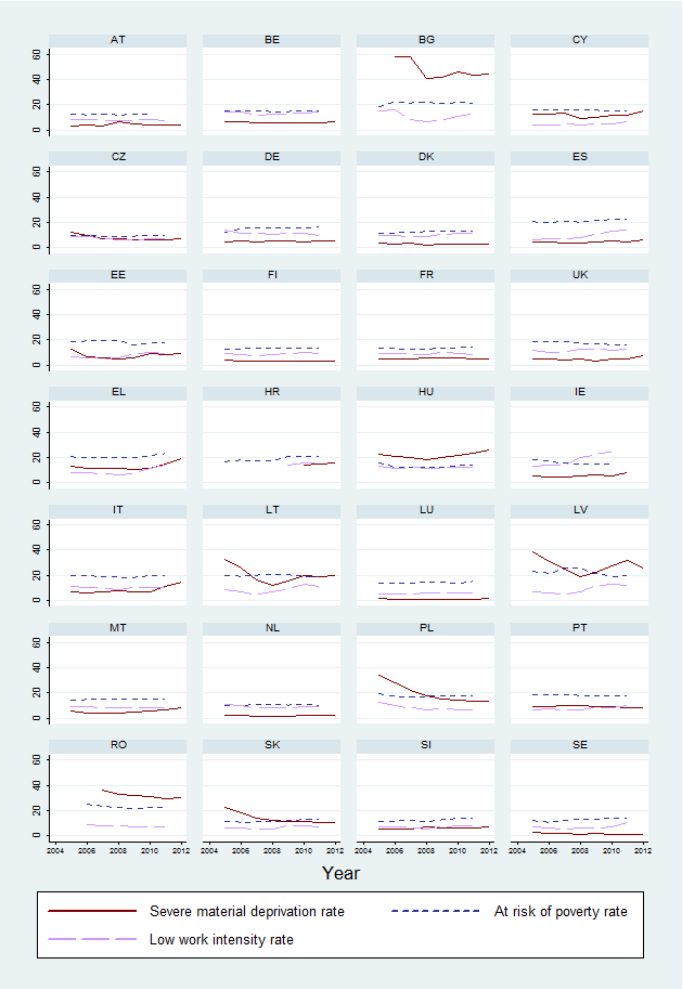
Graph 1: At risk of poverty and social exclusion indicators for the EU 27, 2005-2012



Source: Eurostat.

This apparently muted response of poverty at aggregate EU level hides marked differences between Member States (see graph 2 below). In particular, while most of the former EU15 Member States did not experience particularly strong changes in any of the poverty indicators, those countries most severely hit by the crisis (Spain, Greece, Ireland and Italy, with the exception of Portugal) recorded steep increases in severe material deprivation and/or low work intensity rates starting from 2010. Regarding New Member States, those less affected by the crisis continued along a downward path consistent with economic convergence (e.g. Poland, Slovakia, Czech Republic), while for countries such as Bulgaria, Romania, Hungary, Latvia and Lithuania such downward trend reversed dramatically, in particular with reference to severe material deprivation.

Graph 2: Country trends in severe material deprivation, at risk of poverty and low work intensity rates, 2005-2012



Note: The variables of at risk of poverty low work intensity have been corrected to reflect the actual reference year. [9]

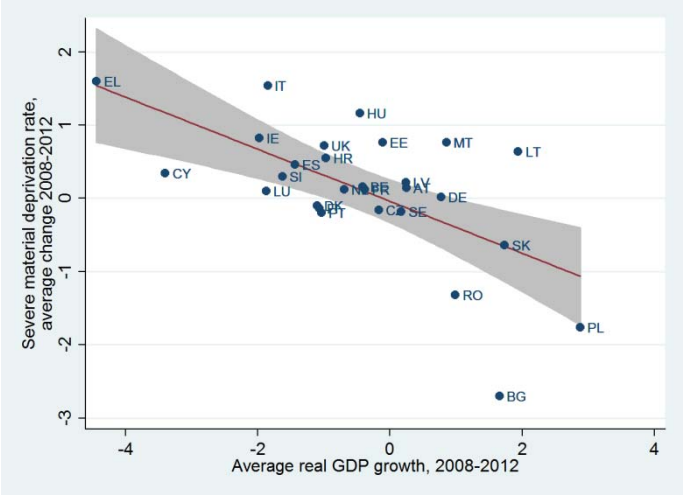
Source: Eurostat.

Considerable variation can be observed also with respect to trends and co-movements in the different indicators. In some Member States at risk of poverty and severe material deprivation display a similar pattern, while in others they tend to go in opposite directions. Such trends can be related to different economic developments and to how the income distribution is affected. As severe material deprivation is defined in relation to common EU criteria, it reflects differences in the GDP per capita between countries and therefore

[9] For a given survey year, EU-SILC income data refer to incomes earned in the *preceding* year. This means that, for example, the at-risk-of-poverty rates for 2011 as reported by Eurostat reflect the situation prevailing in 2010 in terms of income distribution. The same caveat applies for the indicator of work intensity. The material deprivation indicator is instead contemporaneous, reflecting the situation at the time of the survey.

has declined quite strongly in Member States experiencing strong growth (see graph 3), while changes in the at risk of poverty rate can be mitigated by the concomitant fall in average disposable incomes at country level. The case of Latvia is illustrative: in the first period from 2004 to 2008 the severe material deprivation rate was on a declining trend, while relative poverty was increasing. During the economic boom, incomes were growing and improved living standards overall, including for those on low income, but inequality was increasing at the same time. This trend reversed after the 2008 recession, with material deprivation increasing again and relative poverty falling as average incomes were severely affected. The evolution of the low work intensity rate reflects directly that of the situation in the labour market, but also country-specific differences in households' composition (such as household size and number of household members of working age).

Graph 3: Severe material deprivation and GDP growth

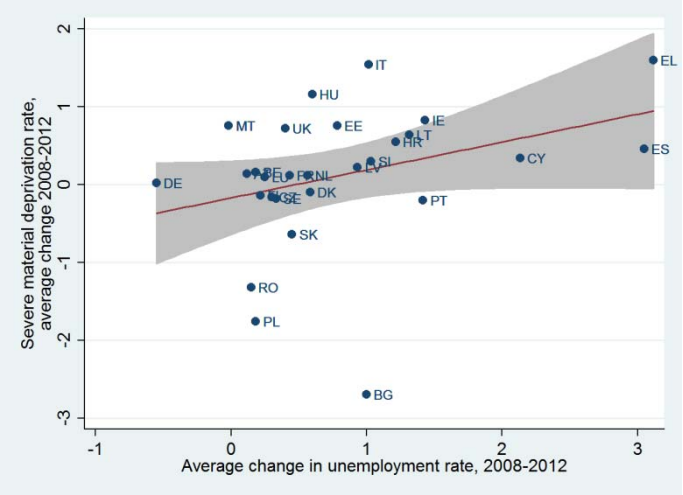


Source: Eurostat.

A number of scatterplots presented below provide insight on the cross-country relationship between poverty developments after the crisis and other variables that can be considered as possible drivers.

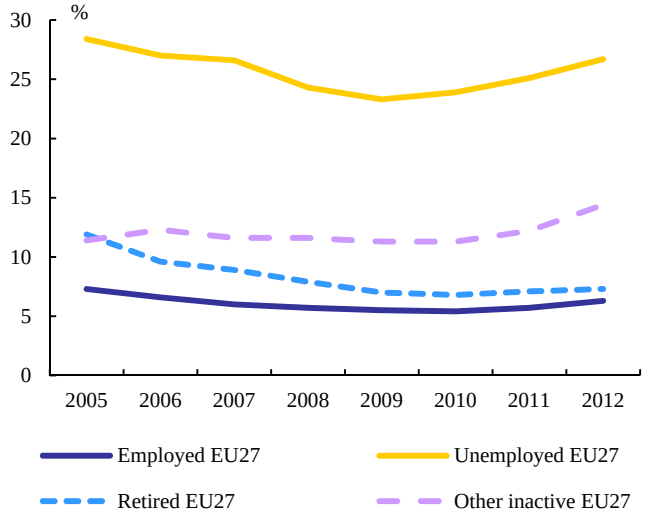
Unemployment status is a key determinant of poverty. Graph 4 above depicts a positive association between changes in severe material deprivation rate and changes in the unemployment rate, while graph 5 shows the evolution of the severe material deprivation rate for the EU 27 according to labour market status. Severe material deprivation is correlated with the economic cycle, while changes in relative poverty reflect changes in the income distribution. As shown in graph 5, the severe material deprivation rate is significantly higher for the unemployed and changes in its levels correlate positively with unemployment and negatively with GDP growth (graph 3 above).

Graph 4: Severe material deprivation and unemployment rate, average change 2008-2012



Source: Eurostat.

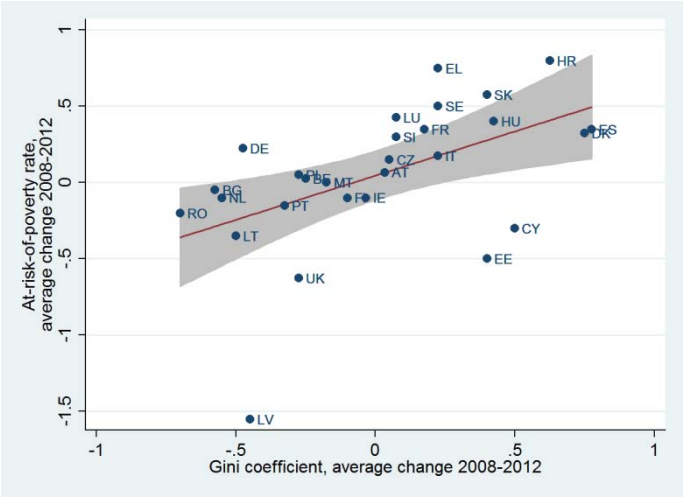
Graph 5: Severe material deprivation by working status



Source: Eurostat.

Relative poverty, instead, appears less influenced by the economic cycle: changes in its level reflect changes in the underlying income distribution, as measured by the Gini index (see graph 6).

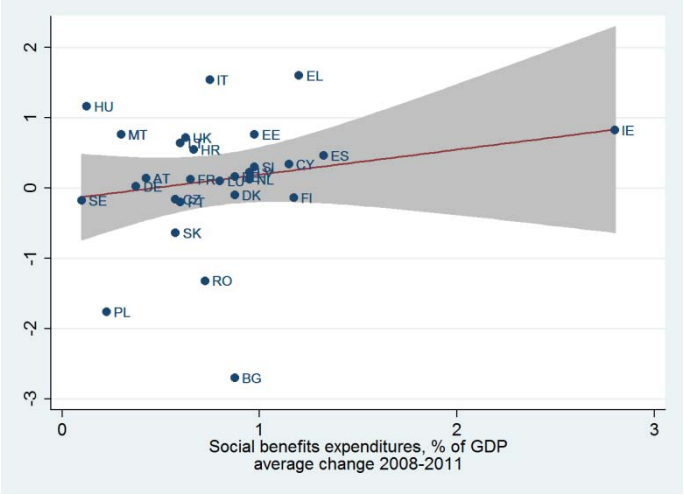
Graph 6: Average change in at-risk-of-poverty rate and Gini coefficient, 2008-2012



Source: Eurostat.

Concerning the link between poverty outcomes and policies, one crucial field is that of social protection. When looking at changes in *social protection expenditure*, it is important to distinguish between changes expressed in absolute terms on one hand, and proportional changes relative to the size of the economy on the other. An increase in social expenditures as a share of GDP has generally been associated with an *increase* in the severe material deprivation rate over the period 2008-11 (graph 7).

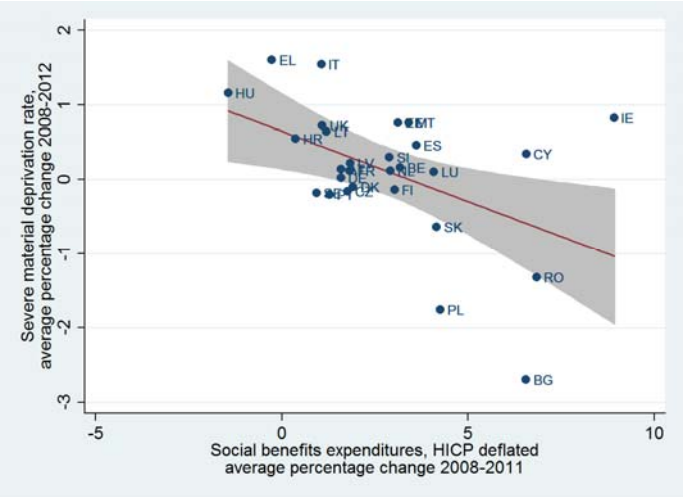
Graph 7: Severe material deprivation and social expenditure as % of GDP, average change 2008-2011



Source: Eurostat.

This counter-intuitive result is driven by the concomitant fall in the denominator of the indicator. Indeed, when changes in real *levels* of expenditure are considered, an increase in the budget allocated to social protection has generally been associated with a decrease in severe material deprivation over the same period (graph 8).

Graph 8: Severe material deprivation and social expenditure, average percentage change 2008-2011



Source: Eurostat.

Assessing poverty drivers

Descriptive indicator-based analysis does not allow disentangling the effects of different policies and economic trends. The aim of this section is to investigate the main *determinants of poverty* by means of econometric analysis exploiting time and cross-country variation, focusing *in primis* on per-capita income, unemployment, and income distribution developments. The sample will include, alternatively, all EU countries and the "vulnerable" countries that, in addition to the 2008-2009 global recession, were concerned by a protracted output contraction ensuing accompanied by major capital flights and bond market tensions.

The direct effect of the crisis would be mainly captured by GDP per capita and unemployment. A dummy variable taking value 1 after the 2008 recession would capture changes in poverty taking place after the crisis on top of what explained by the macro variables explicitly controlled for. The value of this constant would thus capture, *inter alia*, the impact on poverty associated with a different policy stance taken after the crisis and not directly reflected in per capita GDP, unemployment, income distribution. In a second step, the impact of the policies most likely to have a direct impact on poverty outcomes, namely, social protection expenditure, will be explicitly controlled for.

Results for the determinants of severe material deprivation are presented in Table 1.

Table 1: Determinants of severe material deprivation, EU28 and vulnerable countries, years 2005-2012

	Change in severe material deprivation rate			
	Full sample EU28			Vulnerable countries
Explanatory variables	(1)	(2)	(3)	(4)
Lagged level of severe material deprivation	-0.417***	-0.408***	-0.410***	-0.331***
	[-6.913]	[-7.108]	[-6.445]	[-6.591]
Lagged GDP per capita growth rate	-0.129*	-0.0941**	-0.0999**	-0.0669
	[-1.909]	[-2.329]	[-2.755]	[-0.950]
Crisis dummy (year > 2007)	-0.161	-0.0764	-0.125	0.582
	[-0.407]	[-0.189]	[-0.338]	[1.315]
Lagged change in unemployment rate	-0.116			
	[-0.802]			
Lagged change in long-term unemp. over active pop.	0.664***	0.566***	0.559***	0.878**
	[3.038]	[3.418]	[3.360]	[2.483]
Lagged change in at-risk-of-poverty rate		-0.0889		-0.330*
		[-0.417]		[-2.306]
Lagged change in Gini coefficient			0.0575	
			[0.602]	
Constant	4.197***	3.994***	5.638***	3.808***
	[4.754]	[4.799]	[3.282]	[4.225]
Observations	206	205	172	60
R-squared	0.539	0.540	0.594	0.672
Number of countries	28	28	28	8

Robust t-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.1
Notes: the group of vulnerable countries in column (4) includes: Greece, Latvia, Ireland, Portugal, Spain, Italy, Hungary and Romania. The variables of at-risk-of-poverty and Gini index have been corrected to reflect the actual reference income year.

The dependent variable is the change in the severe material deprivation rate; the explanatory variables for the specification exhibiting the best performance include the lagged level of severe material deprivation, the growth rate of GDP per capita, the change in long-term unemployment over active population (both lagged 1 year to address possible endogeneity) and a dummy for the post-2007 crisis period. Despite the relatively small sample (time series for poverty indicators from EU-SILC are relatively short and data for the severe material deprivation rate start from 2005 at the earliest) results are broadly in line with expectations and permit to derive some useful insights.

The lagged severe material deprivation rate has a significantly negative coefficient, pointing to a tendency for this indicator to converge to a stable value over time. The growth rate of GDP per capita exhibits as expected a negative coefficient, which is statistically significant in most specifications.

Developments in long-term unemployment (as a share of total unemployment) emerge as the most significant determinant of severe material deprivation. Moreover, when both the long-term unemployment ratio and the unemployment rate are included among the regressors, the coefficient of the latter variable turns out being not statistically significant (column 1). Hence, what seems to matter for material deprivation is especially the extent to which the unemployment status of individuals persist over time. In this respect, material deprivation can be seen as capturing the gradual depletion of households' resources over the unemployment spell: when faced by an income shock stemming from a job loss, households initially rely on income replacement schemes, savings and other possible available resources (e.g. credit), and only further drops in disposable income associated with protracted unemployment spells (decrease or end of unemployment benefits, credit constraints, etc.) produce a severe impact on living standards.

The variables of relative poverty and income distribution exhibit a much weaker correlation with the severe material deprivation. The at risk of poverty rate and the Gini coefficient introduced in columns (2) and (3) are both not statistically significant. This result is not surprising given the low unconditional correlation existing between these variables and severe material deprivation.

The increase in severe material deprivation associated with the crisis has not been *abnormal* given the extent of the recession and the deterioration in labour markets. In all regressions the "crisis" variable (dummy equal to 1 for the years after 2007) has a negative sign and is not significant, hinting to the fact that there has not been a more severe increase in severe material deprivation after 2007 compared to the past, once recent trends in material deprivation itself and simultaneous developments in GDP per capita, unemployment and long-term unemployment are taken into account. This result is robust to the inclusion of year fixed-effects and other changes in the regression specification (results not shown) and may be indicative that, among other things, the policy stance had no different impact on poverty before or after crisis years.

In column (4), a separate regression is estimated for the subset of "vulnerable" countries (Greece, Latvia, Ireland, Portugal, Spain, Italy, Hungary and Romania). The level of significance is generally low also due to the reduced sample size, but the sign and magnitude of the coefficients are comparable to those of the full sample regressions. In particular, long-term unemployment maintains its explanatory power. The only difference is found in the lagged at risk of

poverty rate: for this subset of countries, it appears to be *negatively* associated with severe material deprivation suggesting that changes in the income distribution have determined a relevant shift in the threshold for relative poverty, causing the two variables to move in opposite directions.

The regressions in Table 2 attempt to explain observed changes in the *at risk of poverty rate (AROP)* using the same determinants of material deprivation. The performance of the specification is much weaker, however. GDP per capita and unemployment variables are generally not significant; long-term unemployment is also non-significant and even shows a negative coefficient.

The coefficient for the Gini variable is not statistically significant, except for the sub-group of vulnerable countries, and with a non-expected negative sign. The crisis dummy in columns (1) and (2) of Table 2 shows a positive and statistically significant coefficient.

The weak performance of the empirical specification in Table 2 in the case of the at risk of poverty rate could be attributed to the fact that macroeconomic developments affect at the same time the average income of low-income households and the threshold used to define poverty. This presumption is corroborated by running the same regression as in column (2) of Table 2 using the change in the *anchored at-risk-of-poverty rate* as dependent variable.[10] Results, shown in column (4), appear more in line with those of the regressions for severe material deprivation, with GDP per capita and long-term unemployment standing out as key determinants. By keeping the threshold value for relative poverty fixed in real terms to the one of 2005 (reference year), the poverty dependent variable does not incorporate the effects of changes in median income: an increase in this rate can be interpreted as an increase in the share of "poor people relative to 2005 standards".

Table 2: Determinants of at risk of poverty rates (AROP), EU28 and vulnerable countries, years 1996-2011

	Change in AROP			Change in anchored AROP
	Full sample EU28		Vulnerable countries	
Explanatory variables	(1)	(2)	(3)	(4)
Lagged level of at-risk-of-poverty rate	-0.303***	-0.281***	-0.255**	-0.500***
	[-5.165]	[-5.658]	[-2.594]	[-3.605]
Lagged GDP per capita growth rate	0.0288	0.00911	0.0530	-0.120***
	[0.726]	[0.318]	[0.650]	[-4.709]
Crisis dummy (year > 2007)	0.371***	0.312**	0.401	0.0470
	[2.851]	[2.237]	[1.269]	[0.129]
Lagged change in unemployment rate	0.0369			
	[0.541]			
Lagged change in long-term unemp. over active pop.	-0.157*	-0.128	-0.0235	0.417**
	[-1.874]	[-1.636]	[-0.135]	[2.206]
Lagged change in Gini coefficient		-0.0322	-0.146*	0.0445
		[-0.604]	[-2.177]	[0.425]
Constant	4.594***	4.316***	4.521**	5.694***
	[5.344]	[5.879]	[2.661]	[3.157]
Observations	287	246	80	143
R-squared	0.201	0.176	0.277	0.515
Number of countries	28	28	8	25

Robust t-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.1

Notes: the group of vulnerable countries in column (3) includes: Greece, Latvia, Ireland, Portugal, Spain, Italy, Hungary and Romania. The variables of at risk of poverty, anchored at risk of poverty and Gini index have been corrected to reflect the actual income year. In column (4) the lagged level of the anchored AROP replaces that of AROP as control. The estimation includes year fixed-effects.

In order to gain insight on the possible effect of public policies on poverty, severe material deprivation equations are augmented to include the impact of social expenditure variables (see Table 3).

An increase in the overall (lagged) level of spending on social protection benefits is associated with a decrease in the severe material deprivation rate (column 1). Expenditure on active labour market policies are added as an additional control in column 2, but the estimated coefficient is not statistically significant. When disentangling spending on different items, it appears that pension and health expenditures have a non-significant impact on poverty, while income support for the unemployed and social exclusion exhibit a significant coefficient (column 3).

If the breakdown of expenditures for the unemployed and social exclusion is refined further, it appears from column (4) that it is changes in the expenditures for housing, and to

[10] The anchored at-risk-of-poverty rate is defined similarly to the at risk of poverty rate, but the threshold fixed at 60% of the median income in a given reference year is kept constant in real terms for all other years.

a lesser extent for social exclusion, that have the most significant impact.

Table 3: Severe material deprivation and social expenditures, EU28, years 2005-2012

	Change in severe material deprivation rate			
Explanatory variables	(1)	(2)	(3)	(4)
Lagged level of severe material deprivation	-0.410***	-0.450***	-0.410***	-0.413***
	[-6.910]	[-7.414]	[-7.103]	[-6.597]
Lagged GDP per capita growth rate	-0.217***	-0.206***	-0.197***	-0.183***
	[-3.544]	[-3.292]	[-3.375]	[-2.984]
Crisis dummy (year > 2007)	-0.180	-0.247	-0.210	-0.206
	[-0.494]	[-0.595]	[-0.566]	[-0.581]
Lagged change in long-term unemp. over active pop.	0.422**	0.348*	0.430**	0.485**
	[2.190]	[1.814]	[2.532]	[2.724]
Lagged change in total social protection exp. (% of GDP)	-0.417**	-0.413**		
	[-2.563]	[-2.454]		
Lagged level in ALMP exp. (% of GDP)		1.071		
		[0.538]		
Lagged change in old age ad survivor pension exp. (% of GDP)			0.224	0.225
			[0.424]	[0.427]
Lagged change in health and disability exp. (% of GDP)			-0.577	-0.662
			[-1.198]	[-1.620]
Lagged change in social assistance and UB exp. (% of GDP)			-0.915*	
			[-1.789]	
Lagged change in family benefits exp. (% of GDP)				-0.429
				[-0.696]
Lagged change in UB exp. (% of GDP)				-0.474
				[-0.824]
Lagged change in housing benefits exp. (% of GDP)				-4.193**
				[-2.565]
Lagged change in social exclusion exp. (% of GDP)				-2.135
				[-1.652]
Constant	4.426***	4.843***	4.326***	4.314***
	[5.082]	[4.998]	[5.198]	[4.994]
Observations	206	193	206	199
R-squared	0.555	0.564	0.567	0.580
Number of countries	28	27	28	27

Robust t-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.1

Note: the estimation includes year fixed-effects.

A final set of estimates looks at the reaction of social protection expenditure to key macroeconomic variables. The aim is that of assessing the responsiveness of social protection expenditures to changes in the economic cycle and in particular to explore whether the response of social protection expenditure policy has been different during the crisis period.[11] The specification includes the lagged output gap, the lagged level of public debt and the possible differential effects of these variables during the crisis.

Table 4: Fiscal reaction functions for social expenditure

	Social protection expenditure (% of GDP)			
	Full sample EU 28 years 1992-2011		Vulnerable countries	
Explanatory variables	(1)	(2)	(3)	(4)
Lagged level of social protection exp.	0.993***	0.990***	1.065***	1.131***
	[14.17]	[13.81]	[8.352]	[7.278]
Lagged output gap	0.0796**	0.0690**	0.0624*	0.109
	[2.521]	[2.444]	[2.340]	[1.525]
Lagged debt to GDP ratio	-0.0179**	-0.0180**	-0.0248	-0.0294*
	[-2.549]	[-2.504]	[-1.863]	[-1.964]
Lagged level of social protection exp. * crisis		-0.00286		-0.122
		[-0.0991]		[-0.908]
Lagged output gap * crisis		0.0293		-0.0848
		[0.589]		[-0.932]
Lagged debt to GDP ratio * crisis		0.00104		0.0106
		[0.244]		[0.939]
Crisis dummy (year > 2007)	0.422	-0.483	-0.0715	2.547
	[1.314]	[-0.630]	[-0.124]	[1.007]
Constant	1.117	2.081	0.623	-1.335
	[0.739]	[1.360]	[0.343]	[-0.652]
Observations	446	446	127	127
R-squared	0.875	0.875	0.929	0.930
Number of countries	28	28	8	8

Robust t-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.1

Notes: the group of vulnerable countries in columns (3) and (4) includes: Greece, Latvia, Ireland, Portugal, Spain, Italy, Hungary and Romania. The estimation includes year fixed-effects.

The results, presented in Table 4 show as expected that social protection expenditures are positively related with their lagged value and (negatively) with the lagged level of public debt to GDP. The output gap variable points to a significant pro-cyclical behaviour. The crisis dummy is always not significant, which implies that on average, and after controlling for their determinants, social expenditure in percentage of GDP did not change significantly during the crisis. Moreover, the reaction of social protection expenditure to its determinant does not appear to change significantly after the crisis, as revealed by the non-significant interaction terms.

[11] The methodology mirrors the literature on the behaviour of fiscal policy. See for example Bohn (1998), and Galí and Perotti (2003).

Concluding remarks

This brief reviews developments in poverty across EU countries after the crisis and analyses the main macro drivers underpinning these developments.

Poverty increases were expressed mostly in terms of severe material deprivation (an indicator of "absolute poverty") and low work intensity rates. While most of the former EU15 Member States did not experience particularly strong changes in any of the poverty indicators, those countries most severely hit by the crisis (Spain, Greece, Ireland and Italy, with the exception of Portugal) recorded steep increases in severe material deprivation and/or low work intensity rates starting from 2010.

While the at risk of poverty rate does not appear to have clearly identifiable drivers, income per capita and unemployment exhibit a significant explanatory power for the severe material deprivation and anchored at risk of poverty rates. In particular, the share of long-term unemployment on total unemployment stands out as the most significant driver. Overall, the increase in severe material deprivation reflects the severity of the crisis and its related persistent high level of unemployment pushing long term unemployment upwards. The analysis also shows that social expenditure (mostly non-pension expenditure) contributes to curb the rise in poverty and was sheltered from fiscal consolidation policies.

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