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Consistent poverty across the EU

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Abstract

This paper investigates the relationship between material deprivation and relative income poverty. We apply the method suggested by Nolan and Whelan (2011a,b) to measure consistent poverty in the European Union. We are interested in the cross-country variation in those at risk of consistent poverty, as well as in the main household-level factors associated with this status. Using EU-SILC data from 2012, we first perform a correlation analysis to investigate the relationship between different poverty concepts and their measures. Second, we analyse the poverty identification patterns of the population by country and country group, according to the four possible combinations of income poverty and severe material deprivation status: not at risk at all, at risk of income poverty only, severely materially deprived only, at risk of consistent poverty. Third, multivariate regression analysis is performed to identify the main individual and household-level factors predicting consistent poverty status.

According to our results, consistent poverty is present in all Member States, although its extent displays fairly large cross-country differences. The share of those living in consistent poverty is highest in the New Member States and the Southern countries. A higher rate of being generally at risk of poverty is associated with higher rates of consistent poverty across the countries. Living in consistent poverty (compared to not being at risk at all) is associated with several household characteristics not only in the EU as a whole, but also across country groups. Household structure, attained level of education of the household head, and work intensity of the household show the strongest correlation with consistent poverty status. Those living in consistent poverty are more likely than those in severe material deprivation or income poverty to live in bigger families, to have lower levels of education, and to have weak or non-existent links to the labour market. In addition, they evaluate their financial circumstances as being worse, *ceteris paribus*.

Keywords: poverty, material deprivation, consistent poverty, EU2020, EU-SILC

JEL codes: I32, I31

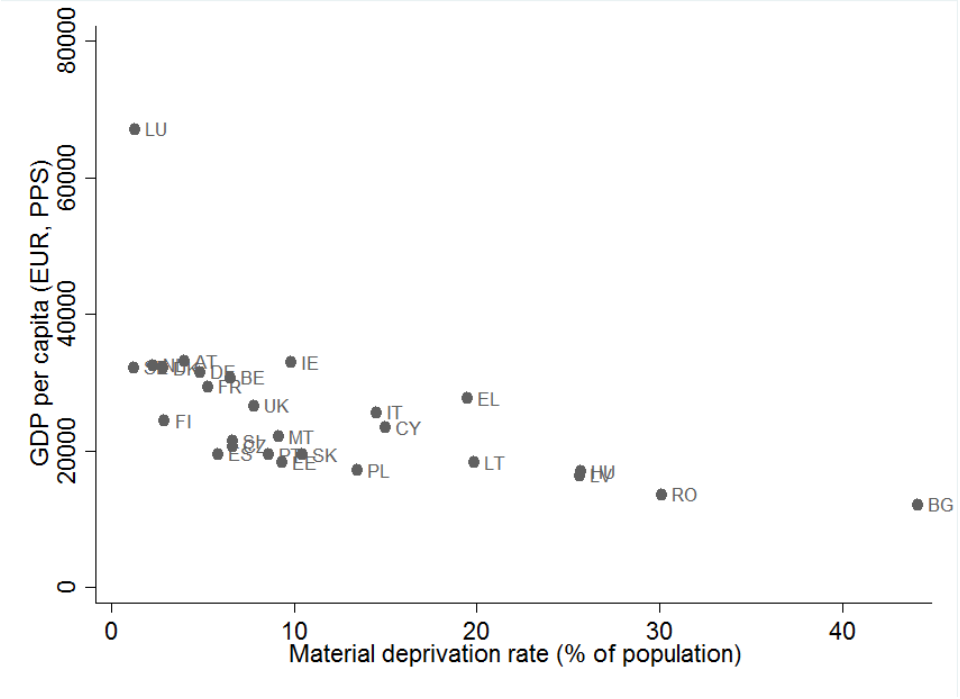
1 Introduction

One of the main challenges in conceptualizing and measuring poverty in Europe as a whole lies in the considerable cross-country disparities in the levels of living standards and in the scope of social policy in this field. While the structure of income inequality (and consequently the risk of relative income poverty)[1] shows greater variation within the groups of Old and New Member States than between those country clusters, the material deprivation rates[2] reflect the absolute income gap between the clusters much more strongly than at-risk-of-poverty rates do. Looking at Figures 1 and 2, we can clearly see the difference between the overall distributions of these two measures plotted against GDP. The negative correlation between GDP per capita and the at-risk-of-poverty (AROP) rate – an indicator based on national median income – in the EU Member States is weak: New Member States can be found in each part of the AROP country ranking. For example, the latest available figures show that the Czech Republic has the lowest at-risk-of-poverty rate across the whole EU (similar to the Netherlands), while the Slovakian figure is similar to those estimated for the Nordic countries. The Slovenian and Hungarian figures are also close to these and are similar to those reported for France, Austria and Ireland. Poland and Estonia are placed near the EU average, while Lithuania, Latvia, Bulgaria, Romania, Italy and Spain are at the top of the distribution. If, however, material deprivation – which is based on an EU-wide standard – is used as a measure of poverty, the picture changes and the disparities in the living standards between Old and New Member States become visible. The average severe material deprivation rate in the New Member States (EU-12) was close to three times the EU-15 average in 2013 (19% vs. 7%).

[1] An individual is defined as 'poor' if he or she lives in a household with an equivalized disposable income (after social transfers) below the poverty threshold, which is set at 60% of the national median equivalized disposable income. That is, poverty is defined in relative terms, and every year a different threshold is set in each country.

[2] Material deprivation is defined as the inability of the household to afford at least three of the following items: (i) to avoid arrears in rent, mortgage or utility bills; (ii) to keep the home adequately heated; (iii) to face unexpected expenses; (iv) to eat meat or proteins regularly; (v) to go on holiday; (vi) to have a television set; (vii) to have a washing machine; (viii) to have a car; (ix) to have a telephone. Severe material deprivation occurs when the household cannot afford at least four of the nine items listed above. The term 'material deprivation' is used in this paper also to describe the phenomenon in general, while 'severe material deprivation' is used in relation to the indicator itself.

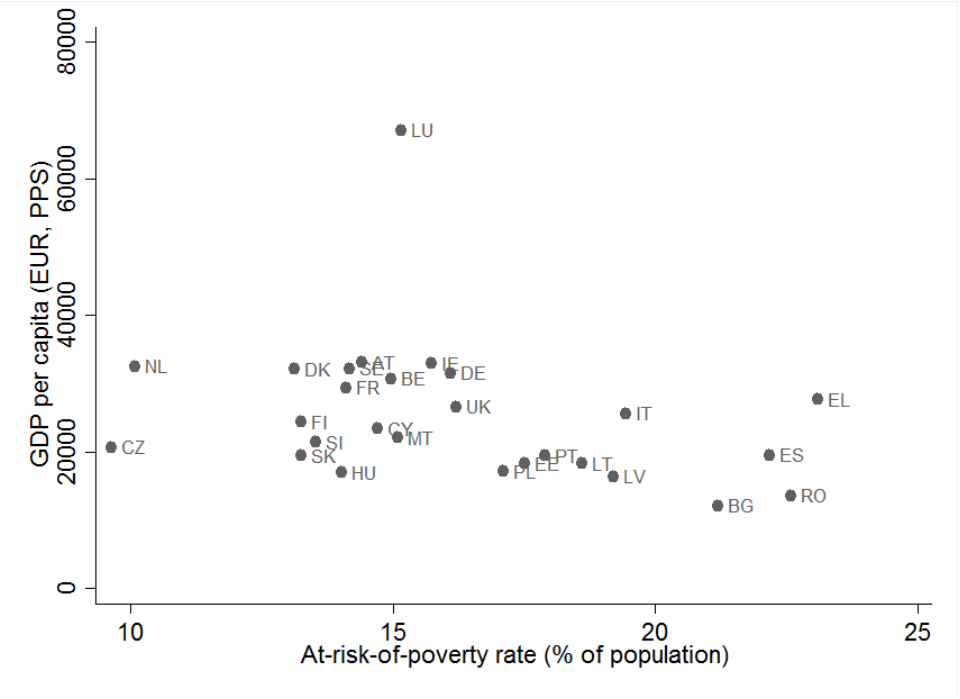
Figure 1. Severe material deprivation rate (%) and GDP per capita (EUR, PPS) in the EU Member States, 2012



Source: *authors' figure based on EU-SILC 2012 and Eurostat 2012.*

Notes: *PPS – purchasing power standard. For the definition of severe material deprivation, see footnote 2 of this paper and Box 1 below.*

Figure 2. At-risk-of-poverty rate (%) and GDP per capita (EUR, PPS) in the EU Member States, 2012



Source: *authors' figure based on EU-SILC 2012 and Eurostat 2012.*

Notes: *PPS – purchasing power standard. For the definition of relative income poverty, see footnote 1 of this paper.*

When social inclusion was identified as one of the main pillars of the Europe 2020 strategy,[3] the European Union adopted a multidimensional concept of poverty, in order to set a target for the reduction in the number of people living in poverty or social exclusion. It considers an individual to be living in poverty or social exclusion if he or she lives in a household affected by any of the following three risks: income poverty, severe material deprivation or low work intensity (European Commission 2010). The composite social inclusion indicator was agreed following a political decision that was motivated by the different views and interests of the Member States, rather than being a tool designed to measure a clear European social policy programme (Maître et al. 2013). Although no theoretical work concerning the relationship between income poverty, material deprivation and low work intensity preceded the adoption of the target, it was clearly connected to intensive conceptual and methodological work concerning multidimensional poverty in general, and the segment of material deprivation in particular (e.g. Förster et al. 2004; Guio 2009; Nolan and Whelan 2011a,b). This line of analytical research aimed to transcend the solely income-based concept of poverty, and tried to develop valid and reliable measures for the multidimensional concept of poverty. On the other hand, the decision to use a composite poverty and social exclusion indicator in itself generated much interest in analysing and refining the separate component indicators (e.g. Decancq et al. 2013; Guio and Marlier 2013; Nolan and Whelan 2011b; Israel and Spannagel 2013; Ayllón and Gábos 2015).

Among others, recent works by Nolan and Whelan (2011a,b), Copeland and Daly (2012), and Maître et al. (2013) discuss extensively the theoretical and policy implications of defining a single European-level target for combating poverty and social exclusion that is based on a multidimensional approach. Transcending the unidimensional income concept is largely acknowledged by researchers (Nolan and Whelan 2011b; Hick 2012a; Decancq et al. 2013) and other stakeholders alike to be an improvement in monitoring poverty and social exclusion in an enlarged Europe.[4] However, the method used to define it comes in for criticism in many respects. At a conceptual level, Ravallion (2011) challenges the effectiveness of using a single measure of multidimensional poverty. The choice of indicators to complement income poverty and the way in which the composite indicator is defined have both been debated (Nolan and Whelan 2011b). In addition, using the 'union' approach instead of an 'overlap' approach is also criticized (Nolan and Whelan 2011a,b).[5]

Contrasts between the union and the overlap approach appeared in the literature even before the adoption of the EU2020 composite indicator. Back in 1996, Nolan and Whelan promoted consistent poverty as a measure that could remain at the heart of EU policy making in the field of social inclusion. The ambition of measuring consistent poverty – and therefore capturing the most deprived in an EU-wide frame, as well as dealing with the double (national and EU-level) benchmark – resulted in several proposals to combine relative income poverty with material deprivation based on an overlap instead of a union approach (Förster et al. 2004; Nolan and Whelan 2011a,b; Whelan et al. 2008; Whelan and

[3] European Commission (2010).

[4] See, for example, 'Eurochild Position on a Renewed Social Open Method of Coordination', available at: http://old.eurochild.eu/fileadmin/ThematicPriorities/others/Eurochild_Policy_Position_on_a_Renewed_Social_OMC.pdf (downloaded on 15 July 2015).

[5] When a composite of individual indicators is applied, the union approach defines the population at risk as being affected by any of the individual risks (this is the case for the EU2020 social inclusion indicator). By contrast, the overlap approach defines the population at risk as those affected by all the individual risks together.

Maître 2010). Nolan and Whelan (2011b), for example, discuss the alternative approaches combining low income and material deprivation to identify those most in need from a poverty reduction perspective (Nolan and Whelan 2011b).

This paper follows the proposal of Nolan and Whelan (2011a,b) to measure consistent poverty in the European Union. Accordingly, relative income poverty and material deprivation are the constituents of consistent poverty in this paper, too. The former is a unidimensional concept and its measures are based on highly standardized methodology, clear interpretation and strong policy relevance (e.g. Atkinson et al. 2002; Marlier et al. 2007). These strengths make it suitable for application in a conventional way in the European Union, as the main indicator of poverty. Other unidimensional concepts of poverty, such as that based on consumption, also date back a long time in terms of both concept and measurement. This is less the case, though, with multidimensional concepts of poverty, like material deprivation, or those based on the concept of capabilities (Sen 1989; Hick 2012a; Alkire and Foster 2007). These concepts, though they can provide a solid conceptual framework for understanding and measuring poverty, become inherently unstable when it comes to operationalization: it is hard to reach wide agreement on the selection of domains, sub-domains and indicators, and it may also be culturally sensitive to a large extent (Papadopoulos and Tsakloglou 2015). Even in the case of the material deprivation indicator used within the European Union's Social OMC (Open Method of Coordination), the original indicator (Guio 2009) is currently undergoing revision (Guio et al. 2012): the plan is to partly replace the set of individual items.[6]

The concept of consistent poverty, as conceived by Nolan and Whelan (2011a), is captured by two of the three indicators of poverty and social exclusion (EU2020 poverty target indicator): the risk of living in relative income poverty and the risk of severe material deprivation. Specifically, we are interested in:

- *(i)* how the population identified by the material deprivation concept as being at risk resembles the at-risk population captured by other concepts,
- *(ii)* how the incidence of consistent poverty and the relationship between different poverty measures vary across EU Member States,
- *(iii)* what socio-economic factors predict living in consistent poverty, rather than living either in income poverty or in material deprivation only.

In our paper, we focus on the relationship between the relative income and the material deprivation concepts of poverty, by identifying the main individual and household-level factors that affect the simultaneous occurrence of both (consistent poverty), compared to exclusive forms of poverty (being either at risk of income poverty or at risk of material deprivation). While previous research has concentrated more on the factors that differentiate between those living in consistent poverty and all others, our analysis looks also at factors that increase the risk of consistent poverty compared to the risk of income poverty only or material deprivation only. In terms of policy and monitoring, the paper aims at providing an input for the selection of lead poverty and social exclusion indicators in Europe, reflecting also on proposals by Noland and Whelan (2011a) and Notten (2015). The paper relies on timely data (of EU-SILC 2012 wave), providing cross-country comparative analysis for the EU-27

[6] Besides the material deprivation indicator, the work intensity indicator is also the object of refinement (see Ward and Özdemir 2013), while its inclusion in the EU2020 poverty and social exclusion measure is criticized (Noland and Whelan 2011a).

member states, either at country (in descriptive statistics) or country group-level (in descriptive statistics and multivariate analysis).

In what follows, first we briefly overview the most important conceptual and methodological issues in poverty, most specifically those related to material deprivation and consistent poverty (Section 2). Section 3 presents the data and methodology we use for analysis, while Section 4 provides the empirical results: main descriptive statistics and the results of the multivariate analysis on the EU and national-level factors associated with consistent poverty. Section 5 concludes.

2 Concepts, measures and research questions

2.1 The concept of material deprivation

Poverty measures, according to Boarini and d'Ercole (2006), can be classified along several dimensions: they might be monetary or non-monetary, input or outcome-based, absolute or relative indicators. Besides, a distinction can be drawn between objective and subjective measures of poverty. Indicators of relative income poverty – both monetary and input-based (indirect) measures – are the most frequently used indicators of poverty.

Table 1. Poverty measures according to different concepts

	Input-based (indirect) measures	**Outcome-based (direct) measures**
Monetary	Income measures, budget standard approach	Basic needs measures
Non-monetary	Access to employment, public services	Material deprivation, capability indicators

***Source**: Boarini and d'Ercole (2006: 11).*

The European Union's definition of persons beset by poverty dates back to the adoption of the European Community's first anti-poverty plan. Later, the definition was slightly expanded by specifying material, social and cultural resources, but otherwise it was kept unchanged when the Second Poverty Plan was adopted (European Commission 1985).

> *'… individuals or families whose resources are so small as to exclude them from the minimum acceptable way of life of the member state in which they live'. (Council Decision 1975)*

As discussed above, the EU2020 strategy of the European Union includes a multidimensional poverty reduction target. The population at risk is defined as being at risk of relative income poverty, being materially deprived, or living in a low work intensity household. In what follows, we provide a short overview of what concept(s) of poverty lies behind this definition and what the consequences are for measurement. We also reflect on the EU enlargement towards Central and Eastern Europe.

According to Fusco et al. (2010), the EU poverty definition is relative and includes both outcome elements ('exclusion from the minimum acceptable way of life') and input elements ('due to a lack of

resources'). Linking this definition to the EU2020 poverty and social exclusion target measure, the income poverty concept clearly serves as the input element of the definition, while that of material deprivation is its outcome element.[7] Measuring the risk of income poverty, the at-risk-of-poverty rate is defined as the headcount of individuals whose income falls below the at-risk-of-poverty threshold, established as 60% of median equivalized income of the total population, calculated at a national level. The conceptual and methodological strengths and weaknesses of the indicator are largely debated in the literature (e.g. Decancq et al. 2013), and so we highlight here only one aspect: how the indicator performs in terms of capturing cross-country disparities in an enlarged EU. For example, Hick (2012a,b, 2014) argues that although at-risk-of-poverty rates can be used widely at the national level, they cannot be easily interpreted at the European level: the concept of income poverty does not take account of variation by country and time, and therefore leads to counterintuitive results (for example, poverty estimates are larger in Luxembourg and the UK than in many Central and Eastern European Member States). It ignores the increasing cost of living if a country develops, and is only affected by distribution of resources and not by level of wealth (Hick 2014). Although it was initially planned as a relative poverty concept, so that it could evolve with the change of social norms in time and space, lack of data led to an oversimplified relative poverty proxy – namely the at-risk-of-poverty rate (Hick 2012a). Guio (2009) also argues that the at-risk-of-poverty rate is a monetary and input-based measure that depends on disposable income, but the link between monetary income and the standard of living (which a poverty indicator should capture) is not sufficiently direct. Acknowledging the great relevance of these arguments, we need to highlight here that the main strength of the relative income measure, beyond its high level of standardization in measurement and its easy interpretation, comes from the fact that direct policies to combat poverty are still designed and pursued at the national level, and aim to reduce income inequalities at the bottom end of the national distribution.

Since input-based measures came in for criticism on several scores, material deprivation arose as a possible alternative to the income-based measures in the European context. As was mentioned above, the severe material deprivation rate was introduced as part of the EU2020 poverty and social exclusion target in order to capture the outcome element of the EU poverty definition. Townsend (1979) defined deprivation as the 'inability to live a decent life' and proposed setting a poverty line that is external to income distribution. Since then, several definitions have been formulated: for example, 'exclusion from the minimum acceptable way of life in one's own society because of inadequate resources' or 'lack of socially perceived necessities' (Boarini and d'Ercole 2006). Admitting that deprivation reflects the lack of resources necessary for an accepted standard of living in a particular community, Sen (1989) also highlights the need to emphasize the adequacy of income, instead of lack of income. Others conceive it as a representation of the satisfaction of needs (Fusco et al. 2010; Nolan and Whelan 2011a). Indicators of material deprivation paint a picture of what a household can or cannot afford. That way, besides measuring the lack of income resources, the material deprivation indicator can also capture the adequacy of income resources and the satisfaction of needs. The possibilities of saving and borrowing, public goods, and family and social ties all render disposable income a bad estimator of standard of living. The needs of households can differ greatly in time, space and social class (Fusco et

[7] It is much less clear what low work intensity represents in the poverty and social exclusion target. According to Nolan and Whelan (2011a), the arguments for this are not particularly strong. Those authors argue that by adopting the union approach, those who live in low work intensity households but who are neither income poor nor materially deprived are mainly individuals'… from the professional and managerial classes and a relatively low proportion from the working class, and that being in this group is not associated with high levels of financial stress' (Nolan and Whelan 2011a: 234).

al. 2010). Moreover, current income is highly affected by the transitory occurrence of economic cycles, which can potentially affect many individuals (Boarini and d'Ercole 2006). At the same time, material deprivation as an outcome measure approximates the standard of living better, because it concentrates on the actual well-being of people (Guio 2009).

The differences in the underlying concepts are also visible when it comes to measurement: according to research results (e.g. Nolan and Whelan 2011b), these two indicators of poverty identify different people as living in poverty, although the extent of the overlap varies across countries (Maître et al. 2013), while longitudinal analysis points to the strong presence of current effects and to the role of unobservable variables in shaping the relationship between income poverty and material deprivation (Ayllón and Gábos 2015). Consistent poverty measures have been proposed to overcome this problem (Nolan and Whelan 1996, 2011a,b; Whelan et al. 2007; Hick 2012b). In their recent work, Nolan and Whelan (2011b) claim that material deprivation reflects the economic stress of households.

Different concepts of poverty represented by the relative income poverty and the material deprivation approaches are reflected in the empirical findings of the related literature. These show a considerable mismatch between the two approaches. Nolan and Whelan (2011a) provide an extensive discussion of the issue, but more recent works (e.g. Guio et al. 2012; Israel and Spannagel 2013; and to some extent Ayllón and Gábos 2015) also underpin earlier findings. Another line of research that investigates the relationship between the two concepts finds that material deprivation is much more strongly correlated with persistent poverty (Whelan et al. 2004; Nolan and Whelan 2011a) – it reflects the standard of living of a household better than risk of poverty observed on the basis of yearly income data.

Notten (2015) highlights possible policy consequences of the difference between these two concepts of poverty. As poverty reduction programmes are usually evaluated using only one of the measures, the lack of overlap between the population defined at-risk-of-poverty and the population defined as materially deprived can lead to very different conclusions about the success of a certain program depending on which indicator is used for the evaluation.

2.2 Measuring material deprivation

In the context of the European Union, the measure of material deprivation has been defined as a composite indicator based on nine individual items that assess the financial stress a household faces and the durables it cannot afford (see the first column of the box below). This composite measure retrospectively became part of the social inclusion portfolio within the Social OMC.

After checking the adequacy and statistical validity of the original indicator on the specific module of the EU-SILC in 2009, Guio et al. (2012) proposed an alternative measure to be included in the revised EU-SILC survey and to be used as the EU measure of material deprivation from 2015 onwards. Like the original one, this alternative measure is defined as a composite indicator, but this time based on 13 individual items: eight measured at the household level and five at the individual level (as indicated by the second column of Box 1 below).

Leaving aside the conceptual issue, the problem of measurement is clearly present when defining material deprivation indicators. As already highlighted in the introductory section to this paper, it would be hard to reach a wide and lasting consensus on the set of domains and sub-domains of

deprivation that such a measure should cover, never mind the particular list of individual items to be included in the composition of the material deprivation indicator. This selection procedure might be based both on preferences expressed by members of society as to what they think constitutes an acceptable standard of living and on external expertise provided by researchers. A combined way of selecting the indicator to define the EU material deprivation measure was followed by Guio (2009) and Guio et al. (2012): the 2007 Eurobarometer survey on perceptions and necessities was used to assess the relevance of the individual items selected. In their work, Guio et al. (2012) made it clear (following Marlier et al. 2007: 177) that their essential interest was 'not so much in the individual items per se as in the underlying situation of more generalized deprivation that they can help to capture'.

Box 1. Indicators of material deprivation in the European Union

The material deprivation indicator	The alternative measure of material deprivation indicator
A household is materially deprived if it	A household is materially deprived if it
1. lacks the capacity to face unexpected expenses,	1. lacks the capacity to face unexpected expenses,
2. lacks the capacity to have a one-week holiday away from home,	2. lacks the capacity to have a one-week holiday away from home,
3. lacks the capacity to afford a meal with meat, chicken or fish every second day,	3. lacks the capacity to afford a meal with meat, chicken or fish every second day,
4. lacks the ability to keep the house adequately warm,	4. lacks the ability to keep the house adequately warm,
5. has arrears on mortgage, rent, utility bills, hire purchase instalments or loans,	5. has arrears on mortgage, rent, utility bills, hire purchase instalments or loans,
6. does not have a washing machine because it cannot afford it,	6. does not have a car, because it cannot afford it,
7. does not have a colour TV because it cannot afford it,	7. does not have a computer and internet because it cannot afford it,
8. does not have a telephone, because it cannot afford it,	8. does not have the capacity to replace worn-out furniture.
9. does not have a car, because it cannot afford it.	And if at least half the adults (persons aged 16 or over) …
	9. do not have the capacity to replace worn-out clothes with some new (not second-hand) ones,
Individuals living in a household that lacks at least three items are considered *deprived*, while those in a household that lacks at least four are *severely deprived*. For conceptual and methodological details, see Guio (2009).	10. do not have two pairs of properly fitting shoes (including a pair of all-weather shoes) because they cannot afford it,
	11. cannot afford to spend a small amount of money each week on themselves,
	12. cannot regularly participate in a leisure activity, such as sport, cinema or a concert because they cannot afford it,
	13. cannot get together with friends/family (relatives) for a drink/meal at least once a month because they cannot afford it.
	Individuals living in a household that lacks at least five items are considered *deprived*, while those in a household that lacks at least seven are

	severely deprived. For conceptual and methodological details, see Fusco et al. (2010).

Another measurement problem is related to the 'enforced-lack' approach, which presumes that one can distinguish between the lack of a material good due to a shortage of financial resources and its lack for other reasons (preferences, health conditions, etc.). This assumption is challenged, however, by the presupposed subjective nature of the indicator and the concept of adaptive preferences. While material deprivation is aimed at measuring poverty in an objective way, necessity may be interpreted differently by different households. According to empirical results, some households tend to underreport items as necessities: they seem to adapt to their material situation by changing their preferences about their needs (McKnight 2013). For example, when the material situation of a family worsens, its members consider a holiday to be inessential, even if they used to consider it a need. The adaptive preferences of poor families may lead to a bias in estimations: if we only consider those households to be materially deprived that lack items in an enforced way, we may underestimate poverty. McKnight (2013) suggests using an alternative indicator of material deprivation, which identifies households as being materially deprived according to one specific item, regardless of whether they report it as necessary (enforced lack) or unnecessary for their household.

Similarly, Crettaz and Sutter (2013) found that aside from subjective indicators of poverty, the material deprivation indicator can also be affected by adaptive preferences: low-income/poor families adapt their aspirations and preferences to the situation, and therefore a longer time spent in poverty downgrades aspiration. According to the authors, having the enforced-lack concept at the core of the EU's material deprivation indicator may lead to serious underestimations. Two theoretical approaches can be mentioned that describe the mechanisms: relative deprivation theory and adaptation theory. Examining Swiss panel data, Crettaz (2012) concludes that the problem caused by adaptive preference appears to be relatively limited in the case of indicators of material deprivation: the impact of a spell of poverty on the odds of saying 'I cannot afford it' is relatively limited over a five-year period. More importantly, those who have been in poverty for up to five years are both more likely to lack items and less likely to blame it on lack of income; however, the impact on the number of items lacking is much larger. In addition, the number of respondents who experience long spells of poverty is limited thanks to a non-negligible mobility at the bottom of the income distribution (Jäntti and Danziger 2000; Oxley et al. 2000), even though income mobility is usually limited. However, Crettaz (2012) suggests that this type of indicator should be used with caution when analysing the living conditions of population groups that have had a low income over an extended period. Similarly, in comparative analysis, cautious interpretations are called for if the incidence of long-term poverty is much higher in some countries than in others – for instance, when comparing Anglo-Saxon with Scandinavian countries (Oxley et al. 2000).

2.3 Consistent poverty – theoretical and empirical aspects

The rationale behind the EU's multidimensional poverty definition is not only conceptual, but is also largely based on the importance of capturing cross-country differences in living standards. At the same time, politics have also played a role, since Member States arrived at the compromise that constitutes this broad definition of poverty. Nolan and Whelan (2011a,b) argue that the use of a combined approach with multiple aspects is a great step forward in terms of elaboration of an EU-wide measure. However, they criticize both the lack of adequate explanation for the adoption of this definition and the methodology adopted.

The EU definition of poverty and social exclusion uses an 'or' approach, meaning that households at risk of income poverty *or* severe material deprivation *or* low work intensity are included in the target group of the EU2020 poverty reduction strategy. Consequently, this target remains very broadly defined. The danger of such a broad definition is that it is much more complicated to interpret and is much less accurate in determining those at highest risk, who are most in need. With this in mind, Nolan and Whelan (2011a) suggest alternative measures of poverty and social exclusion based on the consistent poverty approach (as also proposed by Notten 2015), relying on the measures of relative income poverty and material deprivation. They introduce three alternative measures based on the 'and' approach, where the combination of being at risk according to several measures is used to define the target group.[8] This way, they argue for a measure which combines a unidimensional concept of poverty (that of relative income poverty) with a multidimensional one (that of material deprivation), since its use provides an opportunity to combine national and EU-level poverty thresholds. They also argue that income poverty and material deprivation complement each other in a beneficial way: while income poverty directly measures the input side of the financial situation of households, material deprivation correlates with the ability to make ends meet, capturing a subjective evaluation of poverty.

The three alternative measures are as follows (Nolan and Whelan 2011a: 129):

(i) *national consistent poverty* (NCP) – constructed by choosing a deprivation threshold at the national level that identifies a fraction of the population that corresponds as closely as possible to that identified by the threshold of 60% of median equivalized household income;

(ii) *EU consistent poverty* (EUCP) – those identified as being both at risk of poverty, according to the EU threshold, and above the deprivation threshold that identifies a fraction of the population as close as possible to that found below the corresponding income threshold;

(iii) *mixed level consistent poverty* (MCP) – combines income information at the national level with information relating to consumption deprivation at the EU level.

They argue for the use of MCP, instead of the measure adopted by the European Union (Nolan and Whelan 2011b). Their suggestion arose following their earlier line of research into the concept of 'consistent poverty' (e.g. Callan, Nolan and Whelan 1993; Nolan and Whelan 1996; Whelan et al. 2007). In their most recent analysis, using EU-SILC data from 2008, Nolan and Whelan (2011a) examine the consistency of poverty status, according to the MCP approach. They find that there is lower consistency of income poverty and material deprivation status in more affluent countries, while there usually seems to be a higher consistency in the New Member States. In terms of differences in consistent poverty across occupational status, it is working-class people who are most likely to live in consistent poverty. This is true in most countries, but in Southern Member States a high likelihood of consistent

[8] As far as the consistent poverty approach is concerned, some scholars argue for an even broader concept of multidimensional poverty, based on Amartya Sen's capability approach (Hick 2012a). Hick argues that material deprivation requires a lot of assumptions in itself, which may not be the case for the capability approach, where broader dimensions could be agreed on. At the same time, he argues that the weight given to material deprivation and income poverty should not be the same. As material deprivation captures broader aspects of poverty, especially in the capability framework suggested by him, greater relative importance should be assigned to material deprivation when we define consistent poverty (Hick 2012a).

poverty is also associated with self-employed status (Nolan and Whelan 2011a,b). Furthermore, the authors analyse the relationship between welfare regime types and consistent poverty. According to their results, someone living in a social-democratic country has a lower chance of being at risk of consistent poverty than someone in any of the other country groups (especially in post-socialist and liberal countries).

In this paper, we restrict our analysis to the MCP approach, as defined by Nolan and Whelan (2011a), applying it to the two relevant indicators of the EU2020 poverty and social exclusion target: the at-risk-of-poverty rate and the severe material deprivation rate. We are specifically interested in comparing the sub-population identified by the 'and' approach (those in consistent poverty) to sub-populations that are at risk of only one poverty status across the main socio-economic characteristics. Thus, the third indicator (on the low work intensity status of household members) is not part of our consistent poverty approach, but work intensity will appear as an important covariate in our multivariate statistical model.

3 Data and methods

In this paper, consistent poverty – or more specifically, the overlap between the indicators of (severe) material deprivation and income poverty – remains at the core of the analysis. First, we perform a correlation analysis to investigate this relationship, while also looking at the correlation of material deprivation to the European at-risk-of-poverty rate and to the indicator showing inability to make ends meet, respectively. The correlation analysis is first carried out at the EU level (including all EU-27 Member States, as of 2012), while five distinct country clusters are formed in the next step and analysis is conducted at the country-group level, in order to get a more detailed insight into how poverty indicators are correlated with each other. We use the following groups of countries, considering the usual welfare regime type classification in the literature (Esping-Andersen 1993; Ferrera 1996) and assuming that material deprivation is better correlated with household income than with relative income poverty:

- *Continental countries:* Austria, Belgium, France, Germany, Luxembourg and the Netherlands;
- *Nordic countries:* Denmark, Finland and Sweden;
- *English-speaking countries*: Ireland and the United Kingdom;
- *Southern countries:* Cyprus, Greece, Italy, Malta, Portugal and Spain;
- *New Member States*: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

Second, we analyse the poverty identification patterns of the population by country and country group, according to the four possible combinations of income poverty and severe material deprivation status: not at all at risk; at risk of income poverty only; severely materially deprived only; and living in consistent poverty. As income poverty and material deprivation are assumed to capture different aspects of poverty, they are expected to identify fairly different population groups at risk of poverty.

Third, multivariate regression analysis is performed to identify the main individual and household-level factors predicting consistent poverty status (defined as the overlap between income poverty and

severe material deprivation). We use logit regressions with robust standard error estimation (observations clustered by countries and households).

The cross-sectional EU-SILC database serves as the data source for our analysis. We perform all types of analysis for 2008 and 2011 as income reference years (2009 and 2012, respectively, according to the Eurostat protocol). According to our expectations, the estimated differences between these two years capture the short-term versus the long-term effect of the crisis on different countries and their poverty patterns. We investigate the relationship between poverty indicators separately in both years, but our interpretation of the results considers dynamic aspects in different country groups as well. We select these two years to be able to see the immediate impact of the crisis as in year 2008, but at the same time we look at the long-term effects on poverty by investigating the dynamics between 2008 and 2011.

The main poverty indicators in the focus of our analysis are the at-risk-of-poverty (AROP) rate after social transfers, the severe material deprivation (SMD) rate, and the measure of inability to make ends meet (IMEM). For details of the concepts, see Box 2.

Box 2. Main indicators in the analysis

At-risk-of-poverty rate (AROP): the at-risk-of-poverty rate of the active-age population. Headcount of individuals whose income falls below the at-risk-of-poverty threshold established as 60% of median equivalized income of the total population calculated at the national level.

EU-wide at-risk-of-poverty rate (EU-AROP): the at-risk-of-poverty rate of the active-age population in Europe. Headcount of individuals whose income falls below the European at-risk-of-poverty threshold, determined as 60% of median equivalized income of the population at the European level.

Material deprivation (MD) rate, severe material deprivation (SMD) rate: if the household is deprived of at least three items, it is materially deprived, referred to as MD. If the household is deprived of at least four items, it is considered to be severely materially deprived, referred to as SMD. For a more detailed explanation, see Box 1 in Section 2.

Inability to make ends meet (IMEM) rate: this represents the proportion of individuals living in households for which the answer categories to the question '*Thinking of your household's total income, is your household able to make ends meet, namely, to pay for its usual necessary expenses?'* are: 'with great difficulty' or 'with difficulty'.

In our regressions, the dependent variable is consistent poverty (CP). We consider a household to be living in consistent poverty if that household is at risk according to both poverty measures: if its members are severely materially deprived and live below the at-risk-of-poverty threshold. We compare those in consistent poverty with three different reference groups in three different models. Model 1 compares those living in consistent poverty (AROP=1, SMD=1) to those not at all at risk (AROP=0, SMD=0). Model 2 compares those in consistent poverty to those only deprived (AROP=0, SMD=1), while Model 3 compares them to those only at risk of income poverty (AROP=1, SMD=0).

(a) $CP_i = \beta_0 + \beta_1 * Z_i + \beta_2 *$country groups $+ u_i$

(b) $CP_i = \beta_0 + \beta_1 * Z_i + \beta_2 * IMEM_i + \beta_3 *$country groups $+ u_i$, where

- Z: vector of household-level controls for sex, age, education of the household head, work intensity and urbanization density of the households
- IMEM: inability to make ends meet
- Country groups: New Member States, English-speaking, Continental, and Southern countries; reference group: Nordic countries.

Household-level controls include sex, age, highest education achieved (primary, secondary, tertiary), urbanization (highly, middle- or thinly urbanized areas) and work intensity.[9] In *Model a,* we start with household-level controls and country groups. *Model b* is complemented with the inability to make ends meet indicator, to control for possible cross-country variation in the subjectivity of material deprivation. Results of the models are reported in Section 4.

4 Empirical results

4.1 The incidence of consistent poverty in Europe

Investigating the relationship between income poverty and severe material deprivation, we distinguish four categories of the population, as presented in Table 2.

Table 2. Poverty status identification

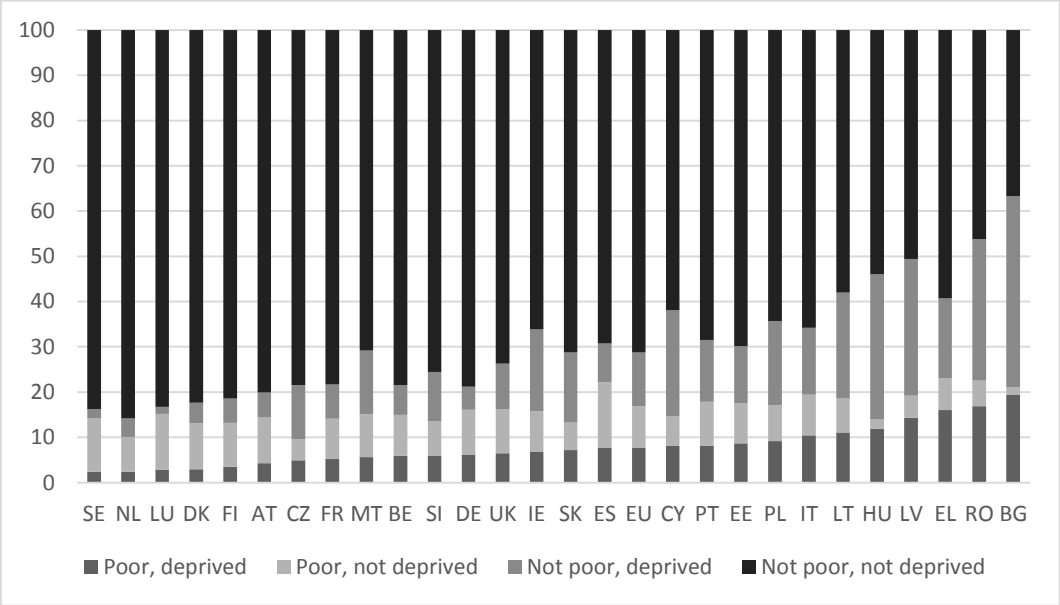
		Severe material deprivation	
		Deprived (1)	Not deprived (0)
Relative income poverty	At risk of poverty (1)	at risk of consistent poverty (1,1)	at risk of income poverty only (1,0)
	Not at risk of poverty (0)	severely materially deprived only (0,1)	not at all at risk (0,0)

Figure 3 displays the distribution of the population across these poverty statuses in 2012, country by country. We can observe that consistent poverty is present in all Member States, while the share of those living in consistent poverty is highest in the New Member States and the Southern countries. The distribution of consistent poverty across countries shows a relatively high correlation with the distribution of those not at all at risk: a higher rate of being at risk is associated with higher rates of consistent poverty. Countries with a low at-risk population and hence low consistent poverty are usually the Nordic and Continental Member States, while countries with the highest at-risk population and the highest consistent poverty rates are the New Member States and the Southern countries. We

[9] Household work intensity (WI) is the average of individual work intensities in a household. Individual work intensity is the ratio of the number of months worked by a working-age household member during the income reference period to the number of months he or she could theoretically have worked. The ratio as a continuous measure ranges from 0 to 1, but we transformed it into a five-category variable for our regression analysis: 1 if the value of WI is lower than 0.2; 2 for values between 0.2 and 0.45; 3 for values between 0.45 and 0.55; 4 for values between 0.55 and 0.85; and 5 for values over 0.85.

can clearly see that variation in the 'at risk of poverty only' rates is much lower across countries than it is in the 'severely materially deprived only' rates. However, while this relationship between different poverty statuses is dominated by income poverty status in the Southern countries, the same role is attached to material deprivation status in the New Member States.

Figure 3. Consistent poverty in the EU Member States, 2012 (%)



***Source**: authors' figure based on EU-SILC 2012.*

***Note**: figures are available in Table A1 of the Appendix.*

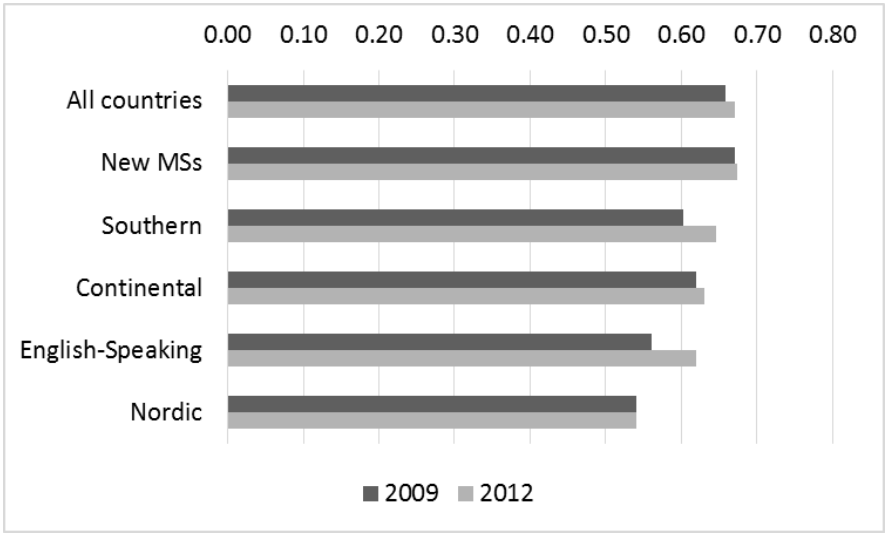
4.2 Consistency of poverty measures: correlation analysis

In this section, we analyse the correlation between the material deprivation rate and all the other measures of poverty considered so far in this paper. We compare the correlation between the indicators by country group, and also look at the dynamics of these relationships between 2009 and 2012. The indicators used in this section are: at-risk-of-poverty (AROP) status, European-level at-risk-of-poverty (EU-AROP) status, material deprivation (MD) status and severe material deprivation (SMD) status. Moreover, the household's inability to make ends meet (IMEM – defined as making ends meet 'with great difficulty' or 'with some difficulty') is also considered here.

First, we select the material deprivation measure to be used afterwards. We expect the two standard deprivation measures (material deprivation and severe material deprivation) to be highly correlated, because of the common methodology and the overlapping definition of these indicators. This is proven by the empirical results: correlation analysis shows that these two measures correlate strongly with each other. Estimated correlation coefficients vary between 0.5 and 0.7, depending on the country group, being somewhat higher for the New Member States (0.66 and 0.67 in 2009 and 2012, respectively) and lowest in the Nordic countries (0.54 in both years). The correlation between the two indicators increased somewhat between 2009 and 2012 in the Southern and the English-speaking countries. They also provide similar results when compared with other poverty indicators. Both

indicators are kept for the correlation analysis, but only the severe material deprivation rate is included in the multivariate regression analysis, given that SMD is part of the EU2020 social inclusion indicator.

Figure 4. Correlation between material deprivation and severe material deprivation measures, 2009 and 2012



Source: *authors' calculations based on EU-SILC 2009, 2012.*

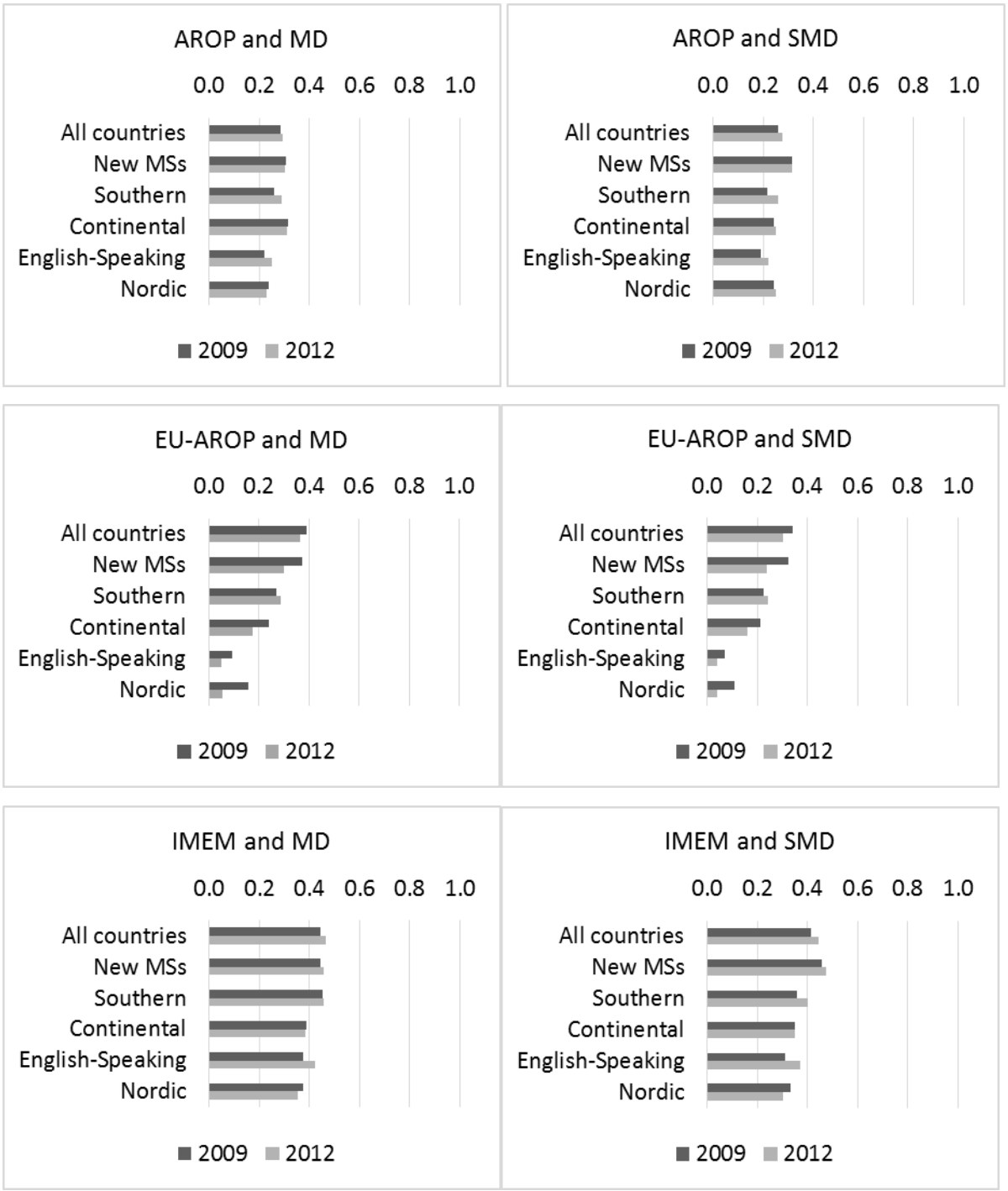
Note: *country groups refer to the following countries: All (EU-27), New (Bulgaria, Estonia, Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia), Southern (Cyprus, Greece, Italy, Malta, Portugal, Spain), Continental (Austria, Belgium, France, Germany, Luxembourg, Netherlands), English-speaking (Ireland, United Kingdom), Nordic (Denmark, Finland, Sweden).*

Figure 5 provides an overview of the relationship between material deprivation and other measures of poverty (AROP, EU-AROP and IMEM) by country group. Neither MD nor SMD correlates very strongly with AROP: the estimated coefficients vary between 0.2 and 0.35, with somewhat higher values for MD than for SMD. These results indicate that the standard measures representing the two different poverty concepts identify fairly different sub-populations across all country groups. The largest overlap is present in the New Member States. The correlation between AROP rates and MD/SMD did not change significantly in this period, either in the EU as a whole or in the country groups previously defined.

When analysing the relationship between EU-AROP rates and MD and SMD, respectively, we expect a significant variation across country groups. We know from the literature (as presented in Section 1 of the paper) that living in material deprivation correlates more with household income than with the risk of relative income poverty, and so we also expect a higher correlation than in the case of comparison with AROP rates, especially in poorer countries (namely the New Member States and, to a lesser extent, the Southern countries). The results are more or less in line with these expectations. Both MD and SMD correlate weakly with EU-AROP, but the estimated coefficients are higher than in the case of AROP. Moreover, the estimated value of the correlation coefficient varies significantly across country groups, being very low in the English-speaking and Nordic countries (0.1–0.15), and relatively high (0.3–0.4) in the New Member States and Southern countries. Differences between country groups are partly explained by the fact that EU-AROP rates are very low in the English-speaking

and Nordic countries. If we look at the dynamics of the correlation between indicators, we see that EU-wide at-risk-of-poverty status tends to correlate less with material deprivation status in 2012 than it did in 2009.

Figure 5. Correlations between different indicators, by country group, EU-27, 2009 and 2012



Source: *authors' calculations based on EU-SILC 2009, 2012.*

Note: *for details about country groups, see Figure 4.*

Besides the poverty indicators introduced in our analysis, material deprivation status correlates most strongly with the inability to make ends meet status. We examine this correlation, in order to assess the supposed subjective nature of material deprivation, as discussed in the introductory part of the paper. If we look at the results, we find that correlation across all countries is higher than 0.4 in 2012, and was slightly lower three years previously. One may also observe that the cross-country group variation in the estimates is larger for SMD than for MD. The correlation of SMD with IMEM varied between 0.3 (Nordic countries) and 0.5 (New Member States) in 2012. The same figures for the correlation between MD and IMEM are 0.35 (Nordic countries) and 0.45 (New Member States, Southern countries). Overall, while the value of the estimated correlation coefficients between MD and IMEM did not change over time, SMD and IMEM statuses became more coherent in European countries between 2009 and 2012.

In this part of the paper, we look at how someone who is at risk of material deprivation or severe material deprivation is also associated with being at risk of income poverty or with reporting difficulties in making ends meet. According to what we have been expecting, the correlation between MD and AROP is relatively low: the population identified as being at risk of poverty according to both measures is small compared to the population identified as being at risk of poverty according to only one of the indicators. In the following, we analyse how the population living in consistent poverty differs from the other groups of the overall population. We expect to find different patterns by country group; this is supported by our findings in this part of the paper, with correlations between poverty indicators differing highly by country group.

4.3 Multivariate analysis

In this section, we carry our analysis further and look at how those living in consistent poverty differ from others in terms of the main socio-economic characteristics of the households they live in. In accordance with the identification presented in Section 3, we run three types of logit regression models by comparing those living in consistent poverty with individuals (i) who are not at all at risk (Model 1), (ii) who are living in severe material deprivation only (Model 2) and (iii) who are living at risk of income poverty only (Model 3).

All regression models are estimated in two specifications. The first includes the main individual and household characteristics we are interested in: sex, age of the household head (and its squared term), household structure, highest level of education attained by the household head, work intensity of the household, and the degree of urbanization of the settlement the members of the household live in (*Model a*). In addition to these variables, the second specification includes the inability to make ends meet indicator (*Model b*). This later step is supported by the findings of the literature with respect to the subjective character of the material deprivation indicator (as discussed in the introductory part of the paper), as well as by the result of our correlation analysis. This subjective measure can therefore serve as a potential control of country-specific heterogeneity in perceptions (cultural differences).

In both specifications, country groups are included first as fixed effects; then, as a second step, separate regressions are run for each country group, with the Nordic countries acting as the reference category in all cases. We report our results by first taking the models separately and then comparing the results for different country groups. Our main analysis is based on results from 2012, while 2009

results are used as a benchmark for a comparison in time. Accordingly, all the tables in the main text include results from 2012, while tables with 2009 results are presented in the Appendix.

In Model 1a, coefficients of household-level controls usually have the expected sign, indicating that the risk of living in consistent poverty (i.e. being both at risk of income poverty and severely materially deprived) compared to not being at risk at all is associated with low-status household characteristics in general, although important cross-country differences may occur (which are out of the scope of this paper). There is no significant difference between male- and female-headed households, all other variables being held constant. Age seems to have a non-linear (U-shape) negative effect on being in consistent poverty. Apart from single-adult households, all household types are significantly more likely than two-adult families to live in consistent poverty. Having a household head with lower than tertiary education also significantly increases the risk of a household being in consistent poverty relative to households not being at all at risk. Similarly, living in a less urbanized area or living in a family where there are fewer than two full-time working adults makes the household more likely to be at risk of consistent poverty, all other controls being held constant.

Introducing the variable 'inability to make ends meet' to the model (Model 1b) does not strongly change the estimated odds, nor the significance. At the same time, it explains a lot of the variance in consistent poverty: inability to make ends meet is associated with an increase in the probability of being at risk of consistent poverty, all other variables being held constant.

As all our household-level variables have the expected sign in Model 1, it is even more interesting to look at the effects of the country-group dummies. In both models, living in either a New Member State, a Southern, a Continental or an English-speaking country (rather than living in a Nordic country) significantly increases the probability of living in consistent poverty. This relationship holds in the strongest way for living in a New Member State and (though to a somewhat lesser degree) in a Southern country. More interestingly, the estimated coefficients of the country-group dummies diminish when IMEM is introduced, but this decrease appears to be sizable only in New Member States and Southern countries, where these effects were the highest of all country groups. This indicates that the country-group effects in Model 1a include a subjective component in these country groups, but not in the others. Whether this component can be interpreted as representing cultural differences in perceiving and reporting financial difficulties across societies should be the subject of further investigation.

The results in the tables below clearly show that household and country-group characteristics lead to a greater difference between those living in consistent poverty and those not at risk at all than they do between those affected by consistent poverty and those who are only at one risk. This is not a surprise. What is more interesting is whether those living in consistent poverty are more similar to those at risk of income poverty only, or to those living in severe material deprivation only, and whether there are clear cross-country patterns in this respect or not.

In Model 2, we compare those at risk of consistent poverty to those who are severely materially deprived only. In general, the household-level characteristics correlated with the odds of living in consistent poverty, rather than being SMD only, are similar to those observed in Model 1. Sex of the household head is significant in this specification: having a female household head significantly reduces the risk of living in consistent poverty, compared to the risk of being SMD only. Moreover, households whose head has secondary education as the highest level attained are not significantly less likely to be at risk of consistent poverty than only at risk of SMD, compared to those with tertiary education. All

coefficients have the same sign as in Model 1, while the magnitude of the estimated coefficients is consistently smaller across all variables and all categories, with only a few exceptions. Besides sex and education, we should mention here households for which work intensity is not estimated – in practice, households made up of the elderly (60+). The chances of being at risk of consistent poverty vs. severely materially deprived among those from this group are similar to (or slightly higher than) the estimated chances of not being at risk of poverty at all. The same relationship holds in the case of those living in thinly populated (generally rural) areas.

However, the estimated effects of country-group dummies differ slightly from what was observed in Model 1. Compared to the Nordic countries, living in a New Member State does not significantly increase the probability of being at risk of consistent poverty vs. being severely materially deprived only. This may be explained by the fact that in the New Member States, the proportion of the latter group is considerably higher than that of the former. The estimated coefficients for the Southern and the Continental countries have a similar sign to previous models, but the magnitude of the coefficients is much smaller. People living in the English-speaking countries are actually less likely to be identified as living in consistent poverty (rather than SMD only) than are people in the Nordic countries. This change in the sign of the relationship compared to Model 1 might be due to the fact that in English-speaking countries there is a larger difference between the rates of those living in consistent poverty and of those who are SMD only.

In Model 3, we compare those at risk of consistent poverty to those only at risk of income poverty. We find that the age of the household head is no longer significant in explaining the differences, and nor is living in a middle-urbanized area (Model 3b) or in a rural area. All other variables have the expected signs, similar to those in previous models. The magnitude of the estimated coefficients is the smallest of the three models, indicating that those living in consistent poverty are more similar (in terms of their socio-economic characteristics) to those living in income poverty only than to those who are severely materially deprived only. When 'inability to make ends meet' is introduced, one can observe that this is indeed significant, and is associated with a higher probability of being at risk of consistent poverty. The odds of living in consistent poverty vs. in income poverty only are higher for those living in any of the identified country groups than in the Nordic countries, *ceteris paribus*. These odds are highest, as expected, in the Central and Eastern European countries: more than twice as high as in the other three country groups (Southern, Continental, English-speaking).

Importantly, introduction of the IMEM variable results in a considerable decrease in the estimated coefficients in the Southern and English-speaking countries, as well as in the New Member States, but not in the Continental countries. This indicates that the estimated coefficients of the country-group dummies include an effect that is strongly correlated with how households subjectively assess their own objective financial circumstances, but that effect is not present in the Continental countries.

According to our estimates for the EU as a whole (presented above), the correlation of the main socio-economic characteristics with the risk of living in consistent poverty (compared to being at risk of income poverty only or of living in severe material deprivation only, as well as to not being at risk of poverty at all) provides clear patterns, which are more or less similar across these models. It is less obvious, though, how these relationships vary by country group. This is what we try to shed light on in the following. Country group-specific results based on Models 1, 2 and 3 are presented in Tables A2, A3 and A4 of the Appendix, respectively. The main results of our analysis are summarized in Tables 4–6.

Table 3. Results from logit regressions comparing consistent poverty to those not at risk (1a, 1b), to those only at risk of SMD (2a, 2b) and to those only at risk of poverty (3a, 3b)

Model	1a	1b	2a	2b	3a	3b
	Living in consistent poverty vs. not at risk of poverty at all		Living in consistent poverty vs. SMD only		Living in consistent poverty vs. at risk of rel. income pov. only	
Sex	0.0695*	0.0225	-0.150***	-0.160***	-0.0173	-0.00629
	(0.0378)	(0.0423)	(0.0482)	(0.0484)	(0.0405)	(0.0445)
Age	-0.0445***	-0.0387***	-0.00906	-0.00950	-0.00295	-0.00439
	(0.00578)	(0.00612)	(0.00626)	(0.00626)	(0.00560)	(0.00597)
Age squared	0.000324***	0.000298***	9.12e-05	9.87e-05	-4.48e-05	-2.72e-05
	(5.87e-05)	(6.19e-05)	(6.31e-05)	(6.32e-05)	(5.77e-05)	(6.15e-05)
Household structure (ref. two adults)						
One-person hh	1.925***	1.706***	1.101***	1.076***	0.583***	0.498***
	(0.0442)	(0.0464)	(0.0507)	(0.0508)	(0.0421)	(0.0453)
Other hhs without children	-0.615***	-0.691***	-0.530***	-0.530***	-0.0583	-0.0382
	(0.0537)	(0.0582)	(0.0644)	(0.0646)	(0.0617)	(0.0665)
Single-parent hhs	1.825***	1.597***	1.010***	0.976***	0.497***	0.344***
	(0.0676)	(0.0728)	(0.0801)	(0.0804)	(0.0656)	(0.0717)
2 adults, 1 child	0.398***	0.266***	0.306***	0.290***	-0.116**	-0.182***
	(0.0542)	(0.0590)	(0.0650)	(0.0655)	(0.0585)	(0.0632)
2 adults, 2 ch	0.664***	0.470***	0.666***	0.650***	-0.124**	-0.186***
	(0.0542)	(0.0594)	(0.0671)	(0.0679)	(0.0580)	(0.0626)
2 adults, 3+ ch	1.374***	1.064***	1.091***	1.052***	0.224***	0.0547
	(0.0626)	(0.0723)	(0.0834)	(0.0843)	(0.0639)	(0.0699)
Other hhs with ch	0.458***	0.224***	0.194***	0.174***	0.123**	0.0312
	(0.0534)	(0.0603)	(0.0632)	(0.0636)	(0.0590)	(0.0649)
Education (ref. tertiary education)						
Primary education	1.799***	1.429***	0.564***	0.531***	0.666***	0.537***
	(0.0489)	(0.0511)	(0.0609)	(0.0608)	(0.0530)	(0.0549)
Secondary education	0.747***	0.567***	0.0760	0.0664	0.153***	0.142**
	(0.0467)	(0.0487)	(0.0604)	(0.0603)	(0.0539)	(0.0556)
Work intensity (ref: WI>0.85)						
WI<0.2	3.485***	3.133***	2.246***	2.164***	1.126***	0.767***
	(0.0379)	(0.0422)	(0.0508)	(0.0513)	(0.0456)	(0.0493)
WI=0.2–0.45	2.863***	2.571***	1.659***	1.593***	0.815***	0.538***
	(0.0515)	(0.0592)	(0.0668)	(0.0674)	(0.0611)	(0.0663)
WI=0.45–0.55	1.525***	1.411***	0.963***	0.920***	0.321***	0.219***
	(0.0465)	(0.0523)	(0.0618)	(0.0624)	(0.0598)	(0.0642)
WI=0.55–0.85	0.625***	0.587***	0.219***	0.190***	0.146**	0.0831
	(0.0578)	(0.0617)	(0.0698)	(0.0703)	(0.0699)	(0.0738)
Elderly households	0.116***	0.195***	0.182***	0.190***	-0.00262	-0.00901
	(0.0270)	(0.0306)	(0.0375)	(0.0375)	(0.0343)	(0.0373)
Settlement (ref: densely populated area)						
Intermediate area	0.128***	0.126***	0.0794*	0.0875*	0.0479	0.0478
	(0.0369)	(0.0413)	(0.0451)	(0.0454)	(0.0407)	(0.0450)
Thinly pop. area	0.428***	0.491***	0.596***	0.612***	-0.0730**	-0.0372
	(0.0314)	(0.0351)	(0.0397)	(0.0400)	(0.0352)	(0.0382)
IMEM		2.628***		0.464***		1.863***
		(0.0323)		(0.0352)		(0.0341)
Welfare state typology (ref: Scandinavian)						
New MSs	2.574***	2.044***	0.228	0.120	2.380***	1.902***
	(0.0934)	(0.100)	(0.145)	(0.145)	(0.0948)	(0.0962)
Southern	1.779***	1.159***	0.442***	0.309**	1.393***	0.834***
	(0.0955)	(0.103)	(0.148)	(0.148)	(0.0977)	(0.0998)
Continental	0.818***	0.791***	0.442***	0.431***	0.697***	0.610***
	(0.0995)	(0.107)	(0.156)	(0.156)	(0.101)	(0.103)

English-speaking	1.019***	0.685***	-0.462***	-0.507***	1.077***	0.770***
	(0.114)	(0.124)	(0.166)	(0.166)	(0.110)	(0.116)
Constant	-6.628***	-6.627***	-2.146***	-2.219***	-3.261***	-3.253***
	(0.177)	(0.188)	(0.216)	(0.216)	(0.166)	(0.175)
Observations	463,629	463,629	59,550	59,550	84,610	84,610

***Source**: own calculations based on EU-SILC 2012.*

***Note**: robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. For more on the definition of the country groups, see the note below Figure 4.*

As Table 4 shows, many factors have an independent effect on the probability of living in consistent poverty, compared to not being at risk of poverty at all. Among these, household structure, level of education of the household head, and work intensity of the household show the strongest correlation with consistent poverty status. Although the estimated effect of these factors can be seen as general over the whole of Europe, we can observe some cross-country group variation. Most notably, one can observe that in the Southern countries, the New Member States and the Continental countries, all (or almost all) estimates are significant at the 95% level. In the Nordic countries, however, the estimates for education and for a few household type categories do not prove statistically significant. The estimations on settlement give mixed results: in the Nordic countries the estimates are not at all significant, while in the Southern countries we observe a significant (positive) relationship only in the case of thinly populated areas, but not for intermediate areas. Comparing the other estimates, we find that consistent poverty is associated with living in urban areas in the Continental and English-speaking countries, but with living in rural areas in the New Member States and the Southern countries. Finally, the estimated effects of the household head's sex and age are relatively weak across country groups. The effect of age tends to be negative, while that of sex to be positive – with the exception of the English-speaking countries, where a significant, but negative, effect has been estimated.

The summary table provides a few clear messages about the main factors and their relative importance across country groups of living in consistent poverty, compared to living in a unidimensional poverty status (either in severe material deprivation or in income poverty only). These can be summarized as follows:

- The most general observation is that the number of household-level characteristics associated with living in consistent poverty rather than in severe material deprivation or income poverty only is much smaller than the number of characteristics explaining why someone lives in consistent poverty rather than not being at risk of poverty at all. The overwhelming majority of these significant effects are positive, indicating that those living in consistent poverty have less-beneficial household characteristics (bigger families, lower levels of education and weak or non-existent links to the labour market). In addition, they evaluate their financial circumstances as being worse, *ceteris paribus*.

- Taking a general picture, only the work intensity of the household emerges as an important factor across (almost) all country groups. Living in a work-poor household is associated with living in consistent poverty (instead of in either of the other two poverty statuses) in all country groups, and the same holds for WI=0.2–0.45, except for the Nordic countries in Model 3b (consistent poverty compared to only at risk of severe material deprivation).

- Other factors that showed a strong correlation with being at risk of consistent poverty rather than not being at risk at all are no longer relevant across the whole of Europe, when the risk of living in

consistent poverty is assessed against living in either severe material deprivation or income poverty only. This is the case with education of the household head, settlement type and, to some extent, household type. There are, however, differences in the importance of these factors, depending on the reference status, and we can detect notable cross-country differences, too.

- Comparing our results (presented in a simplified form in Tables 5 and 6), one can immediately observe that being at risk of consistent poverty rather than at risk of severe material deprivation only (Table 5) is explained (in addition to the above detailed general correlations) by many factors that are not significant in the case of income poverty as a reference status, and vice versa. While household type and work intensity seem to matter more for differentiating between consistent poverty and severe material deprivation, education of the household head and settlement type better explain the differences from income poverty.

- Living in a 'one-person household' or a 'single-parent household' is associated with a significant risk of living in consistent poverty, rather than just in severe material deprivation or income poverty, and this correlation has been detected in most country groups; meanwhile, living in a family with children (apart from single-parent families) is positively associated with a higher risk of consistent poverty only, rather than of severe material deprivation only, and only in the Southern countries and the New Member States (and in the Continental countries in the case of families with at least three children). Interestingly, significant but negative effects are estimated in two cases when comparing the risk of consistent poverty and the risk of income poverty only: for '2 adults with 1 child' in the Southern countries and for '2 adults with 2 children' in the New Member States.

- In the case of work intensity status of the household, we can observe that not only low and very low household work intensity is associated with a higher risk of consistent poverty than of only severe material deprivation in the English-speaking, Southern and Central and Eastern European countries, but so is even medium work intensity (0.45–0.55), relative to very high work intensity households. In addition, moderately high (0.55–0.85) work intensity is also positively associated with consistent poverty in the New Member States. Elderly households are at higher risk in all country groups except the English-speaking countries. However, no such effects are estimated in the case of Model 3b (consistent poverty compared to income poverty), except for medium level work intensity in Continental and Southern countries (Table 6).

- In contrast to what we observed for household type and work intensity status, the highest level of education attained by the household head and the settlement type play a role in differentiating between consistent poverty and just income poverty status. The estimates for education are significant and positive in all country groups, except for the Nordic countries for primary education and the Continental, Southern, and Central and Eastern European countries for secondary education. The estimated coefficients for both primary and secondary education are significant and positive in Model 2b (consistent poverty compared to severe material deprivation) only in the New Member States (Table 5).

- In the New Member States, those living in households that are in either intermediate or thinly populated areas are more likely to be at risk of consistent poverty than those in densely populated areas, whichever of the other two poverty statuses is taken for comparison. While no other estimates are significant in Model 2b (except the positive relationship for thinly populated areas in the Southern countries), significant but negative effects are estimated both for people living in intermediate or thinly

populated areas in the Continental countries and for people in thinly populated areas in the English-speaking countries, when consistent poverty is compared with income poverty only.

- In all country groups except for the Southern Member States, if a household faces severe material deprivation, the chances that it will also be at risk of income poverty increase significantly when the household consists of older people (60+) only (relative to high work intensity households). The same effect cannot be observed, however, in the reverse case: living in an elderly household does not increase the probability of being in consistent poverty rather than at risk of income poverty only.

- Finally, when looking at the effect of IMEM, we can discern an important difference between the results of Models 2b and 3b. While inability to make ends meet (as reported by the household reference person) accounts for the differences between the risk of living in consistent poverty and the risk of living in income poverty only in all five country groups, the same holds for only the Southern countries and the New Member States if consistent poverty status is assessed against income poverty status.

Table 4. Summary of results from logit regressions: living in consistent poverty vs. not at risk of poverty at all (Model 1b), by country cluster, 2012

		Nordic countries	Continental countries	English-speaking countries	Southern countries	New Member States
Sex of the household head			+	-	+	
Age of the household head		-	-		-	
Household type (ref: 2 adults)						
	One-person hh	+	+	+	+	+
	Other hhs no ch		-	-	-	-
	Single-parent hh	+	+	+	+	+
	2 adults 1 ch		+		+	+
	2 adults 2 ch	+	+		+	+
	2 adults 3+ ch	+	+	+	+	+
	Other hh with ch	+	+		+	
Education (ref: tertiary)						
	Primary		+	+	+	+
	Secondary		+	+	+	+
Work intensity (ref: WI=0.85–1)						
	WI<0.2	+	+	+	+	+
	WI=0.2–0.45	+	+	+	+	+
	WI=0.45–0.55		+	+	+	+
	WI=0.55–0.85	+		+	+	+
	Elderly hhs	+	+		+	+
Settlement (ref: densely populated area)						
	Intermediate area		-	-		+
	Thinly populated area		-	-	+	+
IMEM		+	+	+	+	+

***Source**: own summary based on Table A2 from the Appendix.*

***Note**: +/- the estimated coefficients of the logit model are significant at least at 5% level. For more on the definition of the country groups, see the note below Figure 4.*

Table 5. Summary of results from logit regressions: living in consistent poverty vs. at risk of severe material deprivation only (Model 2b), by country cluster, 2012

		Nordic countries	Continental countries	English-speaking countries	Southern countries	New Member States
Sex of the household head				-		-
Age of the household head		-				
Household type (ref: 2 adults)						
	One-person hh		+	+	+	+
	Other hhs no ch		-	-	-	-
	Single-parent hh		+		+	+
	2 adults 1 ch				+	+
	2 adults 2 ch				+	+
	2 adults 3+ ch		+		+	+
	Other hh with ch					+
Education (ref: tertiary)						
	Primary					+
	Secondary					+
Work intensity (ref: WI=0.85–1)						
	WI<0.2	+	+	+	+	+
	WI=0.2–0.45		+	+	+	+
	WI=0.45–0.55		+	+	+	+
	WI=0.55–0.85					+
	Elderly hhs	+	+	+		+
Settlement (ref: densely populated area)						
	Intermediate area					+
	Thinly populated area				+	+
IMEM					+	+

***Source**: own summary based on Table A3 from the Appendix.*

***Note**: +/- the estimated coefficients of the logit model are significant at least at 5% level. For more on the definition of the country groups, see the note below Figure 4.*

Table 6. Summary of results from logit regressions: living in consistent poverty vs. at risk of relative income poverty (Model 3b), by country cluster, 2012

		Nordic countries	Continental countries	English-speaking countries	Southern countries	New Member States
Sex of the household head						
Age of the household head						
Household type (ref: 2 adults)						
	One-person hh		+	+	+	+
	Other hhs no ch					
	Single-parent hh		+	+	+	
	2 adults 1 ch				-	
	2 adults 2 ch					-
	2 adults 3+ ch					
	Other hh with ch					
Education (ref: tertiary)						
	Primary		+	+	+	+
	Secondary		+		+	
Work intensity (ref: WI=0.85–1)						
	WI<0.2	+	+	+	+	+
	WI=0.2–0.45	+	+	+	+	+
	WI=0.45–0.55		+		+	
	WI=0.55–0.85					
	Elderly hhs					
Settlement (ref: densely populated area)						
	Intermediate area		-			+
	Thinly populated area		-	-		+
IMEM		+	+	+	+	+

***Source**: own summary based on Table A4 from the Appendix.*

***Note**: +/- the estimated coefficients of the logit model are significant at least at 5% level. For more on the definition of the country groups, see the note below Figure 4.*

5. Summary and conclusions

In our paper, we have focused on the relationship between the income and the material deprivation concepts of poverty, by identifying the main factors that affect the risk of consistent poverty, compared to exclusive forms of poverty – i.e. living in income poverty only or living in severe material deprivation only. We applied the method proposed by Nolan and Whelan (2011a,b) to measure consistent poverty in the European Union. Accordingly, people facing **both** the risk of income poverty **and** the risk of severe material deprivation were considered to be living in consistent poverty. First, we performed a correlation analysis to investigate the relationship between poverty measures that represent different concepts. Second, we analysed the poverty identification patterns of the population by country and by country group, according to the four possible combinations of income poverty and severe material deprivation status: not at risk at all; at risk of income poverty only; severely materially deprived only; and at risk of consistent poverty. Third, multivariate regression analyses were performed to identify the main individual and household-level factors predicting consistent poverty status. When performing the later step, our analysis introduced a new aspect: we explored factors that differentiate between those living in consistently poverty and those being part of three different reference groups: not at risk at all, at risk of income poverty only and materially deprived only.

According to our expectations and in line with earlier research (e.g. Nolan and Whelan 2011a; Guio et al. 2012; Israel and Spannagel 2013; Ayllón and Gábos 2015), the correlation between income poverty and material deprivation is relatively low: the population identified as being at risk of poverty according to both measures is small, compared to the population identified as being at risk of poverty by only one of the indicators. The share of those living in consistent poverty is highest in the New Member States and the Southern countries, and a higher rate of being at risk is associated with higher rates of consistent poverty. Material deprivation correlates somewhat more strongly with other measures of poverty: the EU-AROP status and the 'inability to make ends meet' status (this latter is supposedly also due to the subjective nature of material deprivation).

Living in consistent poverty, rather than being at risk of poverty at all, is associated with several household characteristics. Household structure, level of education of the household head and the work intensity of the household show the strongest correlation with consistent poverty status. The effects of household-level characteristics are less strong when consistent poverty status is assessed against living in income poverty only or living in severe material deprivation only. However, we found important differences in the differentiating role of these factors when in two respects: between the two reference groups (based on exclusive poverty status) and across country groups. In general, among materially deprived people those also at risk of income poverty were found more likely to live in 'one-person' households than in 'two adults' households, in households with low or medium levels of work intensity (WI<0.55) than in full work intensity households and in elderly households. Among people at risk of income poverty those also being materially deprived are more likely to live (again) in 'one-person' households than 'two adults' households, in households with a low educated head. In addition, they assess their financial circumstances as being worse, *ceteris paribus*.

The role of household characteristics also varies by country group. We found that among factors affecting the risk of consistent poverty against material deprivation only, in both the New Member

states and the Southern countries living in a family with children (first and foremost in a single-parent or in a large family) is one of the most important: families with children in these two country groups (but not in the others) are more likely to be also at risk of income poverty while being materially deprived. In these two country groups (but again, not in the others), reporting inability to make ends meet is also significantly and strongly correlated with consistent poverty. Contrarily, elderly households are most affected in Continental and Nordic countries when the risk consistent poverty is assessed against the risk of material deprivation only. Living in a New Member state is associated with other risk factors in this respect: living in household with a low educated head and living in a thinly populated area.

Although they are least, some country group-specific differences are also present when the differentiating factors between consistent poverty and income poverty only are analysed. Most importantly, living also in material deprivation while being at risk of income poverty is an urban phenomena in the Continental, the English-speaking and (to a lesser extent) the Southern countries, but clearly a rural problem in the New Member states. In addition, living a single-parent household increases this relative risk in the Continental, the English-speaking and Southern countries. Single earner households are also at a higher risk in his respect in the Southern and the Continental countries.

Our analysis showed that consistent poverty is present in all European Union Member States, even in the most affluent societies. The incidence of consistent poverty, however, varies greatly across countries, with higher than EU-average figures in the New Member States (the Czech Republic, Slovenia and Slovakia being exceptions) and in some of the Southern countries (Cyprus, Italy and Greece). The risk of living in consistent poverty correlates strongly with household characteristics related to social status, independently of the reference group used in the analysis. This reinforces the claims that all EU countries should strengthen their efforts to decrease the risk of poverty by focusing on those most in need: low-skilled workers, work-poor households, large families, etc. Furthermore, our results highlight that there are important differences in what factors shape the comparison of living in consistent poverty compared to living in income poverty only or in material deprivation only. This finding suggests that those living in poverty or social exclusion are far from consisting a homogeneous group and so the most vulnerable can be better identified and monitored. In addition, our analysis provides evidence both on the conceptual differences in the two indicators in our analysis (relative income poverty and material deprivation) and on the existing correlation between them (especially in the Nordic countries, but to a lesser extent in other affluent member states as well). Accordingly, we would propose (similarly to Nolan and Whelan 2011a and Notten 2015) to introduce alternative (overlap approach-based) measures of monitoring the effectiveness of social inclusion policies in the European Union. This would serve to strengthen policies towards the most in need.

While our analysis lacks the country level detail and as such is not suitable for national level policy conclusions, some country group-level policy conclusions still can be drawn. As one of these, the need for a strong focus on families with children in the Southern countries and in the New Member states is a clear message. In addition, the accentuated role of education in the New Member States indicates that there is an important mismatch between skills and available jobs on the labour market, which should be tackled by the education system.

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Appendix

Table A1. Consistent poverty in the EU Member States, 2009 and 2012 (% of the total population)

	Not at risk of poverty at all		At risk of income poverty only		Severely materially deprived only		At risk of consistent poverty	
	2009	**2012**	**2009**	**2012**	**2009**	**2012**	**2009**	**2012**
BE	83.35	82.14	11.43	11.35	2.08	2.90	3.14	3.61
BG	54.58	51.60	3.68	4.32	23.73	27.35	18.01	16.73
CZ	87.79	86.58	6.07	6.79	3.65	3.80	2.49	2.83
DK	85.69	85.53	12.04	11.66	1.20	1.34	1.07	1.48
DE	82.15	82.23	12.47	12.91	2.32	1.69	3.05	3.17
EE	77.61	78.15	16.18	12.48	2.67	4.33	3.54	5.04
IE	81.37	77.60	12.50	12.57	3.62	6.66	2.51	3.16
EL	75.38	69.22	13.64	11.28	4.92	7.69	6.06	11.81
ES	78.87	75.52	17.66	18.64	1.65	2.31	1.82	3.53
FR	84.30	83.25	10.14	11.47	2.81	2.63	2.75	2.64
IT	78.26	72.77	14.74	12.73	3.31	7.80	3.69	6.69
CY	78.30	74.96	12.24	10.05	6.45	10.34	3.01	4.65
LV	63.26	65.40	14.80	8.96	11.04	15.40	10.91	10.25
LT	71.39	69.20	13.56	10.95	8.01	12.19	7.04	7.65
LU	84.88	84.35	14.01	14.35	0.26	0.51	0.86	0.80
HU	73.47	69.81	6.22	4.49	14.11	16.17	6.21	9.54
MT	82.11	78.90	13.17	11.95	2.58	6.02	2.14	3.14
NL	88.12	88.60	10.43	9.07	0.81	1.32	0.64	1.01
AT	85.67	83.80	9.55	12.19	2.31	1.81	2.46	2.21
PL	74.22	75.09	10.79	11.43	8.64	7.81	6.35	5.67
PT	77.14	77.70	13.78	13.67	5.00	4.40	6.35	4.23
RO	58.85	60.12	8.76	9.77	18.80	17.37	13.59	12.74
SI	84.94	82.93	8.98	10.43	3.79	3.54	2.29	3.10
SK	81.92	80.90	6.98	8.64	7.10	5.86	4.00	4.60
FI	85.04	85.11	12.14	11.95	1.15	1.66	1.68	1.28
SE	85.91	85.44	12.52	13.28	0.81	0.39	0.76	0.89
UK	81.20	79.63	15.46	12.57	1.52	4.17	1.82	3.64

Table A2. Results from logit regressions: living in consistent poverty vs. not at risk of poverty at all, by country cluster, 2012

	New Member States	Southern	English-speaking	Continental	Nordic
VARIABLES					
Sex	-0.0525	0.159**	-0.569***	0.289***	0.0643
	(0.0625)	(0.0802)	(0.193)	(0.106)	(0.264)
Age	0.0103	-0.0821***	-0.0434*	-0.0485***	-0.121***
	(0.00881)	(0.0113)	(0.0256)	(0.0180)	(0.0440)
Age squared	-0.000170*	0.000759***	0.000283	0.000263	0.000923*
	(8.81e-05)	(0.000113)	(0.000274)	(0.000191)	(0.000504)
Household structure (ref. two adults)					
One-person household	1.728***	1.313***	1.970***	1.896***	2.175***
	(0.0681)	(0.0883)	(0.195)	(0.133)	(0.273)
Other households without children	-0.650***	-0.675***	-1.172***	-0.941***	-1.206
	(0.0790)	(0.0960)	(0.382)	(0.341)	(0.803)
Single-parent	1.787***	1.319***	1.452***	1.733***	1.315***
	(0.114)	(0.142)	(0.278)	(0.181)	(0.435)
2 adults, 1 child	0.303***	0.253**	0.299	0.533***	0.208
	(0.0848)	(0.104)	(0.274)	(0.186)	(0.429)
2 adults, 2 children	0.356***	0.698***	0.438*	0.506**	0.943**
	(0.0889)	(0.0990)	(0.261)	(0.206)	(0.395)
2 adults, 3+ children	0.977***	1.192***	0.755***	1.388***	1.769***
	(0.105)	(0.135)	(0.260)	(0.205)	(0.505)
Other households with children	0.0414	0.300***	0.0370	1.170***	1.415***
	(0.0793)	(0.108)	(0.390)	(0.233)	(0.543)
Education (ref. tertiary education)					
Primary education	2.052***	0.980***	0.445**	1.208***	0.480
	(0.0813)	(0.0879)	(0.186)	(0.130)	(0.296)
Secondary education	0.825***	0.347***	0.501***	0.684***	0.0375
	(0.0751)	(0.0963)	(0.153)	(0.124)	(0.264)
Work intensity (ref: WI>0.85)					
WI<0.2	3.053***	2.902***	3.298***	3.613***	4.056***
	(0.0618)	(0.0781)	(0.170)	(0.106)	(0.302)
WI=0.2–0.45	2.620***	2.415***	2.486***	2.684***	2.589***
	(0.0880)	(0.106)	(0.248)	(0.164)	(0.403)
WI=0.45–0.55	1.407***	1.343***	1.375***	1.500***	0.955**
	(0.0743)	(0.0926)	(0.248)	(0.166)	(0.419)
WI=0.55–0.85	0.761***	0.305**	0.661**	0.166	0.919**
	(0.0867)	(0.122)	(0.265)	(0.171)	(0.381)
Elderly households	0.205***	0.122**	0.222	0.571***	0.822***
	(0.0410)	(0.0541)	(0.207)	(0.118)	(0.296)
Settlement (ref: densely populated area)					
Intermediate area	0.404***	0.105	-0.289**	-0.389***	0.0160
	(0.0636)	(0.0693)	(0.144)	(0.112)	(0.377)

Thinly populated area	0.903***	0.264***	-0.798***	-0.393***	0.457*
	(0.0501)	(0.0664)	(0.185)	(0.125)	(0.267)
IMEM	2.685***	2.602***	2.102***	2.664***	3.057***
	(0.0448)	(0.0581)	(0.141)	(0.117)	(0.263)
Constant	-6.280***	-4.110***	-3.910***	-5.723***	-4.657***
	(0.242)	(0.300)	(0.640)	(0.443)	(0.971)
Observations	164,164	109,870	28,926	110,711	49,958

***Source**: authors' own calculations based on EU-SILC 2012.*

***Note**: robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. For more information about country groups, see the note below Figure 4.*

Table A3. Results from logit regressions: living in consistent poverty vs. at risk of severe material deprivation only, by country cluster, 2012

	New Member States	Southern	English-speaking	Continental	Nordic
VARIABLES					
Sex	-0.230***	0.147	-0.492**	-0.0348	-0.117
	(0.0649)	(0.101)	(0.225)	(0.145)	(0.293)
Age	0.00396	-0.0133	-0.00573	-0.0330	-0.107**
	(0.00852)	(0.0135)	(0.0309)	(0.0220)	(0.0528)
Age squared	-3.65e-05	0.000168	0.000206	0.000313	0.000959*
	(8.46e-05)	(0.000133)	(0.000361)	(0.000245)	(0.000583)
Household structure (ref. two adults)					
One-person household	1.292***	0.608***	0.741***	0.818***	0.336
	(0.0681)	(0.104)	(0.236)	(0.167)	(0.341)
Other households without children	-0.510***	-0.458***	-1.614***	-0.945**	-1.439
	(0.0849)	(0.117)	(0.449)	(0.427)	(1.144)
Single-parent	1.322***	0.867***	0.167	0.806***	0.383
	(0.113)	(0.183)	(0.313)	(0.225)	(0.486)
2 adults, 1 child	0.389***	0.274**	-0.122	0.212	0.274
	(0.0869)	(0.129)	(0.318)	(0.226)	(0.608)
2 adults, 2 children	0.737***	0.771***	-0.173	0.392	0.310
	(0.0946)	(0.126)	(0.297)	(0.239)	(0.479)
2 adults, 3+ children	1.098***	1.167***	0.256	0.767***	0.982
	(0.118)	(0.166)	(0.294)	(0.263)	(0.656)
Other households with children	0.191**	0.148	-0.434	0.422	1.385*
	(0.0804)	(0.127)	(0.429)	(0.302)	(0.796)
Education (ref. tertiary education)					
Primary education	1.028***	0.0515	-0.136	0.0929	-0.765*
	(0.0928)	(0.116)	(0.196)	(0.170)	(0.394)
Secondary education	0.356***	-0.190	0.0969	0.0729	-0.665*
	(0.0896)	(0.131)	(0.184)	(0.164)	(0.374)
Work intensity (ref: WI>0.85)					
WI<0.2	2.311***	2.100***	1.599***	2.007***	2.251***
	(0.0683)	(0.109)	(0.233)	(0.167)	(0.469)

WI=0.2–0.45	1.804***	1.359***	1.138***	1.388***	0.850
	(0.0922)	(0.129)	(0.308)	(0.224)	(0.547)
WI=0.45–0.55	0.994***	0.790***	0.681**	0.954***	0.975*
	(0.0825)	(0.121)	(0.316)	(0.244)	(0.591)
WI=0.55–0.85	0.359***	-0.232	0.460	0.0778	0.767
	(0.0918)	(0.143)	(0.328)	(0.221)	(0.571)
Elderly households	0.115**	0.248***	0.190	0.766***	1.027**
	(0.0459)	(0.0771)	(0.278)	(0.210)	(0.476)
Settlement (ref: densely populated area)					
Intermediate area	0.289***	-0.117	-0.205	-0.133	-0.0209
	(0.0642)	(0.0827)	(0.160)	(0.141)	(0.399)
Thinly populated area	0.859***	0.272***	-0.297	-0.117	0.591*
	(0.0518)	(0.0828)	(0.207)	(0.159)	(0.329)
IMEM	0.551***	0.445***	0.119	0.119	0.365
	(0.0464)	(0.0711)	(0.146)	(0.124)	(0.290)
Constant	-3.034***	-1.570***	-0.931	-0.719	1.187
	(0.239)	(0.360)	(0.760)	(0.525)	(1.098)
Observations	36,900	14,409	3,082	4,307	852

***Source**: authors' own calculations based on EU-SILC 2012.*

***Note**: robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. For more information about country groups, see the note below Figure 4.*

Table A4. Results from logit regressions: living in consistent poverty vs. at risk of relative income poverty only, by country cluster, 2012

	New Member States	Southern	English-speaking	Continental	Nordic
VARIABLES	CP	CP	CP	CP	CP
Sex	-0.00741	-0.0511	-0.153	0.0964	-0.310
	(0.0734)	(0.0790)	(0.180)	(0.101)	(0.225)
Age	0.00469	-0.00663	-0.00279	-0.000330	0.0405
	(0.00918)	(0.0113)	(0.0256)	(0.0165)	(0.0372)
Age squared	-9.38e-05	1.25e-06	-0.000260	-4.66e-05	-0.000558
	(9.38e-05)	(0.000114)	(0.000289)	(0.000182)	(0.000422)
Household structure (ref. two adults)					
One-person household	0.272***	0.443***	1.063***	0.766***	0.455*
	(0.0729)	(0.0820)	(0.186)	(0.122)	(0.241)
Other households without children	-0.0411	0.0405	-0.613	-0.470	-0.332
	(0.0994)	(0.105)	(0.390)	(0.347)	(0.778)
Single-parent	0.107	0.318**	0.778***	0.567***	0.396
	(0.120)	(0.134)	(0.259)	(0.167)	(0.364)
2 adults, 1 child	-0.182*	-0.234**	0.460*	-0.0673	-0.420
	(0.0932)	(0.111)	(0.271)	(0.193)	(0.456)
2 adults, 2 children	-0.291***	-0.165	0.169	-0.0549	0.168
	(0.0944)	(0.106)	(0.266)	(0.195)	(0.380)
2 adults, 3+ children	0.0198	0.0466	0.373	0.201	-0.361

	(0.104)	(0.135)	(0.258)	(0.193)	(0.440)
Other households with children	-0.0620	0.0722	-0.208	0.290	0.438
	(0.0887)	(0.113)	(0.417)	(0.238)	(0.505)
Education (ref. tertiary education)					
Primary education	0.853***	0.302***	0.382**	0.435***	0.364
	(0.0931)	(0.0954)	(0.189)	(0.130)	(0.286)
Secondary education	0.154*	0.297***	0.207	0.303**	0.00708
	(0.0894)	(0.107)	(0.164)	(0.125)	(0.269)
Work intensity (ref: WI>0.85)					
WI<0.2	0.624***	0.548***	1.090***	1.317***	1.423***
	(0.0730)	(0.0962)	(0.203)	(0.121)	(0.311)
WI=0.2–0.45	0.352***	0.454***	0.892***	1.084***	0.941**
	(0.0973)	(0.123)	(0.277)	(0.172)	(0.425)
WI=0.45–0.55	0.0763	0.243**	0.484	0.416**	0.342
	(0.0912)	(0.122)	(0.297)	(0.188)	(0.458)
WI=0.55–0.85	-0.0143	0.0913	0.387	0.0620	0.804*
	(0.105)	(0.149)	(0.297)	(0.191)	(0.454)
Elderly households	0.0229	0.0132	0.0551	0.000757	0.130
	(0.0525)	(0.0633)	(0.223)	(0.128)	(0.314)
Settlement (ref: densely populated area)					
Intermediate area	0.485***	-0.0715	-0.100	-0.439***	-0.358
	(0.0775)	(0.0739)	(0.150)	(0.108)	(0.348)
Thinly populated area	0.265***	-0.122*	-0.764***	-0.594***	-0.265
	(0.0568)	(0.0676)	(0.190)	(0.119)	(0.255)
IMEM	1.934***	1.861***	1.373***	1.808***	2.254***
	(0.0508)	(0.0593)	(0.144)	(0.100)	(0.222)
Constant	-1.827***	-2.065***	-2.048***	-3.187***	-3.880***
	(0.253)	(0.301)	(0.628)	(0.385)	(0.859)
Observations	32,380	25,805	5,890	15,223	5,312

***Source**: authors' own calculations based on EU-SILC 2012.*

***Note**: robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. For more information about country groups, see the note below Figure 4.*

Table A5. Results from logit regressions: living in consistent poverty vs. not at risk of poverty at all, by country cluster, 2009

	New Member States	Southern	English-speaking	Continental	Nordic
VARIABLES					
Sex	0.163***	0.307***	-0.165	0.117	0.327
	(0.0591)	(0.0899)	(0.221)	(0.111)	(0.219)
Age	-0.0450***	-0.108***	-0.0422	-0.104***	-0.122***
	(0.00854)	(0.0136)	(0.0385)	(0.0175)	(0.0384)
Age squared	0.000400***	0.00106***	4.76e-05	0.000762***	0.000821**
	(8.37e-05)	(0.000134)	(0.000396)	(0.000189)	(0.000416)
Household structure					

(ref. two adults)					
One-person household	1.430***	1.054***	2.330***	1.870***	2.176***
	(0.0621)	(0.0977)	(0.289)	(0.135)	(0.286)
Other households without children	-0.770***	-0.789***	-0.797	-0.975***	-1.436*
	(0.0863)	(0.111)	(0.567)	(0.349)	(0.823)
Single-parent	1.392***	1.097***	1.211***	1.656***	1.045**
	(0.112)	(0.162)	(0.381)	(0.184)	(0.482)
2 adults, 1 child	-0.108	0.201*	0.449	0.537***	0.0636
	(0.0892)	(0.113)	(0.411)	(0.196)	(0.506)
2 adults, 2 children	0.233***	0.287**	0.526	0.383*	0.990*
	(0.0891)	(0.123)	(0.391)	(0.211)	(0.514)
2 adults, 3+ children	0.992***	1.055***	1.150***	1.159***	0.867
	(0.101)	(0.157)	(0.426)	(0.229)	(0.586)
Other households with children	0.0492	0.322***	0.545	1.022***	1.053
	(0.0819)	(0.122)	(0.521)	(0.263)	(0.819)
Education (ref. tertiary education)					
Primary education	1.728***	0.417***	0.626**	1.323***	0.993***
	(0.0801)	(0.0961)	(0.274)	(0.135)	(0.309)
Secondary education	0.348***	-0.201*	0.225	0.816***	0.486
	(0.0761)	(0.111)	(0.269)	(0.131)	(0.297)
Work intensity (ref: WI>0.85)					
WI<0.2	2.651***	2.630***	3.395***	3.555***	3.867***
	(0.0631)	(0.0903)	(0.224)	(0.113)	(0.254)
WI=0.2–0.45	2.576***	2.357***	2.420***	2.536***	2.327***
	(0.0922)	(0.119)	(0.351)	(0.179)	(0.410)
WI=0.45–0.55	1.370***	1.270***	0.687	1.286***	0.890**
	(0.0736)	(0.108)	(0.471)	(0.185)	(0.404)
WI=0.55–0.85	0.614***	0.451***	-0.0937	0.457**	-0.872*
	(0.0843)	(0.132)	(0.541)	(0.177)	(0.527)
Elderly households	0.403***	0.378***	0.982***	0.697***	1.351***
	(0.0409)	(0.0604)	(0.245)	(0.120)	(0.273)
Settlement (ref: densely populated area)					
Intermediate area	0.138	0.0506	-0.447*	-0.310***	-0.0589
	(0.0853)	(0.0816)	(0.232)	(0.116)	(0.298)
Thinly populated area	0.929***	0.398***	-0.672**	-0.106	0.105
	(0.0470)	(0.0743)	(0.270)	(0.139)	(0.257)
IMEM	2.645***	2.524***	2.106***	2.906***	2.274***
	(0.0454)	(0.0685)	(0.214)	(0.112)	(0.278)
Constant	-4.593***	-3.539***	-4.830***	-4.273***	-4.634***
	(0.232)	(0.359)	(0.982)	(0.417)	(0.860)
Observations	167,335	112,323	26,681	103,555	52,811

***Source**: authors' own calculations based on EU-SILC 2009.*

***Note**: robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. For more information about country groups, see the note below Figure 4.*

Table A6. Results from logit regressions: living in consistent poverty vs. at risk of severe material deprivation only, by country cluster, 2009

	New Member States	Southern	English-speaking	Continental	Nordic
VARIABLES					
Sex	0.00148	0.0609	-0.459	-0.270*	-0.167
	(0.0644)	(0.114)	(0.279)	(0.148)	(0.309)
Age	-0.0204**	-0.0479***	0.0134	-0.0422*	-0.0522
	(0.00868)	(0.0163)	(0.0476)	(0.0230)	(0.0466)
Age squared	0.000227***	0.000595***	-0.000355	0.000432*	0.000280
	(8.49e-05)	(0.000162)	(0.000526)	(0.000254)	(0.000516)
Household structure (ref. two adults)					
One-person household	1.105***	0.684***	0.979***	0.630***	0.848**
	(0.0651)	(0.120)	(0.322)	(0.166)	(0.355)
Other households without children	-0.673***	-0.670***	-1.174*	-0.838**	-1.011
	(0.0884)	(0.157)	(0.645)	(0.406)	(0.988)
Single-parent	1.117***	1.285***	0.681	0.940***	0.0945
	(0.113)	(0.210)	(0.416)	(0.229)	(0.516)
2 adults, 1 child	0.0782	0.705***	0.364	0.395	-0.232
	(0.0917)	(0.165)	(0.493)	(0.247)	(0.678)
2 adults, 2 children	0.585***	0.655***	0.738	0.349	0.0555
	(0.0975)	(0.164)	(0.541)	(0.237)	(0.577)
2 adults, 3+ children	1.247***	1.096***	0.617	0.526*	1.077*
	(0.120)	(0.221)	(0.469)	(0.286)	(0.572)
Other households with children	0.193**	0.240	1.848***	0.192	1.604
	(0.0820)	(0.154)	(0.714)	(0.341)	(1.415)
Education (ref. tertiary education)					
Primary education	0.620***	0.0331	0.222	0.267	-0.409
	(0.0925)	(0.123)	(0.308)	(0.189)	(0.422)
Secondary education	-0.0540	-0.195	0.259	0.198	-0.649
	(0.0908)	(0.154)	(0.330)	(0.183)	(0.413)
Work intensity (ref: WI>0.85)					
WI<0.2	2.089***	2.196***	1.379***	2.267***	2.219***
	(0.0702)	(0.139)	(0.387)	(0.177)	(0.416)
WI=0.2–0.45	1.817***	1.914***	0.458	1.467***	1.270**
	(0.0989)	(0.169)	(0.498)	(0.242)	(0.610)
WI=0.45–0.55	0.808***	1.008***	-0.196	0.608**	0.605
	(0.0822)	(0.154)	(0.578)	(0.248)	(0.567)
WI=0.55–0.85	0.302***	0.156	-0.455	0.597***	-1.017
	(0.0893)	(0.163)	(0.656)	(0.225)	(0.693)
Elderly households	0.334***	0.478***	1.080***	1.118***	1.631***
	(0.0484)	(0.0935)	(0.382)	(0.212)	(0.454)
Settlement (ref: densely populated area)					
Intermediate area	0.0894	0.0924	-0.329	0.0829	0.260
	(0.0895)	(0.104)	(0.249)	(0.141)	(0.366)
Thinly populated area	0.803***	0.418***	0.158	0.0240	0.566*
	(0.0503)	(0.105)	(0.327)	(0.174)	(0.300)

IMEM	0.492***	0.0147	0.171	0.174	-0.429*
	(0.0472)	(0.0910)	(0.221)	(0.125)	(0.255)
Constant	-2.062***	-0.767*	-1.162	-0.651	0.345
	(0.239)	(0.422)	(1.141)	(0.580)	(1.107)
Observations	34,827	9,076	1,330	4,192	827

***Source**: authors' own calculations based on EU-SILC 2009.*

***Note**: robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. For more information about country groups, see the note below Figure 4.*

Table A7. Results from logit regressions: living in consistent poverty vs. at risk of relative income poverty only, by country cluster, 2009

	New Member States	**Southern**	**English-speaking**	**Continental**	**Nordic**
VARIABLES	CP	CP	CP	CP	CP
Sex	0.0210	0.0675	0.163	-0.172	0.113
	(0.0640)	(0.0909)	(0.209)	(0.111)	(0.197)
Age	0.00777	-0.0364***	-0.0164	-0.0272	0.0437
	(0.00874)	(0.0129)	(0.0309)	(0.0174)	(0.0334)
Age squared	-0.000136	0.000280**	-0.000328	0.000140	-0.000674*
	(8.61e-05)	(0.000128)	(0.000338)	(0.000191)	(0.000367)
Household structure (ref. two adults)					
One-person household	0.125*	0.467***	1.222***	0.820***	0.457*
	(0.0670)	(0.0941)	(0.260)	(0.127)	(0.247)
Other households without children	-0.215**	0.147	-0.302	-0.436	-0.613
	(0.100)	(0.121)	(0.586)	(0.350)	(0.814)
Single-parent	-0.00631	0.280*	0.417	0.693***	-0.0695
	(0.114)	(0.147)	(0.335)	(0.177)	(0.396)
2 adults, 1 child	-0.567***	0.227*	-0.0189	0.323	-0.414
	(0.0962)	(0.122)	(0.449)	(0.197)	(0.475)
2 adults, 2 children	-0.531***	-0.172	0.0321	-0.220	-0.0536
	(0.0960)	(0.129)	(0.390)	(0.208)	(0.456)
2 adults, 3+ children	-0.277***	0.150	0.107	-0.0803	-0.917*
	(0.100)	(0.159)	(0.397)	(0.212)	(0.504)
Other households with children	-0.106	0.394***	0.692	0.385	-0.0548
	(0.0934)	(0.129)	(0.439)	(0.256)	(0.839)
Education (ref. tertiary education)					
Primary education	0.675***	-0.0200	0.463*	0.389***	0.803***
	(0.0925)	(0.100)	(0.264)	(0.141)	(0.295)
Secondary education	-0.0622	-0.162	0.173	0.228	0.513*
	(0.0906)	(0.123)	(0.262)	(0.140)	(0.282)
Work intensity (ref: WI>0.85)					
WI<0.2	0.635***	0.544***	0.934***	1.160***	1.785***
	(0.0718)	(0.107)	(0.319)	(0.141)	(0.282)

WI=0.2–0.45	0.501***	0.480***	1.047**	0.483**	0.957**
	(0.0987)	(0.137)	(0.416)	(0.204)	(0.430)
WI=0.45–0.55	0.121	0.0724	-0.148	0.0439	0.324
	(0.0877)	(0.136)	(0.531)	(0.214)	(0.450)
WI=0.55–0.85	-0.00604	0.109	-0.520	0.212	-0.908
	(0.0971)	(0.156)	(0.604)	(0.199)	(0.572)
Elderly households	0.0700	0.0760	0.443	0.115	0.606**
	(0.0527)	(0.0714)	(0.294)	(0.145)	(0.280)
Settlement (ref: densely populated area)					
Intermediate area	-0.00407	-0.126	0.0859	-0.196*	0.0860
	(0.104)	(0.0830)	(0.209)	(0.111)	(0.294)
Thinly populated area	0.347***	-0.110	-0.205	-0.362***	-0.0116
	(0.0538)	(0.0759)	(0.252)	(0.135)	(0.233)
IMEM	1.896***	1.771***	1.661***	1.816***	1.930***
	(0.0514)	(0.0673)	(0.191)	(0.103)	(0.225)
Constant	-1.599***	-1.727***	-2.616***	-1.987***	-4.945***
	(0.246)	(0.346)	(0.803)	(0.400)	(0.777)
Observations	34,739	26,548	5,239	14,084	5,790

***Source**: authors' own calculations based on EU-SILC 2009.*

***Note**: robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. For more information about country groups, see the note below Figure 4.*

ImPRovE: Poverty Reduction in Europe. Social Policy and Innovation

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

The two central questions driving the ImPRovE project are:

How can social cohesion be achieved in Europe?

How can social innovation complement, reinforce and modify macro-level policies and vice versa?

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

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

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