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The Europe 2020 social inclusion indicators: main conclusions of the ImPRovE project on validity, methodological robustness and interrelationships

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Abstract

In 2010, heads of state and government agreed on the Europe 2020 poverty reduction target. The target is measured on the basis of a composite indicator, including income poverty, severe material deprivation and very low work intensity. In this paper, we summarise the main findings and conclusions of a series of studies carried out in the ImPRovE project, with regard to the quality of the three underlying indicators and their cross-sectional, longitudinal and dynamic relationships. By doing so, we point to relevant policy conclusions and areas for further improvement of the indicators and poverty research.

Key words: poverty, social exclusion, Europe 2020, consistent poverty, material deprivation, low work intensity, poverty dynamics

JEL codes: D63, I32, I31

1 Introduction

In line with the EU2020 strategy for smart, sustainable and inclusive growth, the European Union has adopted a set of headline targets to reflect these three priorities (European Commission, 2010). Accordingly, aside from targets on employment, research and development, education, climate change and energy sustainability, there is also one target related to the fight against poverty and social exclusion. The latter target is set at reducing by 20 million the number of European citizens living in poverty or social exclusion by the year 2020.

The measure covering the headline target in the fight against poverty and social exclusion is composed of three indicators. An individual is considered to be at risk of poverty or social exclusion if he or she is at risk of poverty, is severely materially deprived or lives in a household with very low work intensity. While the overall EU target is based on the composite indicator, in setting their national targets, Member States were free to choose the most appropriate indicator (or any combination thereof). Importantly, national targets do not add up to the overall EU level target.

The use of quantitative social indicators to set up a Europe-wide monitoring system in the field of social inclusion is strongly linked to the start of the Lisbon era (cf. Atkinson et al., 2002). The system of indicators adopted by the Laeken European Council in 2001 was further developed and extended during the 2000s within the framework of the Open Method of Coordination on Social Protection and Social Inclusion (European Commission, 2006; 2009; Marlier et al., 2007). The policy target in the Europe 2020 Strategy was based on individual measures that were either part of the Laeken set of indicators from the very beginning (like the at-risk-of-poverty indicator) or that have been developed in recent years. For all three indicators, the data source consists of the European Statistics on Income and Living Conditions (EU-SILC). Rather than being a tool designed to measure a clear European social policy programme, the composite indicator of multidimensional poverty was adopted as a result of a political decision that was motivated by the different views and interests of the Member States (Maître et al., 2013). Nor was the introduction of the composite indicator based on any previous theoretical work concerning the relationship between income poverty (AROP), material deprivation (MD) and low work intensity (LWI).

Once launched, the composite indicator became the subject of conceptual and methodological debate within the research community, which encouraged a considerable amount of empirical work. Among others, recent work by Nolan and Whelan (2011a; 2011b), Copeland and Daly (2012), and Maître et al. (2013) discusses 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. By many, the inclusion of non-monetary indicators is considered a step forward in monitoring the poverty target in an enlarged Europe (e.g. Nolan and Whelan, 2011b), even though the effectiveness of using a single measure of multidimensional poverty has come in for criticism (e.g. Ravallion, 2011). The choice of indicators to complement income poverty and the way the composite indicator is defined have also been debated (see also Nolan and Whelan, 2011b).

While the agreement on the Europe 2020 poverty and social exclusion target generated a series of methodological and analytical works and recommendations related to the underlying main indicators (at-risk-of-poverty, severe material deprivation and very low work intensity), until today important questions related to the measurement, validity and robustness of individual indicators, as well as on the interrelationship between the sub-indicators remained unanswered. Within the context of the

ImPRovE project, a set of deliverables has been produced to improve our knowledge related to these questions and to provide recommendations for the way forward in better monitoring poverty and social exclusion. The work was coordinated mainly in work package 12 (WP12), entitled 'How can the EU social indicators be improved? Challenges of current tools'. The papers can be classified in the way presented in Table 1, making a distinction between the approach used (cross-sectional or longitudinal) and the level of analysis (focusing on single indicator or on the interrelationship between indicators). In addition to the deliverables discussed in this paper, within the ImPRovE project several other papers have been produced on the definition and measurement of poverty and the relationship between various indicators, including, for instance, Notten (2016) on the relation between income poverty and material deprivation; Andriopoulou and Tsakloglou (2015) on the relation between mobility in and out of income poverty and demographic and labour market variables; Goedemé et al. (2015) on the development of reference budgets for contextualising the at-risk-of-poverty threshold; Gábos et al. (2015) on the relation between trends in employment and poverty dynamics; and Goedemé and Collado (2016) on the use of a single pan-European income threshold for monitoring social inclusion, rather than a national income threshold as is the case for the at-risk-of-poverty indicator. Given that these papers are less focused on understanding and improving the Europe 2020 poverty reduction indicators, they are left out of consideration in this paper.

Table 1. Summary of WP12 deliverables

	Indicator level	**Interrelationships**
D12.1 Decanq et al. (2013): Evolution of poverty in the EU: concepts, measurement and data		
Cross-sectional	**D12.5** Guio and Marlier (2013): Alternative vs current measures of MD **D12.7** Ward and Özdemir (2013): Measuring low work intensity	**D12.3** B. Kis and Gábos (2015): Consistent poverty across the EU
Longitudinal/dynamics	**D12.6** D'Ambrosio (2013): The indicators of intertemporal MD	**D12.2** Papadopoulos and Tsakloglou (2015): Chronic MD and long-term poverty in the crisis period **D12.4** Ayllón and Gábos (2015): The interrelationships between the Europe 2020 indicators

Complete list of deliverables of WP12 'How can the EU social indicators be improved? Challenges of the current tools':

Decancq, K., T. Goedemé, K. Van den Bosch and J. Vanhille (2013), *The Evolution of Poverty in the European Union: Concepts, Measurement and Data,* ImPRovE Methodological Paper N°13/01. Antwerp: Herman Deleeck Centre for Social Policy, University of Antwerp.

Papadopoulos F. and P. Tsakloglou (2015), *Chronic material deprivation and long-term poverty in Europe in the pre-crisis period*, ImPRovE Working Paper N°15/16. Antwerp: Herman Deleeck Centre for Social Policy, University of Antwerp.

B. Kis, A. and A. Gábos (2015), *Consistent poverty across the EU*, ImPRovE Working Paper N°15/22. Antwerp: Herman Deleeck Centre for Social Policy, University of Antwerp.

Ayllón, S. and A. Gábos (2015), *The interrelationships between the Europe 2020 social inclusion indicators,* ImPRovE Working Paper N°15/01. Antwerp: Herman Deleeck Centre for Social Policy, University of Antwerp.

Guio, C. and E. Marlier (2013), *Alternative vs. current measures of material deprivation at EU level: What differences does it make?,* ImPRovE Working Paper N°13/07. Antwerp: Herman Deleeck Centre for Social Policy, University of Antwerp.

D'Ambrosio, C. (2013), *The indicators of inter-temporal material deprivation: a proposal and an application to EU countries,* ImPRovE Working Paper N°13/08. Antwerp: Herman Deleeck Centre for Social Policy, University of Antwerp.

Ward, T. and E. Ozdemir (2013), *Measuring low work intensity – an analysis of the indicator*, ImPRovE Working Paper N°13/09. Antwerp: Herman Deleeck Centre for Social Policy, University of Antwerp.

In this report, first we summarize conceptual and measurement issues in poverty and social exclusion. Further, we highlight the most important findings of the work package deliverables related to the Europe 2020 social inclusion target indicators. First, we focus on individual indicators such as material deprivation and low work intensity and then we present the main findings related to the interrelationships between either two or all three indicators. Either the individual indicators or the interrelationship between them is considered, both cross-sectional and dynamic approaches are applied.

2 Poverty in the EU: concepts, measurement and data

In order for the quantitative target on social inclusion of the Europe 2020 strategy to make sense, a clear measure of poverty and social exclusion is required. There is a long list of on-going conceptual discussions on the definition and measurement of poverty. What exactly do we mean by poverty? Is it a one-dimensional or a multidimensional phenomenon? Should the focus be on the severity of poverty or on the extent to which it manifests itself in different life domains? Where should the poverty line be drawn? Should it follow changes in the prevailing living standard? Should a single poverty line be applied across the EU or are country-specific lines preferable? Should one merely count the number of poor or also consider how the depth of poverty varies across the poor population?

The class of Foster-Greer-Thorbecke (FGT) poverty measures offers a powerful and flexible toolbox for measuring poverty, as stressed by Decanq et al. (2014)[1]. They focused on the measurement of poverty in the European Union, choosing a widely accepted definition of poverty in the EU context as their starting-point. There are three main decisions points to be able to measure poverty. These relate to (i) the determination of the most appropriate metric of well-being, (ii) the setting of the poverty line, and (iii) the sensitivity to the distribution among the poor. All three decisions involve value judgments with regard to the notion of poverty, implying that some disagreement between individuals is inevitable.

The widely applied 'at-risk-of-poverty indicator' reflects a particular answer to the three aforementioned questions. Although the official at-risk-of-poverty measure is easy to interpret and communicate, it should be used with care. As a policy target, the at-risk-of-poverty measure provides incentives to focus on the richest among the poor. Moreover, poverty measured by at-risk-of-poverty can decrease in a situation where a deterioration in living standards specifically affects the median of the distribution. Therefore, rather than to rely on a single poverty indicator, one should apply a broad portfolio of poverty measures including robustness and sensitivity checks.

Some progress has been made recently in the literature on poverty measurement by the introduction of a more encompassing definition of well-being through the application of multidimensional techniques. More sophisticated approaches have been explored for fixing a poverty line, such as the budget standard method (in the context of the ImPRovE project, see in particular Penne et al. 2016); and increased computational power has resulted in more reliable assessment of the statistical precision of results obtained (cf. Goedemé, 2013; Berger et al., forthcoming). However, the quality of a poverty analysis obviously depends crucially on the quality of the underlying data. Further improvements of EU-SILC that would allow for broadening the portfolio of indicators of human well-being (expenditures, objective health characteristics, subjective well-being and life satisfaction), larger sample sizes and more precise information on the sampling procedure can only improve the measurement and our understanding of the nature of poverty in Europe.

3 The Europe 2020 social inclusion indicators: individual indicators

3.1 Material deprivation

Since input-based measures (as at-risk-of-poverty rate) came in for criticism on several scores, material deprivation arose as a possible alternative to the income-based measures in the European context. 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 the 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).

[1] This work has been published both as an ImPRovE Working paper (No. 13/01), and as a book chapter in an edited volume.

Recognising 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 constrained estimator of standard of living. The needs of households can differ greatly in time, space and social class (Fusco et 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). Material deprivation offers an interesting alternative, given that it is an outcome measure, focused on the actual living standard of people, rather than the financial resources at their disposal (Guio 2009).

Nonetheless, as a poverty indicator also material deprivation, and the way it is operationalised in the EU indicator of several material deprivation, is confronted with important challenges, especially if it is used in comparative studies (cf. Van den Bosch et al., 2009). First of all, it is not very clear that the set of items that is used for measuring severe material deprivation (with equal weighting of each item), has exactly the same social meaning in all EU Member States. Even though there is some agreement on what EU citizens consider as essential for an adequate living standard, as is evidenced in both quantitative (e.g. Dickes et al., 2009) and qualitative (e.g. Goedemé et al., 2015) research, the extent to which people have access to these items is very unevenly distributed across the EU (e.g. Guio, 2009; Guio et al., 2012). Also, the (original) set of items is rather limited, and does not cover all relevant spheres of life: it may well be more representative for some countries or subpopulations than for others. More generally, a challenge of measuring material deprivation is that potentially some people cannot afford some items, or are confronted with financial stress, as a result of previous preferred expenses (e.g. a mortgage for the dwelling or hire purchase of a car). Finally, indicators of material deprivation do not solve an issue of a more practical nature. That is, they do not indicate the minimum resources required in order not to be poor. In other words, it is very difficult to evaluate in a straightforward way the adequacy of social benefits (but see Notten 2016). In other words, both material deprivation, and measures of income poverty have strengths and weaknesses, which are complementary in several respects. Therefore, it is useful to use them as complements for sensitivity analysis, to look at the relation between them and how they may reinforce one another, and to use them jointly to identify the worst off, for instance in the form of a measure of 'consistent poverty' (see below).

Two papers of the WP12 of the ImPRovE project focused exclusively on the material deprivation indicator. The first, prepared by Guio and Marlier focused on the recent developments in measuring material deprivation in the context of monitoring at EU level, by analysing the differences between the current measure included in the Europe 2020 social inclusion target and the alternative measure proposed by Guio, Gordon and Marlier (2012). The second, written by D'Ambrosio, focuses on the dynamical aspects of being at-risk-of material deprivation by considering intertemporal elements in the phenomenon.

3.1.1 Alternative vs. current measures of material deprivation at EU level: What difference does it make?

When the need to revise the material deprivation (MD) indicator proposed by Guio (2009) arose[2], Guio, Gordon and Marlier (2012) have proposed an analytical framework for developing suitable, reliable, valid and additive aggregate indicators that could be used for analytical and monitoring purposes at national and EU levels. They have applied this framework to EU-SILC data collected in 2009. Based on a systematic item-by-item analysis, carried out at both EU and country levels, they have suggested an alternative MD indicator for the whole population. This alternative indicator consists of 13 items – six are common to the current 9-item MD indicator and seven are new. Using a broad range of statistical techniques, they have demonstrated that their proposed 13-item MD indicator produces a more accurate and precise measurement of deprivation than the current EU MD indicator.

The analysis performed by Guio and Marlier (2013) for the ImPRovE project showed that this alternative 13-item indicator:

- *"adds"* to the population identified by the current standard EU MD indicator a group of people who cumulate a large number of deprivations, encompassing "basic" and "social" items;

- *"drops"* from the population identified by the current standard indicator a group of people who have a high probability to suffer from a small number of deprivations and who are not severely deprived;

- *"keeps"* the more vulnerable population, either in terms of the number of items lacked (whatever the scale used) or in terms of the probability to lack each individual item in the list.

In terms of the characteristics and exposure to other risks, those "added" and those "dropped" are quite similar, except for a few differences which offer an interesting ex-post validation of the alternative indicator (especially, the closer link of the alternative indicator with low income and with bad health compared with the current indicator). All in all, those identified by both the current and alternative indicators are the most vulnerable, i.e. they are more likely to suffer from other risks (low income, bad health, low work intensity, difficulties in making ends meet, etc.) and are proportionally more numerous among single parents, migrants and low educated people.

The impact of the definition change on the proportion of people deprived (standard definition) or severely deprived is small at the EU level, but it varies across countries. As six items are common to both indicators, the incidence of the seven "new" items, the probability of cumulating them and also the way they interact with the "old" six items influence considerably the differences between the two aggregated indicators. Finally, the total proportion of people targeted at EU level is 23.1% according to the current EU severe MD indicator and 23.7% according to the alternative (MD 7+)

[2] The original indicator relied on 9 individual items (out of which 4 being related to durables and 5 to financial stress).

indicator. At the country level, using the alternative (MD 7+) indicator instead of the current EU severe MD indicator increases the proportion of people targeted by more than 2% in Portugal, Hungary and Romania. In other words, the new indicator does indeed appear to be more robust and up to date, but at the same time changes the population identified as severely materially deprived. Switching from the old to the new indicator does unavoidably result in a break in series that cannot be neglected.

3.1.2 The indicators of intertemporal material deprivation: a proposal and an application to EU countries

The paper provided by D'Ambrosio (2013) took as a starting point the fact that the intertemporal aspect of multidimensional poverty has received relatively little attention so far. Most of the studies in the literature have been cross-sectional. At the same time, many contributions on unidimensional poverty have shown that chronic poverty and persistent periods of poverty are worse, in a number of ways, for individuals than are sporadic episodes. For surveys of this literature, see, among others, Rodgers and Rodgers (1993) and Jenkins (2000), and the more recent ImPRovE paper by Andriopoulou and Tsakloglou (2015).

The indices to incorporate these intertemporal considerations proposed by Foster (2009), Bossert, Chakravarty and D'Ambrosio (2012) and Dutta, Roope and Zank (2012) share a similar structure and are generalizations of one another. Analyzed together, they allow to bring into the analysis different aspects of past experiences. D'Ambrosio (2013) aimed to propose an application of the latter contributions on the measurement of poverty over time to material deprivation by employing the EU-SILC panel data set, which includes information on different aspects of well-being over time.

D'Ambriosio (2013) analysed the role of intertemporal considerations in material deprivation and compared EU countries according to this additional information. If the path of material deprivation experienced by each individual over time is followed, one may obtain a different picture from that given by the yearly results. The paper provided methodological considerations and guidance for fully empirically focused analysis of material deprivation. Further analysis could extend the results to patterns of deprivation by population subgroups to better understand the risk factors generating deprivation. Since the measurement of material deprivation is used by EU member states and the European Commission to monitor national and EU progress in the fight against poverty and social exclusion, the basic results reported by the paper suggested that time cannot be neglected. Countries should not only be compared according to their yearly results but also by following individuals over time in order to produce a time-sensitive aggregate measure of material deprivation. Intertemporal material deprivation indices could be thought of as indicators of extreme forms of poverty along the lines of the recommendation of the Indicators Sub-Group of the Social Protection Committee.

3.2 Low work intensity – an analysis of the indicator

Also the household work intensity indicator included as part of the Europe 2020 poverty target is measured on the basis of information in EU-SILC. The indicator is defined, according to Eurostat, as

'the ratio of the total number of months that all working-age household members have worked during the income reference year and the total number of months the same household members theoretically could have worked in the same period', while defining a working-age member as 'a person aged 18-59 years, with the exclusion of students in the age group between 18 and 24 years.' In addition, 'households composed only of children, of students aged less than 25 and/or people aged 60 or more are completely excluded from the indicator calculation'. Further, very low work intensity is, in turn, defined as being '*below a threshold set at 0.20*'.

The paper by Ward and Özdemir (2013) examined a number of issues related to the measurement of work intensity, aiming to assess the robustness of the indicator and suggesting potential improvements and extensions. These are:

- the way the indicator is at present defined and measured, particularly as regards the age group defined to be of working age and the treatment of students;
- the scale of missing data and its potential effect on the results;
- the threshold used for identifying 'low' work intensity;
- the case of workless households with income from employment;
- a comparison of the EU-SILC and EU-LFS as a basis for calculating the indicator and assessing its reliability as usually measured;
- the potential development of an indicator of persistent low work intensity to supplement the indicator of the situation in a single year.

Ward and Özdemir (2013) came to several conclusions and recommendations based on their analysis, including in particular:

- The indicator could be refined by taking account of young people in education and training, who are accordingly not available for work, on a month by month basis rather than according to their status at the time of the survey as is done at the moment.
- The definition of working age in the calculation of the indicator should be in line with that conventionally adopted and with that used for the Europe 2020 employment target, which means increasing the upper age limit from 59 to 64. This means that policies for postponing the age of retirement could help to achieve two Europe 2020 targets at the same time. The effect of raising the upper age limit to 64 would be to increase the proportion of those under 65 living in low work intensity households.
- Cases where data on employment status during the year are missing are not significant except for the UK, though even here the way that they are treated has only a minor effect on the value of the indicator.
- The relatively high risk of poverty among those living in low work intensity households as compared with those in workless households is a compelling reason for defining the indicator to include the former as well as the latter. There is a case for increasing the threshold used to define low work intensity from 0.2 to 0.3 since it would encompass couple households in which only one person works and then only part-time. This is reinforced by the fact that the risk of poverty of those living in households with work intensity of between 0.2 and 0.3 is much the same or higher than those in workless households in many countries.

- Income from employment in workless households is significant in a number of countries reflecting the fact that the data on main activity each month does not capture all of those working during the year. Counting people with income from employment has much less of an effect on the indicator of low work intensity than it would on one of workless households, which reinforces the case for defining the threshold of low work intensity as higher than zero (either at 0.2 as it is for the moment or at 0.3 as suggested above). Nevertheless, taking account of employment income in workless households, as currently defined, materially affects the indicator of low work intensity in some countries, and in particular in Denmark and Italy. This deserves more detailed investigation.
- The EU Labour Force Survey (EU-LFS) is an alternative source of data on household work intensity; while it does not contain information on employment status during each month of the year, the measurement of work intensity at the time of the survey is similar to that measured on the same basis in EU-SILC in most countries. There are some countries for which differences are relatively large between both datasets, which might indicate an issue of reliability of the EU-SILC as a measure of low work intensity, given that LFS has a larger sample size. The similarity of changes over time in the indicator and an LFS-based one for the large majority of countries suggests the latter can be used to estimate changes in the proportion of people living in low work intensity households well in advance of the EU-SILC data becoming available. This opens up the possibility of monitoring developments in work intensity on a much more timely basis, which would provide the information to take more timely policy action to help meet the Europe 2020 target.
- In the same way as for the at-risk-of-poverty indicator, the indicator of low work intensity can be extended to identify those persistently living in such households, which is particularly relevant for targeting policy measures. The relative numbers concerned vary markedly across the EU, in part reflecting the speed of the increase in unemployment over the crisis period. In all countries, those living in households with a persistent low work intensity have a substantially higher persistent risk of poverty than others of working age, emphasising the importance of employment for avoiding persistently low income.

4 Europe 2020 social inclusion indicators: interrelationships

Three papers prepared within the frame of WP12 of ImPRovE focused on the interrelationships between the three phenomena combined by the Europe 2020 social inclusion target: income poverty, material deprivation and low work intensity. All three papers use a different perspective: the one prepared by B. Kis and Gábos (2015) focused on the overlap between the two indicators from a cross-sectional perspective, while the one by Papadopoulos and Tslakloglou (2015) examined the correlation between the chronic forms of these phenomena. Finally, Ayllón and Gábos (2015) analysed the dynamic interrelationships between income poverty, severe material deprivation and low work intensity status.

4.1 Consistent poverty across the EU

When social inclusion was identified as one of the main pillars of the Europe 2020 strategy, 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. The decision to use a composite poverty and social exclusion indicator in itself generated much interest in analysing and refining the separate component indicators. While transcending the unidimensional income concept is largely acknowledged by researchers and other stakeholders alike to be an improvement in monitoring poverty and social exclusion in an enlarged Europe, the method used to define it comes in for criticism in many respects. Among these, using the 'union' approach instead of an 'overlap' approach is also criticized (Nolan and Whelan 2011a). 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. With consistent poverty, those who are both below an income threshold and confronted with material deprivation are considered to be poor. 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 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).

The paper of B. Kis and Gábos (2015) focused on the relationship between the risk of living in relative income poverty (measured by the at-risk-of-poverty indicator) and living in material deprivation (measured by the current severe material deprivation indicator). More in particular, they identified 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. They 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. The following methods were applied: (1) correlation analysis to investigate the relationship between poverty measures that represent different concepts; (2) identifying poverty 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; (3) multivariate regression analyses to identify the main individual and household-level factors predicting consistent poverty status against three different reference groups: not at risk at all, at risk of income poverty only and materially deprived only.

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 proved to be relatively low: the population identified as being at risk of poverty according to both measures was 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 was highest in the New Member States

and the Southern countries. Material deprivation correlated somewhat more strongly with other measures of poverty: the EU-AROP status and the 'inability to make ends meet' status.

The paper 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 (that is either those exclusively income poor or those exclusively materially deprived). 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, there are important differences in what factors shape 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, by focusing on the intersection of both indicators, the most vulnerable can be better identified and monitored. In addition, the analysis provided 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, B. Kis and Gábos 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 those most in need. This is not to say that a union approach should be replaced by an approach focusing on the intersection only: by having the union the goal is to eliminate all forms of poverty and social exclusion. However, having in addition an indicator of consistent poverty allows for a focus on eliminating first the worst forms of poverty and social exclusion and on those most in need.

4.2 Chronic material deprivation and long-term poverty in Europe in the pre-crisis period

In contrast to B. Kis and Gábos (2015), Papadopoulos and Tsakloglou (2015) aimed to outline a methodology for identifying individuals at high risk of chronic relative material deprivation (or, in fact, any form of chronic multi-dimensional deprivation depending on the available data) and to examine to what extent those who suffer from chronic material deprivation and long-term financial poverty overlap, what are the common determinants and which are the differences between material deprivation and income poverty. The longitudinal data of the EU-SILC UDB 2008 version 4 were used for analysis.

An index of chronic relative material deprivation was constructed using a three-step method. In the first step, population members deprived in three domains of static relative material deprivation (satisfaction of basic needs, possession of consumer durables, being able to meet housing needs) were identified. In the second step, the extent of cumulative relative disadvantage of these individuals was examined and, in the final step, persons at high risk of chronic relative material deprivation were identified as those who were found suffering from chronic relative cumulative disadvantage. Application of this method to the data of 22 EU countries revealed very substantial

cross-country differences in the population shares of those classified as being at high risk of chronic cumulative disadvantage. The highest levels of aggregate risk of chronic relative material deprivation were recorded in some countries of Southern and Central - Eastern Europe and the Baltic countries and the lowest in a number of Northern and Continental European countries, broadly in line with what we find with the official indicator of severe material deprivation.

Results also show that there are considerable differences across EU member states regarding both the level and the structure of population members at high risk of chronic material deprivation and longitudinal poverty. There appears to be a considerable overlap of the two groups within countries, although in quantitative terms the extent of overlap varies across countries. Nevertheless, there are also considerable elements of deprivation captured by the chronic material deprivation index that are independent of being in a state of longitudinal poverty and vice versa.

In terms of particular population groups at high risk of deprivation (material or income poverty), the results of the analysis revealed a number of qualitative similarities regarding the population groups that tend to be classified as "high risk" groups and quantitative differences regarding the "magnitude" of risk faced by these population groups, across EU member states. In almost all countries under examination, lack of full employment by the individual or, especially, by the household's reference persons leads to higher risks of chronic material deprivation and longitudinal poverty. In addition, the risk of both forms of deprivation was found to be strongly negatively associated with educational qualifications. Other risk groups, with respect to both types of deprivation, are members of lone parent households and members of households headed by a woman or by a very young or, to a lesser extent, an elderly person. Children and the elderly are facing moderate risks of deprivation. Remarkably, the age of the reference person of the household rather than of the individual member appeared to be a more important factor associated with deprivation.

4.3 The dynamic interrelationships between the Europe 2020 social inclusion indicators

The aim of the paper by Ayllón and Gábos (2015) was to analyse dynamically the interrelationships between the three segments of poverty and social exclusion covered by the EU2020 poverty target: namely, financial poverty, severe material deprivation and low work intensity. Special attention was paid to the measurement of the degree of state dependence in each phenomenon, as well as to the possible feedback effects between the three processes. State dependence means that being in a situation of poverty or deprivation in one period, increases the likelihood of being in the same situation in the next period. The proposed econometric strategy controlled for observed and unobserved characteristics and the initial conditions problem, while analysis was based on data from the EU-SILC for eight European Member States. Initially, the authors aimed at including more countries, but in many countries the data appeared to be of insufficient quality in terms of sample size and panel duration for the analytical technique employed.

The three processes under study are affected by a considerable degree of genuine state dependence, according to which the past in itself influences the probability of someone experiencing the same problem again in the future. Once more, the results highlight the importance of accounting for past experiences when trying to understand the current processes of poverty, material deprivation and

low work intensity. Of the three segments, material deprivation is the phenomenon least affected by scarring, and low work intensity is most affected. From a policy point of view, this means that interventions at a given point in time will have spill-over effects in the future; thus combating economic hardship today clearly reduces the problem tomorrow. Among the mechanisms, the social benefit regimes, human capital depreciation, demoralisation, loss of motivation, or stigma appear to play an important role.

In terms of feedback effects between poverty and material deprivation, Ayllón and Gábos (2015) find clear evidence of a feedback loop only in the Central-Eastern European countries, where both phenomena reinforce each other. In the remainder of the countries, there was no such evidence, which highlights the fact that poverty and material deprivation are different in nature and may be identifying different individuals. This is confirmed by the analysis of B. Kis and Gábos (2016) who, as highlighted before, found a higher level of consistent poverty in the Eastern European countries. According to the analysis by Ayllón and Gábos, the weak association between poverty and material deprivation mainly characterises the more affluent Member States. In the latter group of countries, poverty and material deprivation are much more affected by current effects, initial conditions and correlated un-observables.

Regarding the interrelationship between poverty and low work intensity, it was found that feedback effects are not important in explaining either phenomenon. Rather, it is the current status of low work intensity that clearly explains the probability today of living below the poverty line. Feedback effects from low work intensity to poverty were only found in three of the eight countries and did not allow the identification of a pattern by country cluster. The evidence of a relationship between material deprivation and low work intensity was even more mixed (in terms of signs and significance) than for the rest of the feedback effects analysed. Only in the Central-Eastern European countries was a feedback loop found between these two phenomena. It is current low work intensity status that mainly has an influence on material deprivation.

Overall, as was also found in other papers, the three social indicators of the EU2020 strategy are different and capture different aspects of economic hardship in the majority of the countries analysed. However, we also found that the three segments are related via current effects in almost all the samples - in particular, low work intensity status is strongly linked with the risk both of income poverty and of severe material deprivation. In terms of policy conclusions, on the one hand, these results suggest that the three domains should be handled via different interventions, while spill-over effects across time are likely to be marginal, apart from Central-Eastern European countries. On the other hand, employment policies that reduce low work intensity clearly fight poverty in the first instance, but also severe material deprivation, via current effects.

5 Conclusion

This paper summarises the main findings of the ImPRovE project with regard to the measurement of poverty in the EU, and the relationship between the EU 2020 poverty reduction target indicators. The papers show important complementarities between the indicators used, and found little evidence of longitudinal feedback effects, except for the Eastern European countries. From a policy point of view, the ‘union’ approach (with which being poor or excluded in one area is sufficient of being counted in

the target) should be complemented with an approach of 'consistent' poverty. This could help the identification of those most in need of support, given that those considered as consistently poor are faced both with financial poverty and material deprivation.

The analyses carried out in this work package also led to some methodological conclusions. First, the papers show that taking account of the time dimension in poverty research is crucial. For doing so, it is essential to have access to high-quality panel data, and to avoid breaks in series over time. The extension of the standard panel duration of EU-SILC from 4 to 6 (or 8) years would be a positive evolution from this perspective. Second, it is clear that the indicator of low work intensity can be strengthened in several respects, and Ward and Özdemir (2013) have offered several useful recommendations in this respect. Finally, the move from the current indicator of material deprivation to the new one, would result in an improved identification of those confronted with the most severe forms of deprivation, even though it would result in a break in series. It is therefore advisable to keep on using the original indicator of severe material deprivation for monitoring progress to the EU 2020 poverty reduction target, in parallel with the new indicator.

Even though this paper does not offer a complete literature survey of the work carried out in the area of poverty measurement in the EU, it is clear that great advances have been made over the past couple of years. Nonetheless, important improvements in the measurement of poverty and social exclusion are still feasible, mostly by improving data quality. Panel duration is one factor, but being able to link EU-SILC information to other information at the micro level with regard to wealth, expenditures etc. is another example. Other work carried out in the context of ImPRovE points to the importance of improving information on differences in consumption patterns and the price of goods and services (Goedemé and Collado, 2016), and improving methodologies for identifying the minimum resources required for adequate social participation, in a comparative framework (Goedemé et al., 2015). Clearly, more can be done in these areas in the future.

References

Andriopoulou, E. and P. Tsakloglou (2015), Mobility into and out of poverty in Europe in the 1990s and the pre-crisis period: the role of income, demographic and labour market events, ImPRovE WP N°15/13. Antwerp: Herman Deleeck Centre for Social Policy, University of Antwerp, 65p.

Atkinson, A.B., B. Cantillon, E. Marlier and B. Nolan (2002), *Social Indicators: the EU and Social Inclusion.* Oxford: Oxford University Press.

Berger, Y., G. Osier and T. Goedemé (forthcoming), Standard error estimation and related sampling issues. In: A. B. Atkinson, A.-C. Guio, and E. Marlier (Eds.), *Monitoring social Europe.* Luxembourg: Eurostat.

Boarini, R. and M.M. d'Ercole (2006), Measures of material deprivation in OECD countries. OECD Social, Employment and Migration Working Paper N°37. Paris: OECD.

Copeland, P. and M. Daly (2012), Varieties of poverty reduction: inserting the poverty and social exclusion target into Europe 2020. *Journal of European Social Policy*, 22(3): 273–287.

Decancq, K., T. Goedemé, K. Van den Bosch and J. Vanhille (2014), The Evolution of Poverty in the European Union: Concepts, Measurement and Data. In: B. Cantillon & F. Vandenbroucke (Eds.), *Reconciling work and poverty reduction in Europe: how successful are European welfare states?* pp. 60-93. Oxford: Oxford University Press.

Dewilde, C. L. (2004), The multidimensional measurement of poverty in Belgium and Britain: A categorical approach, *Social Indicators Research*, 68(3), 331{369.

Dickes, P., A. Fusco and E. Marlier (2010), Structure of National Perceptions of Social Needs Across EU Countries. *Social Indicators Research,* 95(1): 143-167.

European Commission (2006), Portfolio of indicators for the monitoring of the European strategy for social protection and social inclusion. Brussels: DG Employment and Social Affairs.

European Commission (2009), Portfolio of indicators for the monitoring of the European strategy for social protection and social inclusion - 2009 update. Brussels: DG of Employment, Social Affairs and Equal Opportunities.

Förster, M., G. Tarcali and M. Till (2004), Income and non-income poverty in Europe: What is the minimum acceptable standard in an enlarged European Union? Vienna: European Centre for Social Welfare Policy and Research.

Fusco, A., A.-C. Guio and E. Marlier (2010), Income poverty and material deprivation in European countries, Eurostat Methodologies and Working Papers. Luxembourg: Eurostat.

Gábos, A., R. Branyiczki, B. Lange and I. Gy. Tóth (2015), Employment and poverty dynamics in the EU countries before, during and after the crisis, ImPRovE Working Paper N°15/06. Antwerp: Herman Deleeck Centre for Social Policy, University of Antwerp.

Goedemé, T. (2013), How much confidence can we have in EU-SILC? Complex sample designs and the standard error of the Europe 2020 poverty indicators, *Social Indicators Research*, 110(1), 89-110. doi:10.1007/s11205-011-9918-2.

Goedemé, T. and D. Collado (forthcoming), The EU convergence machine at work. To the benefit of the EU's poorest citizens?, *Journal of Common Market Studies*: doi: 10.1111/jcms.12382.

Goedemé, T., B. Storms, S. Stockman, T. Penne and K. Van den Bosch (2015), Towards Cross-country Comparable Reference Budgets in Europe: First Results of a Concerted Effort, *European Journal of Social Security* (EJSS), 17(1): 3-31.

Goedemé, T., B. Storms, T. Penne and K. Van den Bosch (eds.) (2015), The development of a methodology for comparable reference budgets in Europe - Final report of the pilot project. Pilot project for the development of a common methodology on reference budgets in Europe (contract no. VC/2013/0554). Brussels: European Commission. DOI: 10.2767/096631.

Guio, A.-C. (2009), What can be learned from deprivation indicators in Europe? Eurostat Methodologies and Working Papers.

Guio, A.-C., D. Gordon and E. Marlier (2012), Measuring material deprivation in the EU. Indicators for the whole population and child-specific indicators. Paper presented during the Working Group meeting 'Statistics on Living Conditions'. Luxembourg: Eurostat, 29–31 May 2012.

Israel S. and D. Spannagel (2013), Material deprivation: an analysis of cross-country differences and European convergence, Combating Poverty in Europe (COPE) project, European Commission.

Jenkins, S.P. (2000), Modelling household income dynamics. *Journal of Population Economics*, 13:529–567.

Marlier, E., A.B. Atkinson, B. Cantillon and B. Nolan (2007), *The EU and Social Inclusion: Facing the challenges.* Bristol: Policy Press.

Maître, B., B. Nolan and C.T. Whelan (2013), A critical evaluation of the EU 2020 poverty and social exclusion target: an analysis of EU-SILC 2009. GINI Discussion Paper N°79. Amsterdam: AIAS.

Nolan, B. and C. T. Whelan (1996), *Resources, Deprivation, and Poverty*. Oxford: Clarendon Press.

Nolan, B. and C.T. Whelan (2011a), *Poverty and Deprivation in Europe*. Oxford: Oxford University Press.

Nolan, B. and C.T. Whelan (2011b), The EU 2020 poverty target. GINI Discussion Paper N°19. Amsterdam: AIAS.

Notten, G. (2015), How Poverty Indicators Confound Poverty Reduction Evaluations: The Targeting Performance of Income Transfers in Europe. In: *Social Indicators Research*: 1-18.

Penne, T., I. Cussó Parcerisas, L. Mäkinen, B. Storms and T. Goedemé (2016), Can reference budgets be used as a poverty line?, ImPRovE WP N°16/05. Antwerp: Herman Deleeck Centre for Social Policy, University of Antwerp, 35p.

Ravallion, M. (2011), On multidimensional indices of poverty. World Bank Policy Research Working Paper 5580.

Rodgers, J. and J. Rodgers (1993), Chronic poverty in the United States. *Journal of Human Resources*, 28:25–54.

Sen, A. (1989), Development as Capability Expansion. *Journal of Development Planning*, 19: 41–58.

Townsend, P. (1979), *Poverty in the United Kingdom*. Harmondsworth: Penguin.

Van den Bosch, K., B. Storms, N. Van Mechelen and T. Goedemé (2009), Armoedegrenzen voor Europa, Pp. 195-211 in: *Arm Europa. Over armoede en armoedebestrijding op het Europese niveau,* edited by Jan Vranken, Geert Campaert, Danielle Dierckx and An Van Haarlem. Leuven / Den Haag: Acco.

Whelan, C.T., B. Nolan and B. Maître (2008), Measuring material deprivation in the enlarged EU, Working Paper N°249. Dublin: Economic and Social Research Institute.

Whelan, C.T. and B. Maître (2010), Comparing poverty indicators in an enlarged EU, *European Sociological Review*, 26: 713–730.

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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