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What differences does it make?**

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ALTERNATIVE VS. CURRENT MEASURES OF MATERIAL DEPRIVATION AT EU LEVEL:

WHAT DIFFERENCES DOES IT MAKE?

Anne-Catherine Guio and Eric Marlier¹

Abstract:

Guio, Gordon and Marlier (2012) have proposed a theory based analytical framework for developing robust (i.e. 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, and as a result of their systematic item by item analysis carried out at both EU and country levels, they have suggested an alternative material deprivation (MD) indicator which consists of 13 items – six are common to the current 9-item MD indicator and seven are new. This paper discusses the impact of the move from the current EU definition of MD to this alternative 13-item indicator – impact in terms of the size of the population deprived throughout the EU, impact in terms of the composition (socio-demographic characteristics) of this population as well as impact on the Europe 2020 social inclusion target.

Keywords: Poverty; material deprivation; Europe 2020 social inclusion target ; EU-SILC

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1. INTRODUCTION

Since 2009, the portfolio of social indicators used by European Union (EU) countries and the European Commission for measuring progress towards the EU social protection and social inclusion objectives² includes measures of material deprivation (MD). These measures have been endorsed at EU level as a response to the need to complement EU income poverty and social exclusion figures with indicators that better reflect differences in actual standards of living across the EU – a need which had become even more urgent after the 2004 and 2007 enlargements.

Based on the limited information available from the EU Statistics on Income and Living Conditions (EU-SILC) data-set and building on the work by Guio (2009), the “standard” EU MD rate is currently defined as the proportion of people living in households who cannot afford at least three of the following nine items:

- 1) coping with unexpected expenses;
- 2) one week’s annual holiday away from home;
- 3) avoiding arrears (in mortgage or rent, utility bills or hire purchase instalments);
- 4) a meal with meat, chicken, fish or vegetarian equivalent every second day;
- 5) keeping the home adequately warm;
- 6) a washing machine;
- 7) a colour TV;
- 8) a telephone;
- 9) a personal car.

Since June 2010, when EU leaders launched the new “Europe 2020 Strategy” and set in this context an EU social inclusion target, the importance of EU MD indicators has grown considerably. Indeed, this target, which consists of lifting at least 20 million people out of the risk of poverty or social exclusion in the EU by 2020, is based on three indicators. One of them is a measure of “severe” deprivation, which is built in the same way as the “standard” measure but with a threshold set at four rather than three enforced lacks.

A thematic module on MD was added to the 2009 wave of EU-SILC with a view to addressing two weaknesses of the current EU MD indicators, namely the small number of items they are based on (which is due to the small number of relevant items included in EU-SILC) and the weak reliability of some of these items. As a result of an in-depth analysis of this module carried out by Guio, Gordon and Marlier (2012), the MD items currently included in the core part of EU-SILC are being reviewed and expanded. In addition, the mid-term review of the Europe 2020 Strategy (in 2015) will re-examine the Europe 2020 social inclusion target together with the indicators this target is based on.

This paper builds upon the work of Guio, Gordon and Marlier (2012). It discusses the impact of the move from the current EU definition of MD to that proposed by Guio, Gordon and Marlier – impact in terms of the size of the population deprived throughout the EU as well as impact in terms of the composition (socio-demographic characteristics) of this population. Directly related to that, it also analyses the impact that this move would have on the Europe 2020 social inclusion target.

² For the list of EU social objectives, see Council of the European Union (2011).

2. A PROPOSAL TO REVISE THE EU MD INDICATOR

Guio, Gordon and Marlier (2012) propose an analytical framework for developing robust aggregate indicators that could be used for analytical and monitoring purposes at national and EU levels.³ As a result of the application of this framework to EU-SILC data collected in 2009, they suggest two new MD indicators, one for the whole EU population (i.e. people aged 0+) and one specifically focused on children (defined here as people aged 1-15). For identifying the final optimal list of MD items to be included in these indicators, they consider four aspects:

1. The suitability of each MD item, in order to check that citizens in the different EU countries (as well as the different population sub-groups within each country) perceive them as necessary for people to have an “acceptable” standard of living in the country where they live. “Suitability” should thus be understood as the “face validity” of the measure among EU citizens.
2. The validity of individual items, to ensure that each item exhibits statistically significant relative risk ratios with independent variables known to be correlated with MD.
3. The reliability of the MD scale, to assess the internal consistency of the scale as a whole - i.e., how closely related the set of MD items are as a group. This assessment was done on the basis of the Cronbach’s Alpha statistic and a Classical Test Theory (CTT) framework, and complemented with additional tests on the reliability of each individual item in the scale based on Item Response Theory (IRT).
4. The additivity of items, to check whether a person with a MD indicator score of “2” is in reality suffering from more severe MD than a person with a score of “1”, i.e. that the MD indicator’s components add up.

Only the MD items that successfully passed these four steps were considered eligible for being aggregated into a MD indicator. In order to guarantee a sufficient level of cross-countries comparability, an item was considered as not passing one of these tests as soon as it failed in three of 26 EU Member States (Sweden was not included in this criterion because of the large proportion of missing cases for all module items in that country (around 40 %)).

Guio, Gordon and Marlier (2012) show that among the nine items included in the current EU MD indicators, three fail in a number of countries (enforced lack of a washing machine, a TV and a telephone) and therefore cannot be retained. The other six items successfully pass the tests in the *whole* EU. These consist of the incapacity for a household to:

- 1) face unexpected expenses;
- 2) afford one week annual holiday away from home;
- 3) avoid arrears (in mortgage or rent, utility bills or hire purchase instalments);
- 4) afford a meal with meat, chicken or fish every second day;
- 5) keep the home adequately warm; and

³ For indicators to be fit for purpose, i.e. in this case to ensure that they will provide robust tools for measuring and monitoring MD at national and EU levels, their construction needs to follow a principle-based approach. The methodological principles to be met by EU social indicators were adopted by EU Heads of State and Government in 2001 (Social Protection Committee, 2001) and have only been very marginally revised since then (European Commission, 2009). The EU principles adopted in 2001 were consistent with those put forward in a 2001 study by Atkinson *et al.* carried out on behalf of the EU Belgian Presidency, where they were originally proposed. Readers interested in a detailed discussion of these principles and, more broadly, of comparative EU indicators for social inclusion can refer to Atkinson *et al.* (2002); see also Marlier *et al.* (2007). In developing alternative MD indicators, Guio, Gordon and Marlier have ensured that their proposed measures satisfactorily meet these EU agreed methodological criteria.

- 6) have access to a car/van for personal use (enforced lack – i.e. the household would like to have access but cannot afford it (the lack is not a choice of the household)).

They also show that seven items collected in the 2009 MD module also satisfactorily meet the criteria and contribute to a robust measure of what can be seen as a common underlying concept of MD across the EU.

Five of these items are enforced lacks which adult household members are confronted with. In the households concerned, a majority of members aged 16 or above cannot afford (but would like to):

- 1) replace worn-out clothes by some new ones;
- 2) have two pairs of properly fitting shoes;
- 3) spend a small amount of money each week on him/herself;
- 4) have regular leisure activities; and
- 5) get together with friends/family for a drink/meal at least monthly.

The other two items consist of the incapacity for the household to afford:

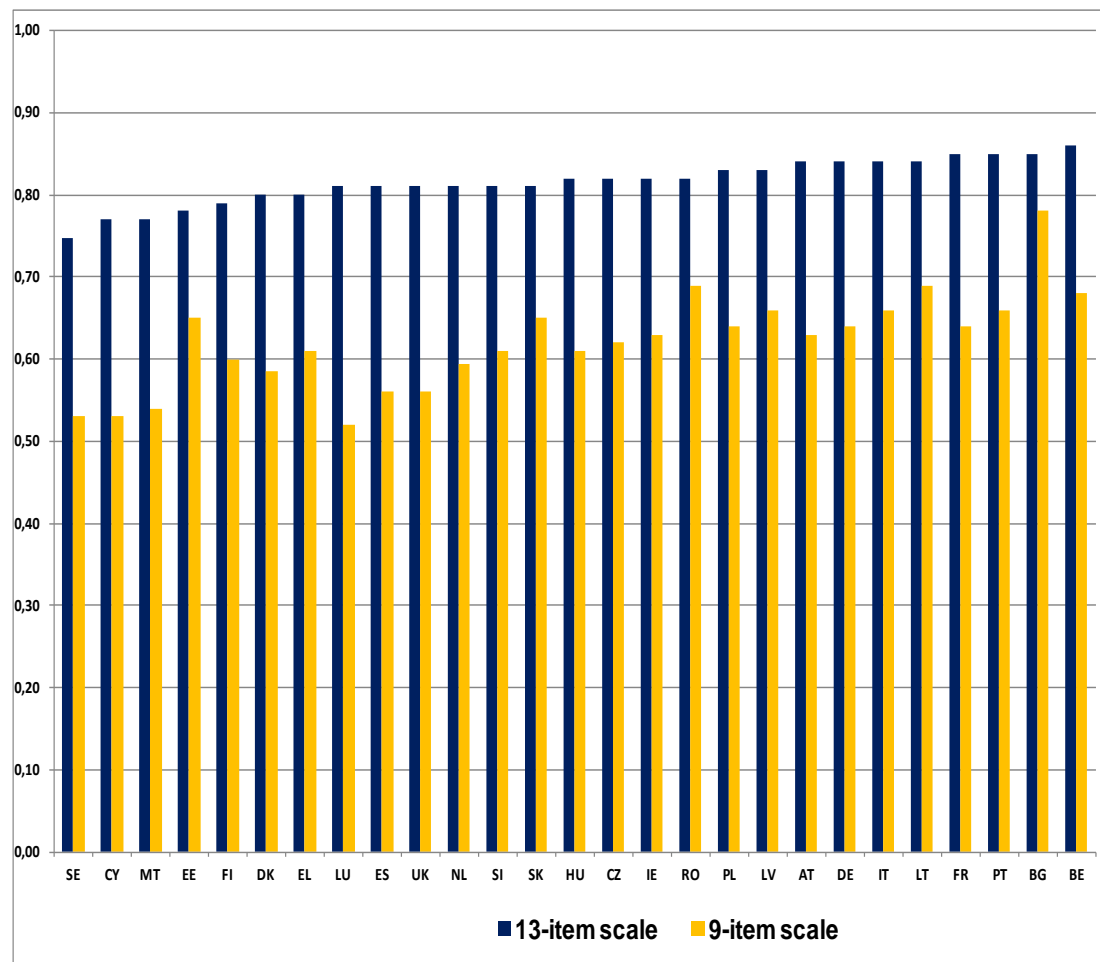
- 6) replacing worn-out furniture; and
- 7) both a computer and an internet connection (enforced lack).⁴

So, Guio, Gordon and Marlier (2012) suggest replacing the current 9-item MD indicator with an alternative 13-item MD indicator which clearly provides a more robust MD measure for use across the EU.

The reliability of the 13-item scale they propose is very high, for the EU-27 as a whole and also for each EU Member State. The Cronbach's Alpha statistic, which measures the internal consistency of a scale, is 0.85 for the pooled EU-27 dataset and ranges from 0.75 in Sweden to 0.86 in Belgium (see Figure 1). The fact that in each country, the reliability largely exceeds the 0.70 acceptability threshold (Nunally, 1978) is a major improvement on the current (9-item) indicator for which the Alpha varies from 0.50-0.60 in LU, CY, MT, ES, SE, UK, DK, NL to 0.78 in BG (0.69 for the EU as a whole). This means that the alternative 13-item MD indicator is more reliable for the EU as a whole and in all EU countries and, therefore, measures deprivation with greater precision than the current MD indicator.

⁴ These seven items are already included in the 2013 wave of EU-SILC in almost all EU countries, on the basis of a gentlemen's agreement between Eurostat and the Member States.

Figure 1: Cronbach's alpha by country, 2009



Note: See Annex 1 for EU countries' official abbreviations.

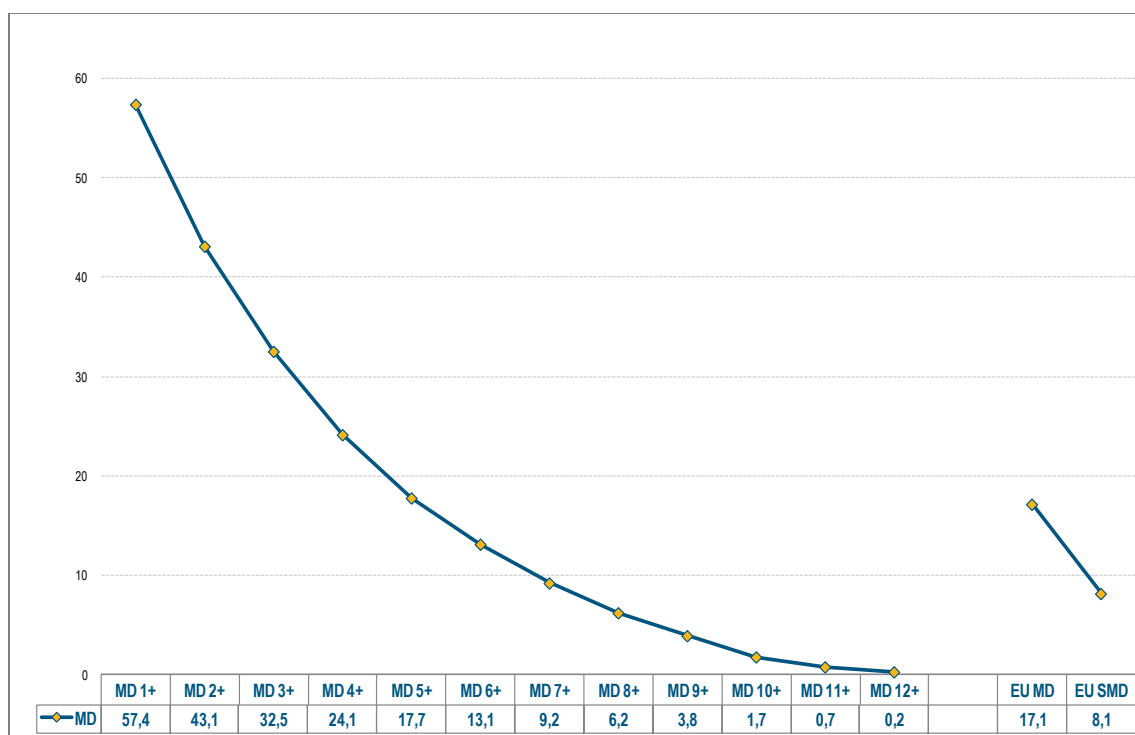
Source: EU-SILC 2009 cross-sectional data, Users' database – August 2011, authors' computation.

3. CHOICE OF THE THRESHOLD

As explained above, the current EU measure of MD is defined as the proportion of people living in households who cannot afford at least three (standard MD) or four (severe MD) items out of a list of nine items. The severe measure of MD is used for the Europe 2020 social inclusion target, in combination with the standard EU “at-risk-of-poverty” indicator (people “at risk of poverty” are those living in a household whose total equivalised income is below 60 % of the national median equivalised household income) and a measure of “very low household work intensity” (people with very low work intensity are those aged 0-59 living in households where, on average, adult members aged 18-59 have worked less than 20 % of their total work potential during the income reference period – i.e. in [quasi-]jobless households).

Guio, Gordon and Marlier (2012) tested different MD thresholds (common to all countries) and compared these to the “standard” and “severe” MD indicators. Figure 2 provides the results obtained for the EU as a whole and Annex 2 the results for each Member State.

Figure 2: MD rates according to different MD thresholds (comparison between the alternative 13-item MD indicator and the current MD indicator), EU-27, 2009, %



Note: “MD 5+”... “MD 9+” refer to a lack of 5+... 9+ items in the alternative 13-item indicator. “EU MD” refers to the current standard EU indicator of MD (3+ lacks out of 9) whereas “EU SMD” refers to the current EU indicator of “severe” MD used in the definition of the Europe 2020 social inclusion target (4+ lacks out of 9).

Source: Guio, Gordon and Marlier (2012).

As can be seen from Figure 2, a threshold of at least five items lacked (out of 13) leads to a MD rate for the EU-27 weighted average⁵ that is very close to that provided by the current standard EU-27 MD indicator (3+ items out of nine; hereafter “EU MD”). And a threshold of at least seven items lacked (out of 13) leads to an EU-27 MD rate that is slightly higher than the current EU severe MD indicator (4+ items out of nine; hereafter “EU SMD”).

In view of the purpose of our paper, we have opted for these two different thresholds, which we refer below to as “MD 5+” and “MD 7+”. First, we consider that the closeness of the results makes it easier to compare the figures provided by the alternative measures proposed by Guio, Gordon and Marlier with those produced by the current EU measures. Second, we believe that this choice is likely to allow for a smoother transition between the two measures, which is especially important for the severe one given its political prominence in the Europe 2020 Strategy.

4. WEIGHTING AND SENSITIVITY OF THE RESULTS TO THE CHOICE OF ITEMS

The above figures result from a simple count of the deprivation items over the population. This method relies on the implicit assumption that each item receives the same weight, i.e. has the same importance, and so in all countries. The issue of weighting receives different answers in the deprivation literature. The difficulty to design weights and, once designed, the effort needed to communicate on the weighted results prevent some authors from weighting (for a discussion

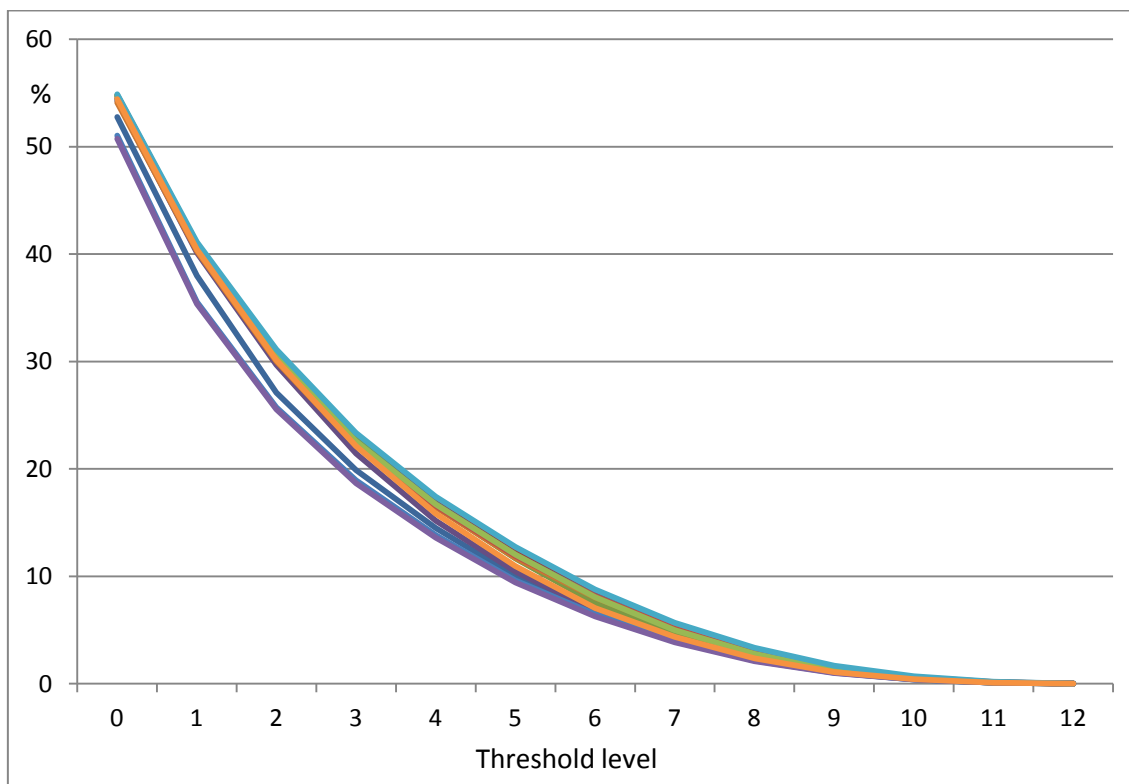
⁵ See Annex 1 for the calculation of EU-27 weighted averages.

on different possible weighting procedure and their impact on the current EU deprivation indicator, see Guio (2009) and Guio *et al.* (2009)).

The indicator discussed in this paper is an unweighted sum of 13 items. The reason for opting for an equal weighting approach is the high reliability of the indicator. As stated by Guio, Gordon and Marlier (2012, p. 110): “Classical Test Theory assumes that there are an infinite (or very large) number of MD measures. If we could have answers to this infinite number of deprivation questions then we would have ‘perfect knowledge’ (we would know everything) about each person’s deprivation. No set of weights could add any additional information as we would already know everything, i.e. the infinite deprivation index is self-weighting. The square root of the Cronbach’s alpha statistic can be considered to be the correlation between the index and the ‘perfect’ index made from the answers to the infinite set of deprivation questions. The Cronbach’s alpha for the whole population list is 0.85. The correlations with the perfect infinite set of deprivation indicators are therefore impressive (0.92), so there is little additional information that any differential weights could add. Even if perfect error free differential weights could be developed, the results from the current deprivation indicator and the weighted indicator would be essentially identical. In view of these results and because of the advantages of this approach (in particular, its simplicity and transparency), an equal weighting approach seems to be well suited for the construction of EU material deprivation indicators.”

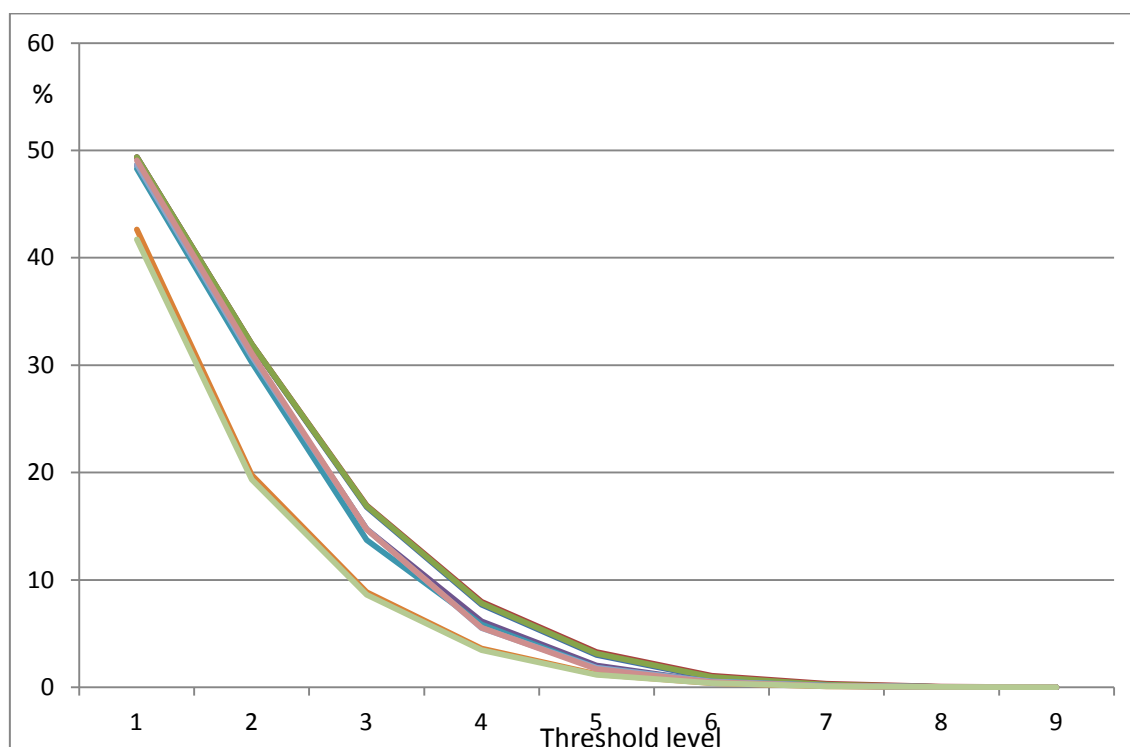
Choosing the items in the list is also a kind of crude weighting (giving 1 to each item retained, and 0 to those not in the final list). To test the extent to which the 13-item indicator depends on the choice of items, we can replicate Figure 2 (which provides the proportion of people deprived according to different thresholds) for the 13 possible subsets of 12 items chosen among the 13 items included in the indicator (i.e. one item is dropped alternatively or, put differently, receives a weight of zero). This is what we do in Figure 3. Looking at this figure, we see that the 13 curves are very close to each other which means that the proportion of people deprived does not depend on the choice of items. A similar exercise based on the 9-item indicator currently used at the EU level, shows a greater variability of the results, depending on which eight items are retained (see Figure 4).

Figure 3: MD rates according to different MD thresholds - comparison between 13 alternative MD indicators composed of 12 items (out of the 13 items included in the indicator proposed by Guio et al.), EU-27, 2009, %



Source: EU-SILC 2009 cross-sectional data, Users' database – August 2011, authors' computation

Figure 4: MD rates according to different MD thresholds - comparison between 9 alternative MD indicators composed of 8 items (out of the 9 items included in the current EU indicator), EU-27, 2009, %



Source: EU-SILC 2009 cross-sectional data, Users' database – August 2011, authors' computation

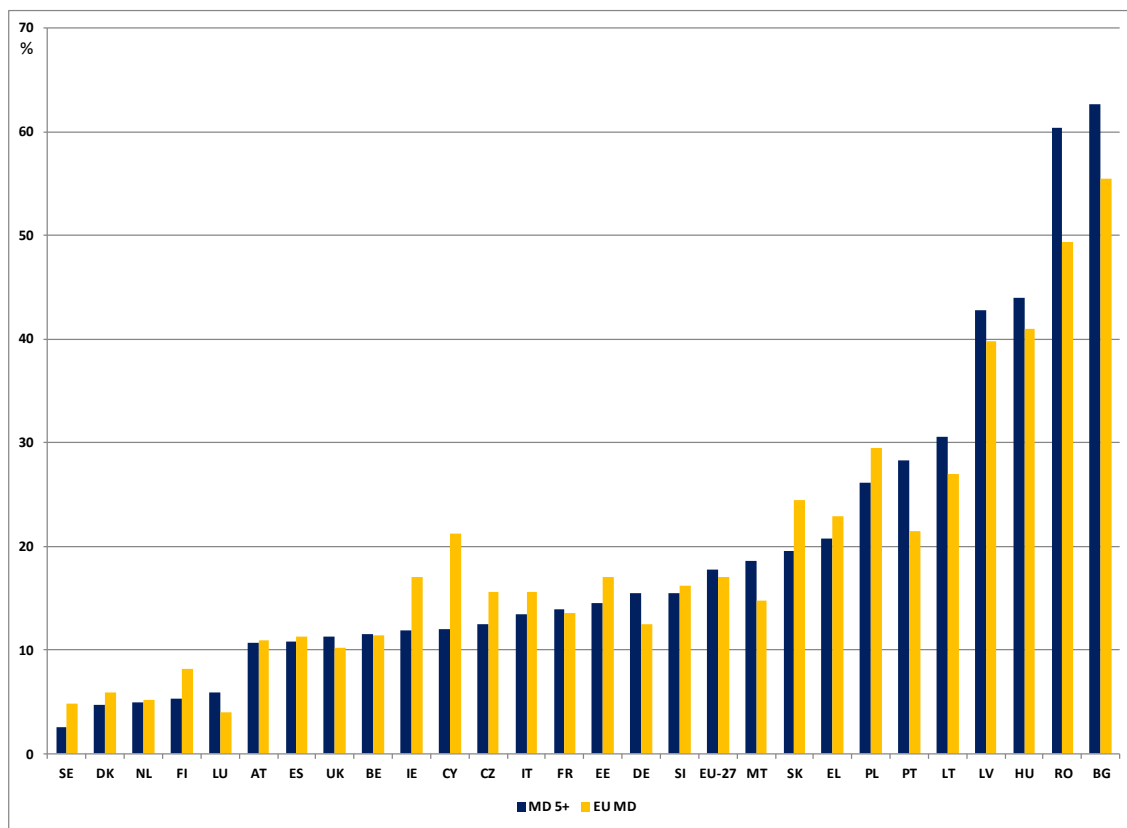
5. IMPACT OF THE DEFINITION CHANGE ON THE INCIDENCE OF DEPRIVATION IN THE EU

5.1 IMPACT ON THE STANDARD EU MD INDICATOR

Figure 5 compares the proportion of people deprived according to the current “standard” MD indicator (EU MD) and the alternative 13-item MD indicator with a threshold set at 5+ deprivations (MD 5+). Figure 6 presents the confidence interval of the difference (in percentage points) between the proportion of people deprived according to the current “standard” MD indicator (EU MD) and the alternative 13-item MD indicator with a threshold set at 5+ deprivations (MD 5+). All confidence intervals presented in this paper are computed on the basis of Goedemé (2013).

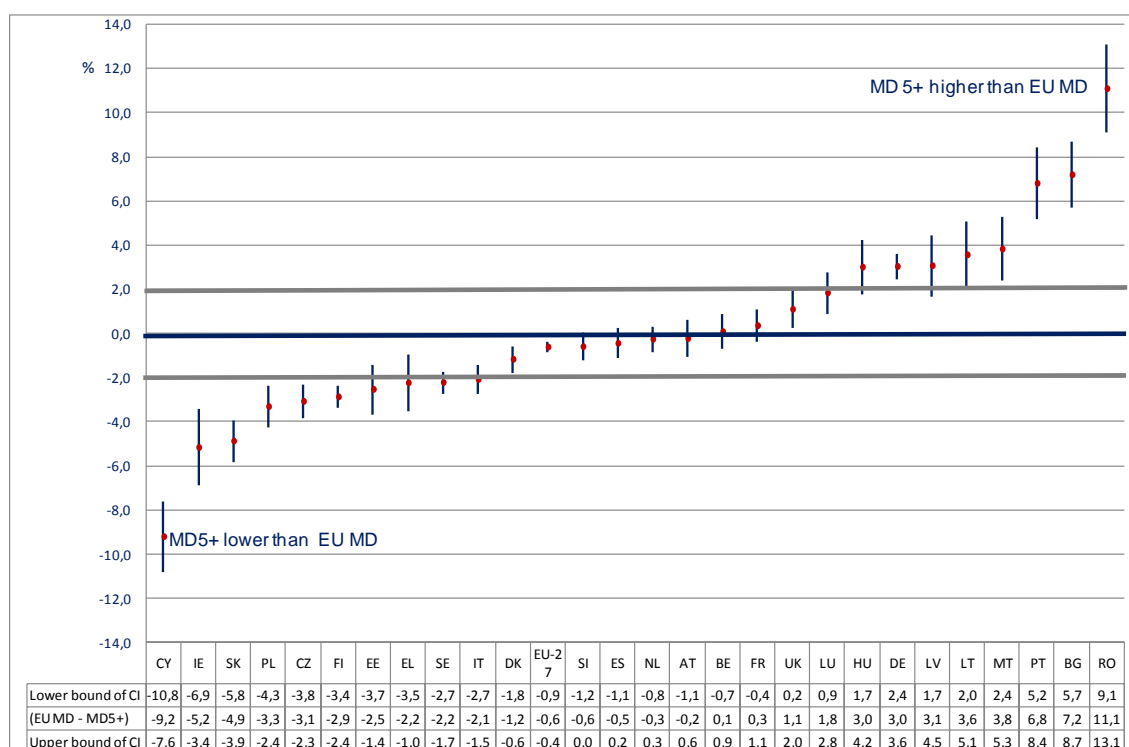
Moving from the current EU MD indicator to the alternative MD 5+ indicator has either no statistically significant impact on the proportion of people deprived (in six Member States: SI, ES, NL, AT, BE, FR) or this impact is maximum 2 percentage points (in EE, EL, SE, IT, DK, UK, LU, HU, LV, LT as well as for the EU-27 average). In five countries (DE, MT, PT, BG, RO), the alternative indicator produces deprivation levels which are higher by more than two percentage points. By contrast, the deprivation levels are lower by more than two percentage points in CY, IE, SK, PL, CZ, FI.

Figure 5: People deprived, using either the current EU standard MD indicator (3+ items out of 9) or the alternative MD indicator (5+ items out of 13), 2009, Percentages



Source: EU-SILC 2009 cross-sectional data, Users' database – August 2011, authors' computation

Figure 6: Difference between the proportion of people deprived using the current EU standard MD indicator (3+ items out of 9) and the proportion of people deprived using the alternative MD indicator (5+ items out of 13), 2009, Percentages points with 95 % confidence intervals



Reading note: In Cyprus, the proportion of people deprived using the alternative MD indicator (5+ items out of 13) is 9.2 percentage points lower than the proportion of people deprived using the current EU standard MD indicator (3+ items out of 9). The interval comprised between 7.6% and 10.8% has 95% probability of containing the "true" difference.

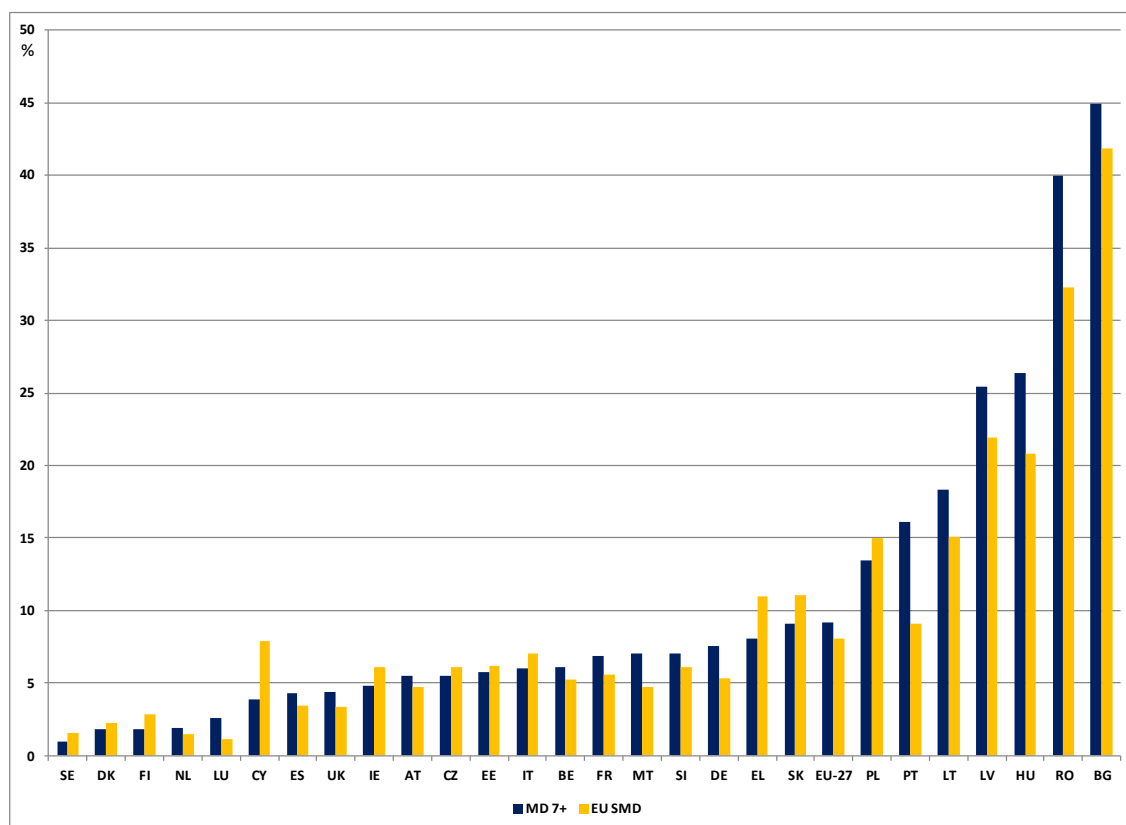
Source: EU-SILC 2009 cross-sectional data, Users' database – August 2011, authors' computation.

Looking at the incidence of each individual MD item retained in the alternative scale may help to understand and assess these national differences. As six items are common to both indicators, the incidence of the seven "new" items, the probability to cumulate them and also the way they interact with the "old" six items influence considerably the differences between the two aggregated indicators. Using a "heat map" presentation, Annex 3 provides for each item and country the ratio between the proportion of people lacking the item in the country and the proportion of people lacking the same item at EU-27 level.

5.2 IMPACT ON THE SEVERE EU MD INDICATOR

Figure 7 compares the proportion of people deprived according to the current "severe" MD (EU SMD) indicator and the alternative MD indicator with a threshold set at 7+ deprivations (MD 7+).

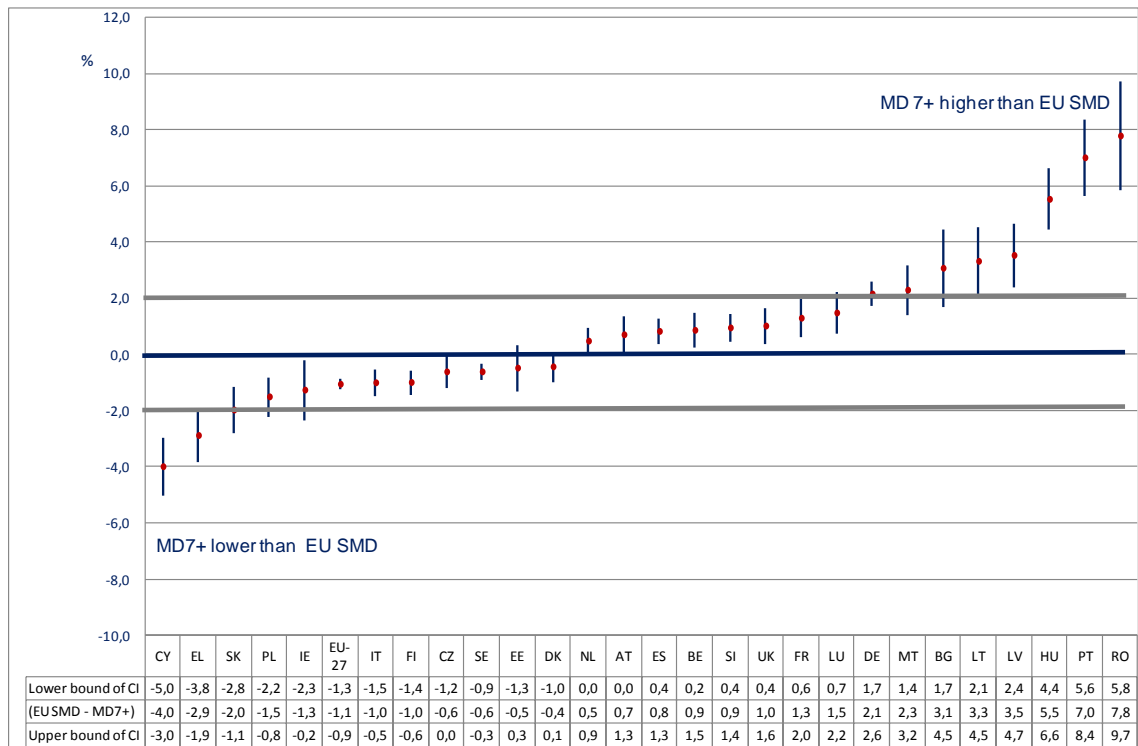
Figure 7: People deprived, using either the current EU severe MD indicator (4+ items out of 9) or the alternative MD indicator (7+ items out of 13), 2009, Percentages



Source: EU-SILC 2009 cross-sectional data, Users' database – August 2011, authors' computation

Moving from the current severe EU SMD indicator to the alternative MD 7+ indicator has no statistically significant impact on the proportion of people severely deprived in five Member States: CZ, EE, DK, NL, AT (see Figure 8). This impact is statistically higher than 2 percentage points in CY (MD 7+ lower than EU SMD) and in LT, LV, HU, PT and RO (MD 7+ higher than EU SMD).

Figure 8: Difference between the proportion of people deprived using the current EU severe MD indicator (4+ items out of 9) and the proportion of people deprived using the alternative MD indicator (7+ items out of 13), 2009, Percentage points with 95 % confidence intervals

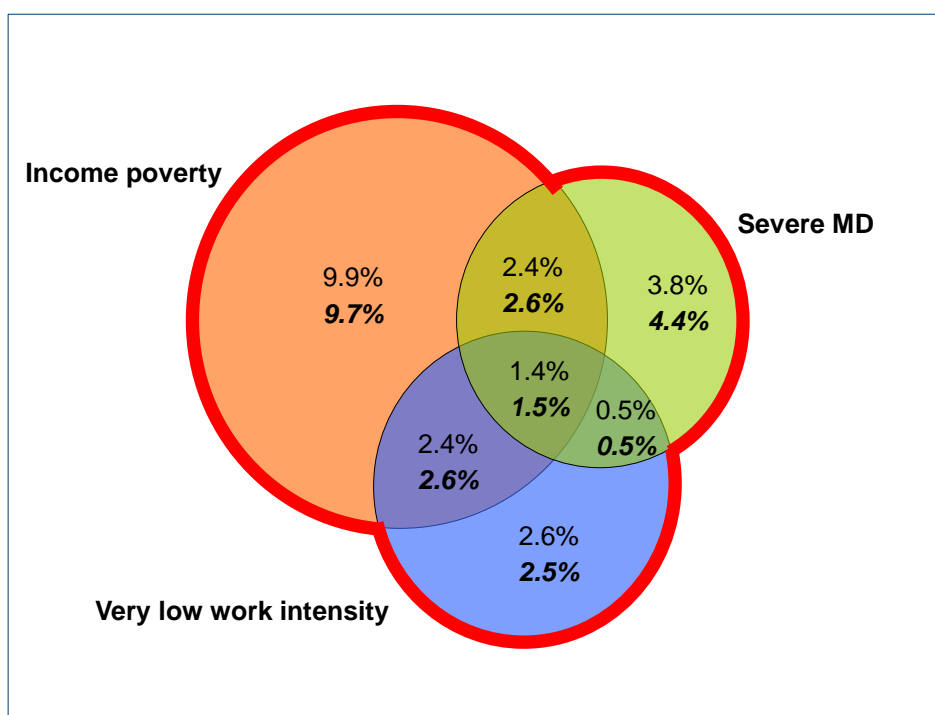


Reading note: see Figure 7.
Source: EU-SILC 2009 cross-sectional data, Users’ database – August 2011, authors’ computation.

5.3 IMPACT ON THE EUROPE 2020 SOCIAL INCLUSION TARGET

Figure 9 compares the levels of the Europe 2020 social inclusion indicator (referred to as “people at risk of poverty or social exclusion (AROPE)”) using either the current ”severe” MD (EU SMD) indicator or the alternative MD 7+ indicator.

Figure 9: Intersections of the Europe 2020 “At risk of poverty or social exclusion (AROPE)” indicator, using either the current EU severe MD indicator (normal font) or the alternative MD 7+ indicator (bold and italics font), EU-27, 2009, %

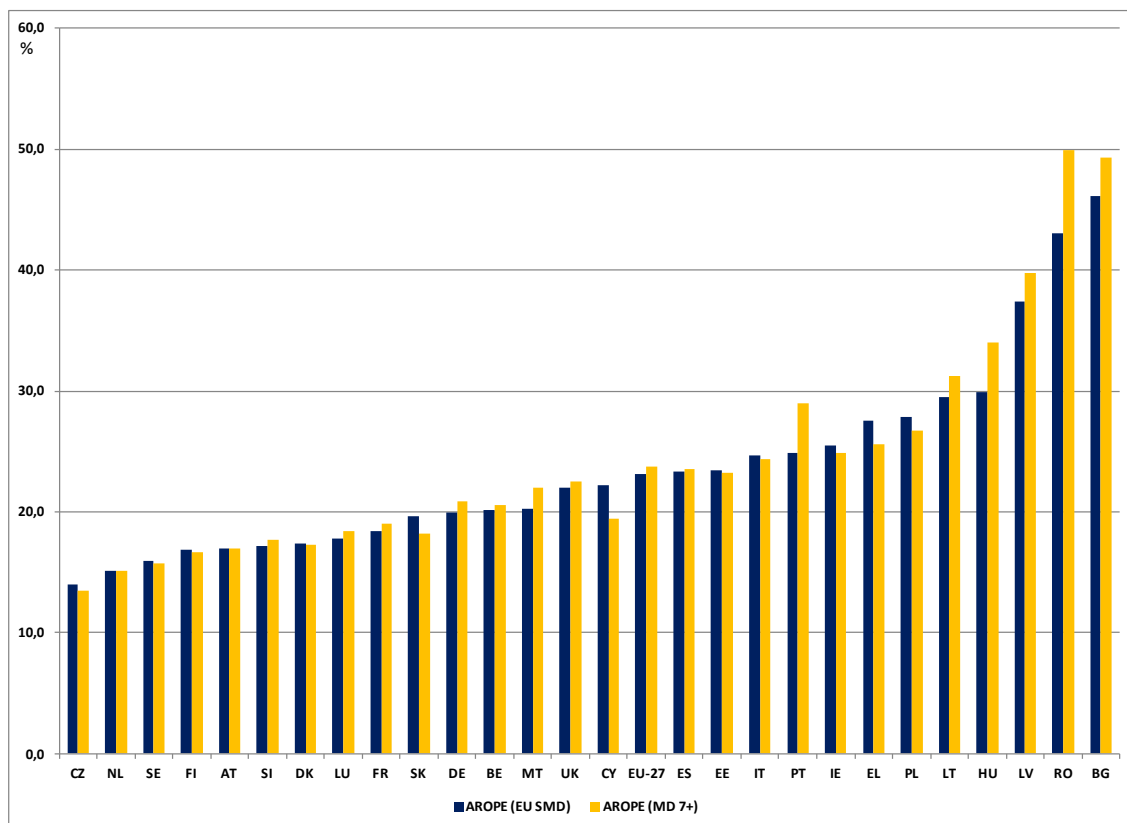


Reading note: 9.9 % of the total population at EU level is “only” income poor (i.e. neither severely deprived nor living in a very low work intensity household), if the MD criterion chosen for the AROPE target is the current severe MD indicator (EU SMD); this figure is 9.7 % if the MD criterion chosen is the alternative MD 7+ indicator. The proportion of EU citizens who are “only” deprived is 3.8 % with EU SMD and 4.4 % with MD 7+. The proportion of people in the EU who combine income poverty and severe deprivation (but not very low work intensity) is 2.4 % with EU SMD as opposed to 2.6 % with MD 7+.

Source: EU-SILC 2009 cross-sectional data, Users’ database – August 2011, authors’ computation.

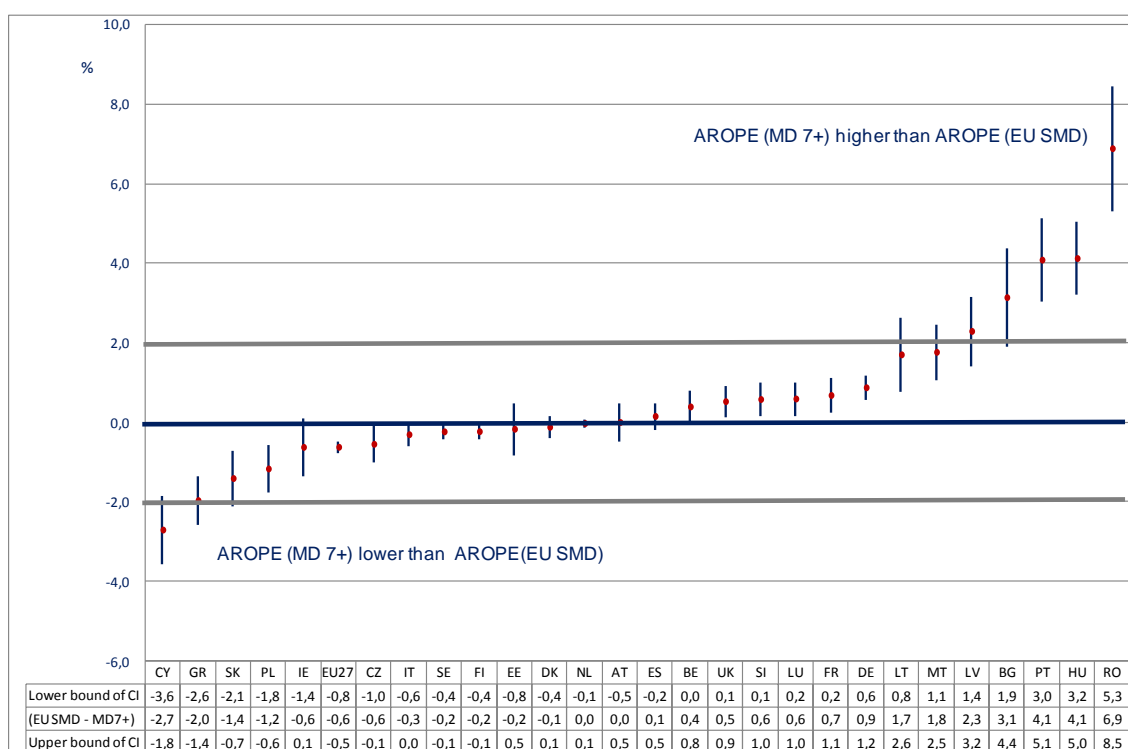
The total proportion of people targeted at EU level is 23.1 % according to the current EU severe MD indicator and 23.7 % according to the alternative (MD 7+) indicator. This very small difference is mainly due to the slight increase in the proportion of people “only” deprived (from 3.8 % [EU SMD] to 4.4 % [MD 7+]). At the country level, the difference in the total targeted population when applying the MD 7+ rather than the EU SMD definition is not statistically significant in EE, DK, FI, NL, AT and BE (see Figures 10 and 11). It increases the proportion of people targeted by more than 2 percentage points only in PT, HU and RO. (See Figure 11 and also Annex 4.)

Figure 10: People at risk of poverty or social exclusion, using either the current EU severe MD indicator or the alternative MD 7+ indicator, 2009, Percentages



Source: EU-SILC 2009 cross-sectional data, Users' database – August 2011, authors' computation.

Figure 11: Difference between the people at risk of poverty or social exclusion, using either the current EU severe MD indicator or the alternative MD 7+ indicator, 2009, Percentage points with 95 % confidence intervals



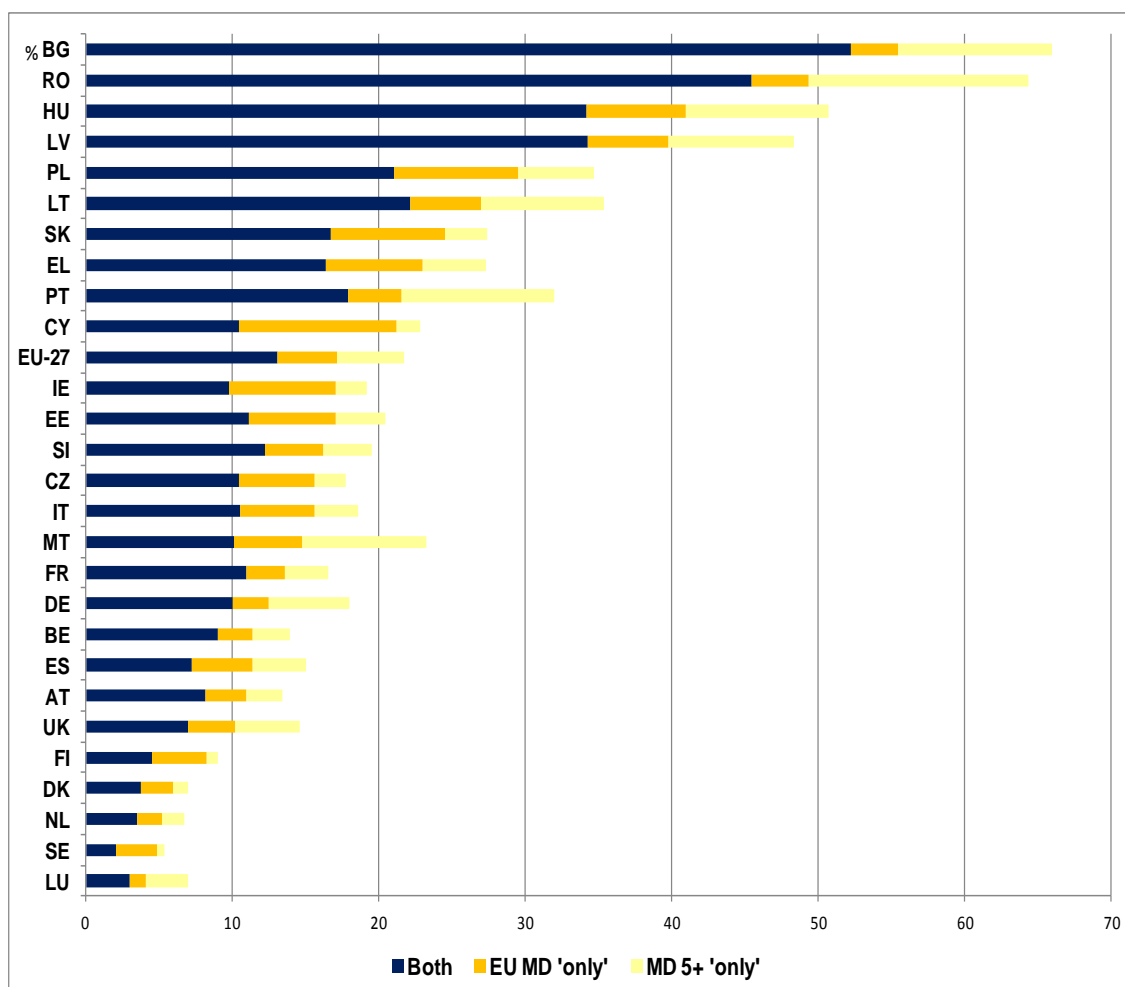
Source: EU-SILC 2009 cross-sectional data, Users' database – August 2011, authors' computation.

6. OVERLAP BETWEEN THE CURRENT AND THE ALTERNATIVE INDICATORS

The previous results provide the overall changes in the level of MD due to the definition change but do not tell us anything about the degree of overlap between the alternative MD indicators and the current EU MD indicators. Figure 12 shows that the composition of people deprived may change, even in countries where the definition change has no statistically significant impact on the total proportion of people deprived.

So, at EU level, 13.1 % of people are deprived according to both the current EU “standard” MD (3+ lacks out of 9) indicator and the alternative MD 5+ indicator (5+lacks out of 13). Around 9 % of people are identified as deprived either by the alternative indicator or by the current EU MD indicator but not by both indicators at the same time - i.e., they are EU MD “only” (4.0 %) or MD 5+ “only” (4.6 %). Put differently, this means that at EU-27 level 74 % of those deprived according to the alternative MD 5+ indicator are also deprived according to the current EU MD indicator. This proportion varies a lot between countries, as highlighted in Figure 12. In countries like BG, LV, PL, SK, CY, IE, CZ and FI, the proportion of people deprived according to MD 5+ (i.e. categories “Both” and “MD5+ only”) who are also deprived according to the current EU MD (“Both” category) exceeds 80 %. At the other extreme, this proportion is around 50 % in MT and LU. In the remaining countries, it varies between 60 % and 80 % (see Annex 5a).

Figure 12: Overlap between the current EU standard MD indicator (EU MD, i.e. 3+ lacks out of 9) and the alternative MD 5+ indicator (5+ lacks out of 13), 2009, %



Note: The MD 5+ “only” category refers to those who suffer from 5+ lacks according to the alternative MD 5+ indicator but are not deprived according to the current EU MD indicator. The EU MD “only” category refers to those who suffer from EU MD but are not deprived according to MD 5+. Finally, the “Both” category consists of those who are deprived according to both MD indicators (EU MD and MD 5+).

Source: EU-SILC 2009 cross-sectional data, Users’ database – August 2011, authors’ computation.

A similar exercise with the threshold set at 7+ items shows that 5.8 % of people are both “severely” deprived (according to the current EU SMD (4+) Europe 2020 definition) and lack at least seven items according to the alternative MD 7+ scale; 2.3 % of people are identified as not deprived according to the alternative indicator whereas they are severely deprived according to the current EU MD indicator. This proportion is 3.3 % for those “only” deprived according to the alternative scale (see Annex 5b).

Table 1 presents the mean number of items lacked (out of the 9 items of the current list), by those who are deprived according to the current EU standard MD (3+ lacks out of 9) “only”, those deprived according to the alternative 13-item indicator (5+ lacks out of 13) “only” and those who suffer from both types of deprivation.

Table 1: Distribution of those suffering from MD 5+ “only” (5+ items lacked in the alternative 13-item MD indicator), EU MD “only” (3+ items lacked in the current 9-item indicator) or from deprivation on both the alternative and current indicators, by level of MD (9-item scale), 2009, %

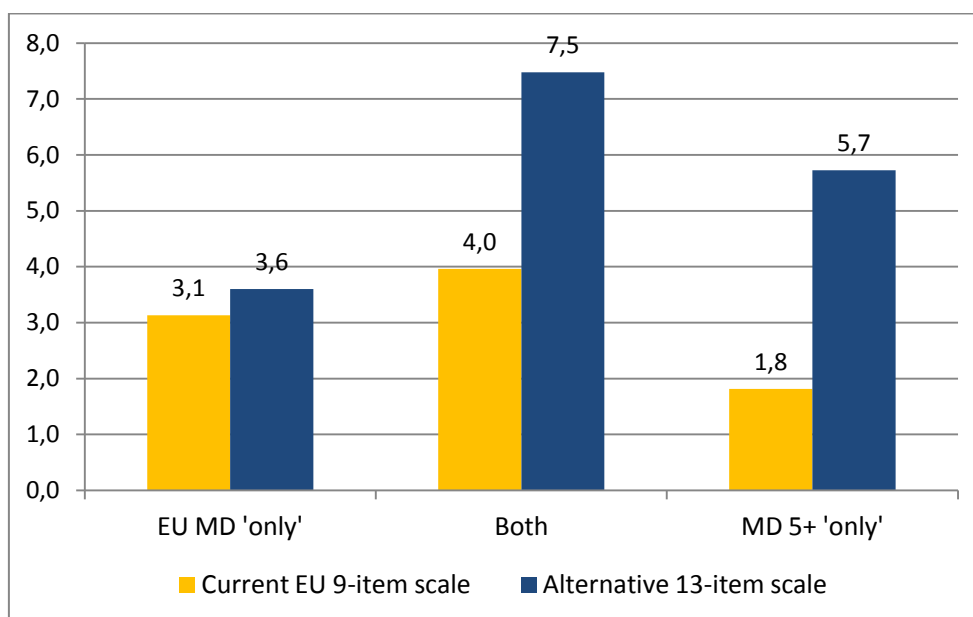
Number of items	EU MD “only”	MD 5+ “only”	Both
0	0	2	0
1	0	17	0
2	0	82	0
3	89	0	40
4	11	0	33
5	0	0	18
6	0	0	7
7	0	0	2
8	0	0	1
9	0	0	0

Source: EU-SILC 2009 cross-sectional data, Users’ database – August 2011, authors’ computation.

Table 1 highlights three interesting results:

1. 82 % of those deprived “only” according to the alternative 13-item indicator (MD 5+ “only”) lack two items from the current 9-item list. So, these people lack at least 3 items of the “new” seven items (as they lack in total at least five items out of the 13 items of the alternative list). It is therefore important to include them in a standard indicator of deprivation. As expected, Figure 13 illustrates very clearly that these people lack, on average, a much higher number of items than those EU MD “only” (5.7 vs. 3.6), when the larger 13-item list of items is used. Figure 14 shows that each of the seven items included solely in the alternative scale (these items appear with one star in the Figure) is lacked by a much higher proportion among those deprived “only” according to the alternative indicator (MD 5+ “only”) than among those deprived “only” according to the current EU MD. The reverse is true for each of the six items common to both the current and alternative lists: people who are EU MD “only” have a higher probability to lack these items than those who are MD 5+ “only”.

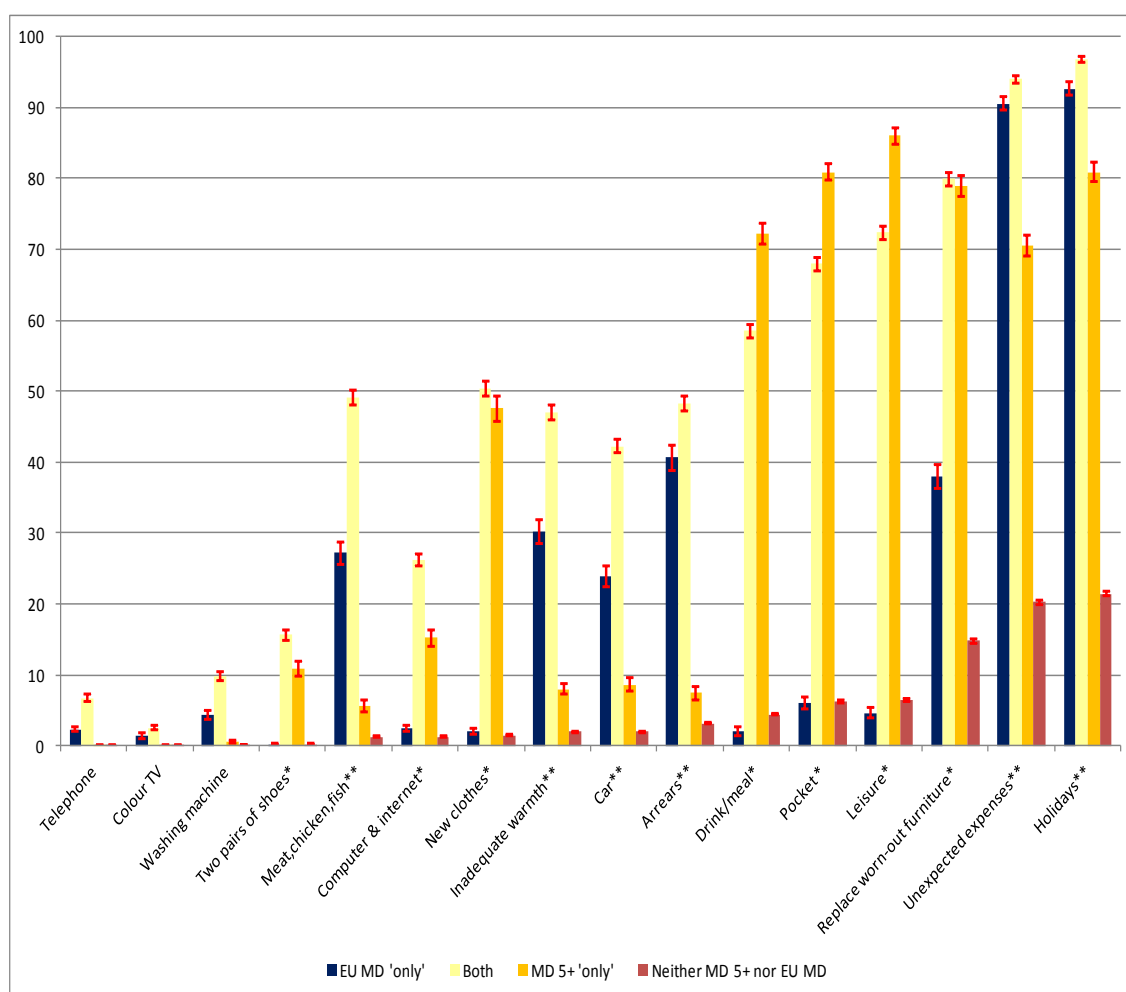
Figure 13: Average number of items lacked by those suffering from MD 5+ “only” (5+ items lacked in the alternative 13-item MD indicator), EU MD “only” (3+ items lacked in the current 9-item indicator) or from both forms of deprivation, 2009, %



Source: EU-SILC 2009 cross-sectional data, Users' database – August 2011, authors' computation.

2. Those suffering from both forms of MD are by far the most deprived in terms of the number of items lacked, with almost 30 % of people lacking five items or more out of the current 9-item list (see Table 1). As can be seen from Figure 14, this group suffers from the *highest* incidence of deprivation for the *whole* list of items used in both scales.

Figure 14: Proportion of people lacking each of the 16 items comprised in the current 9-item scale and/or in the alternative 13-item scale, for those suffering from MD 5+ “only”, EU MD “only” or from MD 5+ and EU MD, and for those who are not deprived on both, 2009, Percentages with 95 % confidence intervals

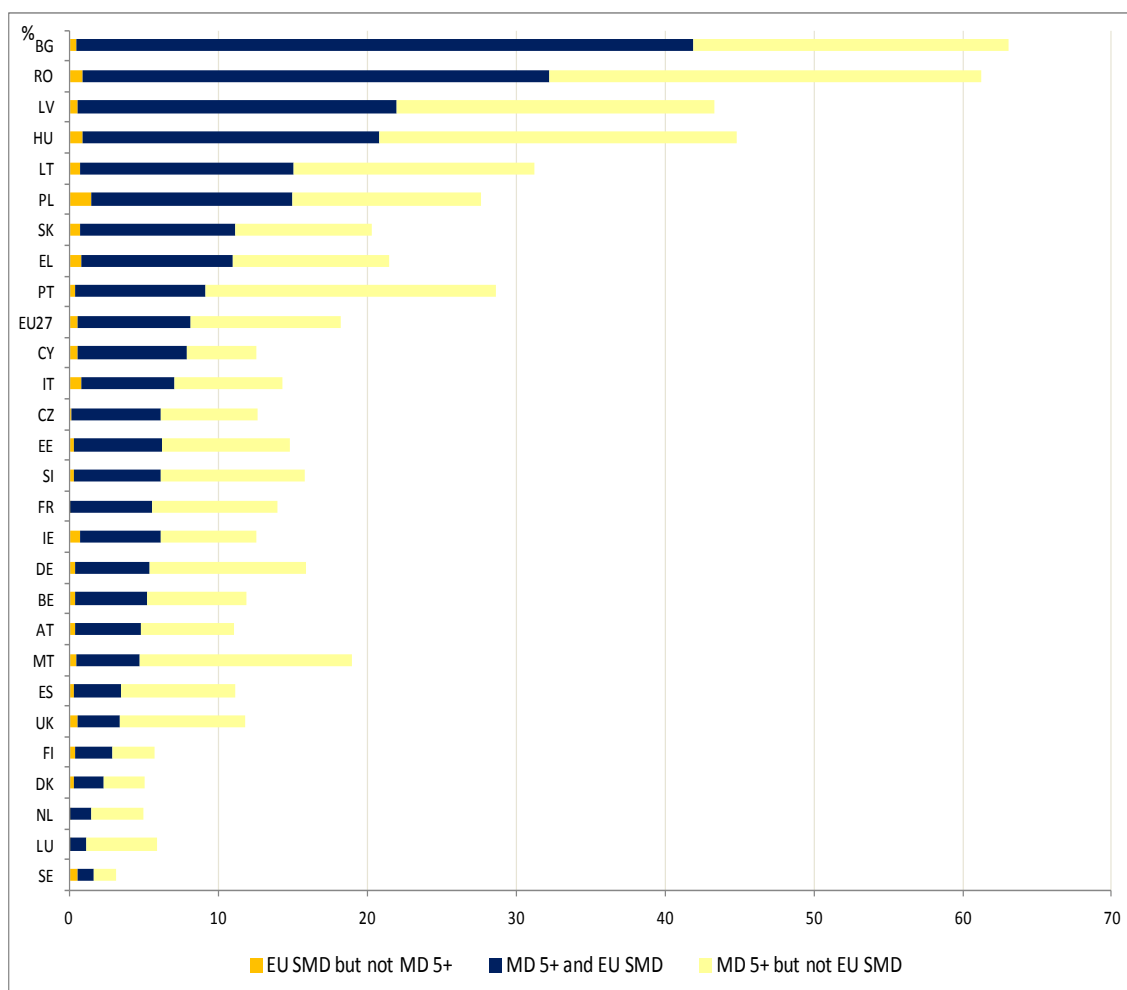


Note: The MD 5+ “only” category refers to those who suffer from 5+ lacks according to the alternative indicator but are not deprived according to the current EU MD indicator. The EU MD “only” category refers to those who suffer from EU MD but are not deprived according to the alternative (5+) indicator. Finally, the “Both” category consists of those who are deprived according to both MD indicators (EU MD and 5+ MD according to the alternative scale). Items with one star are those that are included only in the alternative scale, those with two stars are common to the two scales and those without a star are only in the 9-item scale.

Source: EU-SILC 2009 cross-sectional data, Users’ database – August 2011, authors’ computation.

3. An extremely large proportion (89 %) of those EU MD “only”, i.e. those who are not included in the alternative MD 5+ indicator, are also *not* severely deprived according to the Europe 2020 definition: they lack exactly three items from the current 9-item list (not four). Moreover, additional analysis shows that these people lack none or only one of the seven “new” items included in the alternative scale (as they do not reach the “at least 5 out of 13” threshold). This result is confirmed by Figure 15, which presents the degree of overlap between the current “severe” MD indicator (EU SMD) and the alternative MD 5+ indicator. Among those currently identified as severely deprived, the proportion of those not included in the MD 5+ indicator is negligible: less than 0.5 % at EU level and less than 1 % in all countries, except in PL (1.4 %) (see Figure 15).

Figure 15: Overlap between the alternative MD 5+ indicator (5+ lacks out of 13) and the current EU severe MD indicator (4+ lacks out of 9), 2009, %



Note: The “MD 5+ but not EU SMD” category refers to those who suffer from 5+ lacks according to the alternative indicator but are not deprived according to the current EU severe MD indicator. The “SMD but not MD 5+” category refers to those who suffer from EU SMD but are not deprived according to MD5+. Finally, the “Both” category consists of those who are deprived according to both MD indicators (EU SMD and MD 5+).

Source: EU-SILC 2009 cross-sectional data, Users’ database – August 2011, authors’ computation.

If we put in perspective all the above results, we can conclude that the alternative indicator (MD 5+):

1. “*adds*” to the population currently identified by the standard indicator of MD a group of people (those MD 5+ “only”) who cumulate a large number of deprivations, encompassing “basic” as well as “social” items (see Figures 13 and 14);
2. “*drops*” from the population currently identified by the standard indicator of MD a group of people (those EU MD “only”), who have a high probability to suffer from a small number of deprivations linked to financial stress and who are not severely deprived. They lack, on average, 3.1 items (out of the 9 items of the current list) or 3.6 items (out of the 13-item list), i.e. a smaller number of deprivations than the group who is “added” (Figure 13);
- 3 “*keeps*” the more vulnerable population, either in terms of the number of items lacked (whatever the scale used; see “Both” category in Figure 13) or in terms of the probability to lack each individual item in the list (Figure 14).

A crucial question that we need to explore now is whether or not those identified by the current and alternative indicators share the same characteristics. This is what we do in the next section.

7. IMPACT OF THE DEFINITION CHANGE ON THE CHARACTERISTICS PEOPLE DEPRIVED

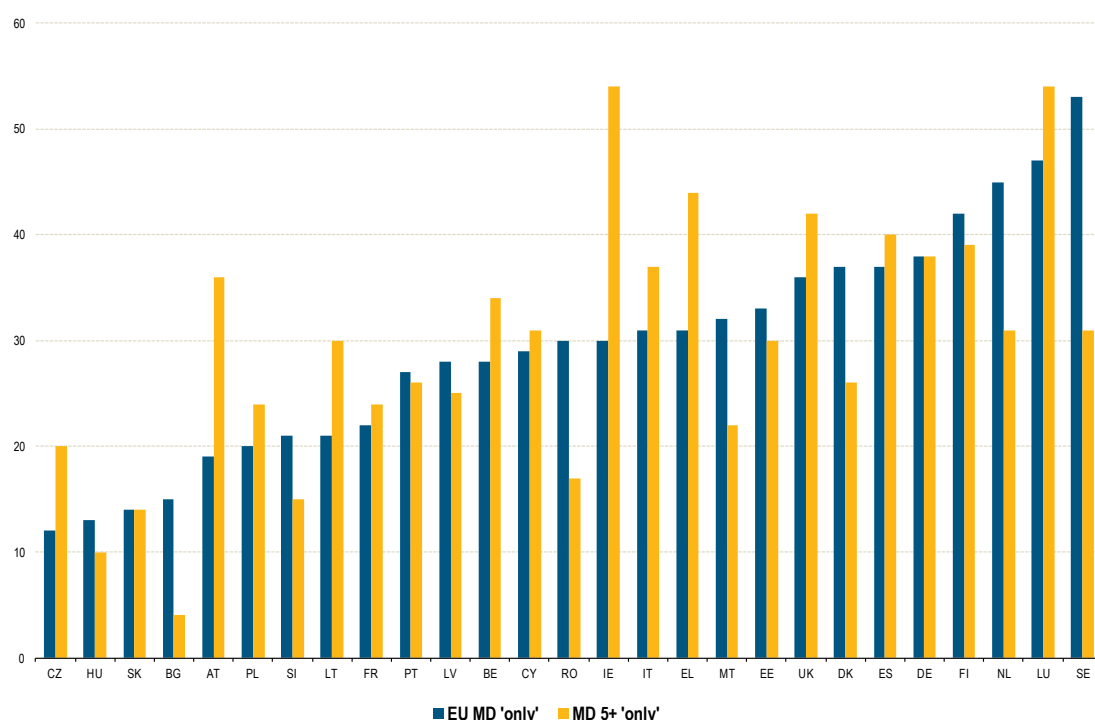
This section compares the composition of those who are “added” to the population currently identified by the standard indicator (those MD 5+ “only”) with those who are “dropped” (the EU MD “only”) and those who are “kept” because they suffer from both forms of deprivation. We only look at the standard deprivation indicators (MD 5+ and EU MD) in order to guarantee a sufficiently large sample size in each group.

The explanatory variables we use in this section contain a set of individual or household socio-economic characteristics that are often identified in the literature as having an impact on the risk of material deprivation (see for example Fusco, Guio, Marlier (2010)), i.e. variables that can affect the resources or needs of the individual, such as their income, their age, their household type, the presence of individuals in bad health in their household, the work attachment of their household members, their education level or their country of birth.

Figures 16 and 17 illustrate some of these aspects at country level. Figure 16 compares the proportion of people in households facing difficulties with making ends meet for the categories of people MD 5+ “only” and EU MD “only”. Computing the confidence interval⁶ of the difference of people facing difficulties with making ends meet between these two categories shows that in 17 countries, the differences are not statistically significant (BE, BG, CZ, EE, ES, FR, IT, LT, LU, MT, NL, AT, PL, PT, RO, SK, SE). In all (10) countries, as well as at the EU level, where differences are significant, people deprived according to the alternative MD 5+ indicator “only” face more risk of suffering from financial strain than those deprived according to the current standard EU MD “only” measure.

⁶ 95% confidence intervals of the national differences are available upon request.

Figure 16: Difficulties making ends meet for those suffering from MD “only” (5+ items lacked in the alternative 13-item MD indicator) and for those suffering from EU MD “only” (3+ items lacked in the current 9-item indicator), by country 2009

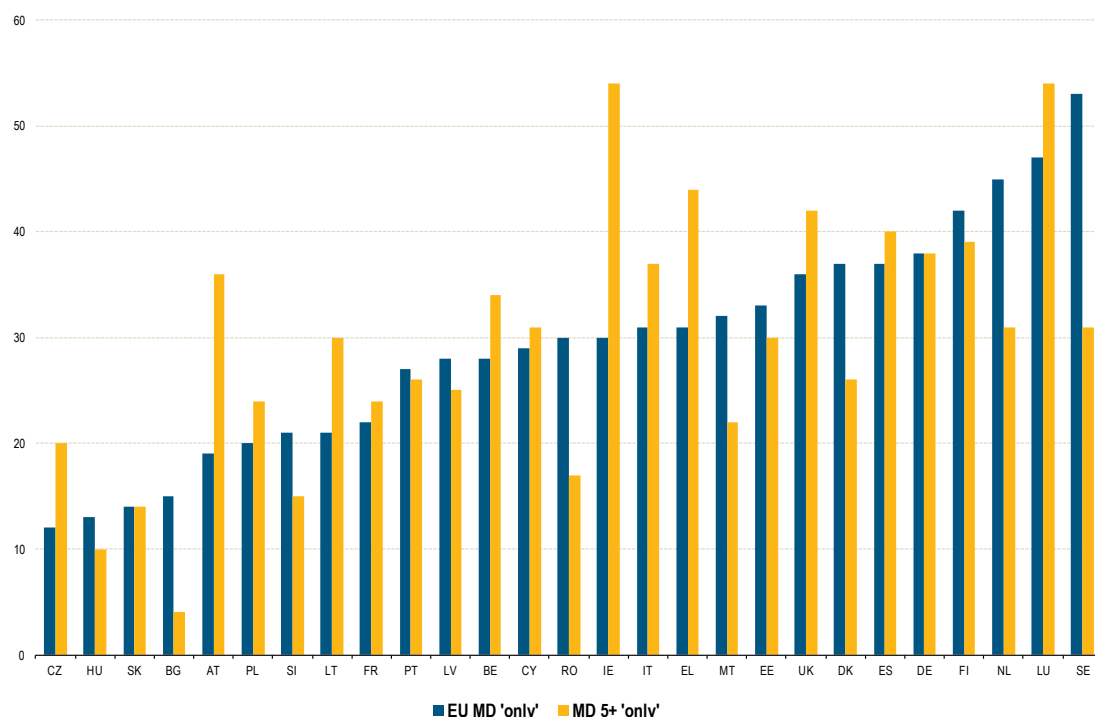


Note: The subjective poverty rate is the proportion of people living in households who declare they have “great difficulties” or “difficulties” with making ends meet.

Source: EU-SILC 2009 cross-sectional data, Users’ database – August 2011, authors’ computation

For the income poverty rate, there is a very large number of countries where the differences between the alternative and current indicators are not statistically significant (21); in the six countries where the differences are significant they go in both directions (Figure 17). On the one hand, people deprived according to the alternative MD 5+ indicator “only” face significantly more income poverty risk than those deprived according to the current MD measure “only” in IE, EL and AT. But the reverse is true in BG, MT and SE. At the EU level, the difference is not significant (95% confidence intervals of the national/EU differences are available upon request).

Figure 17: Income poverty rate for those suffering from MD “only” (5+ items lacked in the alternative 13-item MD indicator) and for those suffering from EU MD “only” (3+ items lacked in the current 9-item indicator), by country2009



Note: The income poverty rate is the proportion of people living in a household whose total equivalised disposable income is below a threshold set at 60 % of the median national equivalised household income (the equivalence scale is the so-called OECD modified scale).

Source: EU-SILC 2009 cross-sectional data, Users' database – August 2011, authors' computation

Finally, we have also applied a multinomial logistic regression to analyse the marginal impact of these factors on the probability of belonging to one of the four groups, namely “being both MD 5+ and EU MD”, “being only MD 5+”, “being only EU MD” and “being neither MD 5+ nor EU MD”, at the EU level. The modality “being only EU MD” is used as the reference category so that all the results are expressed in relation to it.

Table 2: Multinomial regression, estimation of the relative risk ratio of being MD according to the EU 9-item MD indicator (EU MD) and/or MD according to the alternative 13-item MD indicator (MD 5+), people aged 0-59, EU-27, 2009

Exponentiated coefficients	EU MD “only”	Both	MD 5+ “only”	None
Single parent households	1.00	1.45***	1.03	0.44***
One-person households	1.00	1.06	0.53***	0.49***
Log equivalised income	1.00	0.61***	0.84***	2.71***
Primary education or less	1.00	1.21**	0.91	0.46***
Lower secondary	1.00	1.43***	1.04	0.50***
Upper secondary	1.00	1.09***	1.09	0.64***
Born in a non-EU country	1.00	1.35***	0.99	0.50***
Very low work intensity	1.00	1.71***	1.12	0.56***
Bad health	1.00	1.47***	1.19**	0.64***
N	444655			
pseudo R ²	0.193			
L1	-268432.9			
chi2	32339.1			

Notes: Unweighted, exponentiated coefficient (relative risk ratios); ***p<0.01; **p<0.05; reference category of the dependent variable: EU MD “only” (3+ items lacked in the current 9-item indicator). The maximal level of education attained by the person is divided into four categories: lower education level (i.e. those who have reached primary level or less), lower secondary level, upper secondary level, and the rest of the population. People in bad health are people having “limitations” or “strong limitations” in daily activities because of health problems. People living in very low work intensity households ([quasi-]jobless households) are people aged 0-59 living in households where, on average, adult members aged 18-59 have worked less than 20 % of their total work potential during the income reference period.

Source: EU-SILC 2009 cross-sectional data, Users’ database – August 2011, authors’ computation.

Table 2 shows the result of the multinomial logistic regression (ran on the EU as a whole) in terms of relative risk ratios. These ratios are computed as the exponentiated considered coefficient. They measure the probability of belonging to one group relative to the probability of belonging to the group of reference for a unit change in the independent variable considered. For dummy variables, they are interpreted in relation to the category “EU MD only”. For example, the relative risk ratio for people living in single parent households is the ratio between the following two relative risks:

- the relative risk for people in single parent households; and
- the relative risk of the related “reference” that has been chosen - i.e., in our case: the rest of the population.

Each of these two relative risks measures the probability of belonging to the group of interest (one of the three risks modelled in this paper: MD 5+ “only”, both forms of deprivation (EU MD and MD 5+) and neither MD 5+ nor EU MD), relatively to the reference group EU MD “only”.

For example, the fact that the relative risk ratio of suffering from both forms of deprivation is 1.45 for single parents means that the risk for people living in single parent households of being in the “both” category, relatively to being EU MD “only”, is 1.45 times higher than for other households.

Table 2 confirms previous results. Once the effect of the other explanatory variables is controlled for, we see that:

- Most variables have no significant impact on those in the MD 5+ “only” group, which confirms that EU MD “only” and MD 5+ “only” people broadly share the same socio-economic characteristics. Nevertheless, some variables (having a bad health or a low income) do increase significantly the risk of being MD 5+ “only” relatively to being EU MD “only”, which is an interesting ex-post validation of the alternative indicator. These results also show that for single-adult households the relative risk of being MD 5+ “only”, relatively to being “EU MD only”, is lower than for other households.
- Most of the variables do have a significant impact on the risk of suffering from *both* forms of deprivation (relatively to being EU MD “only”). Having a low income, a bad health, living in a single parent household, in a low work intensity household or being a migrant increase the risk of cumulating both forms of deprivation.
- As expected, all these characteristics decrease the probability to be in the category who manages to avoid any form deprivation (the “none” category), relatively to those EU MD “only”.

Table 3 presents the results of the national multinomial logistic regressions. At the country level, many variables have no significant impact on the probability of being MD 5+ “only” relatively to being EU MD “only” or on the risk of suffering from both forms of deprivation, compared to the risk of being EU MD “only”. But when significant, it goes generally in the same direction as what is observed at EU level (see above).

Compared to those EU MD “only”, those who manage to avoid any form of deprivation (“none” category) do differ from the three other groups in all countries (much higher income and lower incidence of risk factors such as bad health, very low work intensity, low level of education, single parenthood).

Table 3: Multinomial regression, estimation of the relative risk ratio of being MD according to the EU 9-item MD indicator (EU MD) and/or MD according to the alternative 13-item MD indicator (MD 5+), people aged 0-59, by country, 2009

(a) Relative risk ratios: “Both” versus “EU MD “only””

	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT
Single parent households	2.56*	1.18	1.28	2.19	2.06*	1.32	0.96	0.78	1.68	1.50	1.50	1.34	1.12	2.16
One-person households	1.25	0.89	1.55*	0.83	0.78	0.76	1.48	0.57*	1.03	0.93	0.72*	1.50	0.91	1.54
Log equivalised income	0.67	0.34***	0.38***	0.98	0.72**	0.65**	0.87	0.54***	0.87**	0.56**	0.71***	0.70	0.57***	0.47***
Primary education or less	1.99*	1.74	2.33	0.50	1.14	1.34	1.76	1.94**	1.51*	1.23	1.35	1.08	0.78	0.82
Lower secondary	1.95*	1.45	1.77*	1.80	1.61**	0.75	1.12	1.52	1.57*	1.39	1.37*	1.31	1.18	1.35
Upper secondary	1.01	1.94**	1.21	1.06	1.15	0.82	0.99	1.28	0.95	1.48	1.22	0.81	1.23	1.20
Born in a non-EU country	1.29	0.72	0.21**	1.90	1.09	1.32	1.65	1.01	1.69*	1.44	2.28***	1.51	1.03	1.28
Very low work intensity	2.27**	1.03	1.32	1.27	2.09***	2.06*	2.18*	1.35	3.46***	2.06**	1.44*	2.15	2.00*	1.55
Bad health	2.38**	1.62*	1.12	1.60	1.89**	1.40	1.09	1.51	1.30	2.25**	1.38*	1.20	1.79***	1.13
	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	
Single parent households	0.77	1.74	2.30	1.30	1.97	1.40	0.79	1.76	1.65	1.23	0.83	0.95	0.97	
One-person households	0.44	1.02	0.69	1.57	0.98	1.13	1.00	1.10	2.00*	1.50*	0.67	1.30	1.61	
Log equivalised income	0.50	0.46***	0.96	0.95	0.67	0.48***	0.60**	0.84	0.81	0.54***	0.83	1.05	0.98	
Primary education or less	1.52	1.07	1.79	0.67	2.54	1.62***	2.62*	1.32	1.79*	1.27		1.09		
Lower secondary	2.12	1.42**	2.12	0.86	1.23	1.36*	2.05	1.69	1.68*	1.84***	1.75*	1.73	1.39	
Upper secondary	2.13	1.18	1.76	0.71	1.31	1.50***	1.47	1.62	1.62*	1.55**	1.23	1.17	1.17	
Born in a non-EU country	1.57	2.30	0.87	2.19**	1.02	1.82	6.37**	6.07	1.33	5.75**	0.29*	0.77	0.80	
Very low work intensity	2.52	2.06***	1.42	0.99	2.78*	1.57*	1.84	1.09	1.99**	1.95**	3.83***	1.31	2.96***	
Bad health	0.23**	1.17	1.25	4.52**	1.82*	1.38**	1.44	1.81	1.56**	1.16	1.53	1.55	1.74	

Note: See Table 2.

Source: EU-SILC 2009 cross-sectional data, Users' database – August 2011, authors' computation

Table 3 (continued):

(b) Relative risk ratios: "MD 5+ "only"" versus "EU MD "only"" category

	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT
Single parent households	0.95	0.48	0.51	1.89	1.31	0.65	0.90	0.73	0.86	1.29	0.93	1.05	0.80	1.04
One-person households	0.63	0.46	0.60	0.49	0.31***	0.38*	0.47	0.26***	0.68	0.57*	0.61*	0.93	0.40***	0.50
Log equivalised income	1.29	6.09***	0.53*	0.93	0.89	0.83	0.59*	0.56**	0.96	0.75	0.83*	0.89	0.89	0.51**
Primary education or less	5.53***	1.25	3.72	13.86	0.51*	1.13	2.45	2.61**	1.59	1.73	1.87**	1.34	0.52*	0.67
Lower secondary	4.36**	1.26	2.40	7.19*	0.99	0.56	1.73	1.66	1.47	1.19	1.27	0.87	0.81	1.09
Upper secondary	2.17*	2.01**	2.11	3.37	1.04	0.73	2.24	1.24	0.90	1.42	1.37	0.81	1.05	1.22
Born in a non-EU country	0.60	1.34	0.17*	0.64	1.08	1.12	0.98	1.01	0.52*	0.76	1.87*	3.11*	0.96	1.02
Very low work intensity	1.54	1.81	1.34	0.69	1.06	1.16	1.09	1.32	2.44***	0.57	0.88	2.15	1.35	1.17
Bad health	2.08*	1.50	0.76	2.23	1.43	2.01**	1.48	1.45	0.83	1.82*	1.36	1.33	0.90	0.68
	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	
Single parent households	0.36	1.04	0.84	0.75	0.77	0.68	0.58	0.87	1.43	0.62	0.72	0.52	0.95	
One-person households	0.19**	0.54***	0.49	0.52	0.43*	0.66	0.37	0.68	1.09	0.68	0.32**	0.62	0.56*	
Log equivalised income	0.67	1.01	1.69**	0.91	0.81	0.85	1.03	1.50	1.33	0.87	0.91	1.12	0.97	
Primary education or less	2.66	0.75	0.81	0.77	0.99	0.91	1.34	1.01	0.88	1.00	1.01	1.15	0.98	
Lower secondary	3.01	0.91	0.98	1.35	1.49	0.79	1.06	1.68	0.88	0.96	0.92	1.35	1.58	
Upper secondary	2.36	1.09	1.04	1.26	1.22	1.18	1.35	2.06	1.12	0.96	1.25	0.84	1.37	
Born in a non-EU country	1.09	2.84	0.68	1.19	0.91	1.37	2.97	0.77	1.58*	1.10	1.28	0.77	0.81	
Very low work intensity	0.81	1.27	1.02	0.47	3.08*	0.93	1.38	1.21	1.62	0.75	1.33	1.16	1.49	
Bad health	0.28*	0.85	1.21	5.15***	0.91	1.12	1.43	1.44	1.68**	1.37	2.58*	1.81	2.15*	

Note: See Table 2.

Source: EU-SILC 2009 cross-sectional data, Users' database – August 2011, authors' computation

Table 3 (continued):

(c) Relative risk ratios: “None” versus “EU MD “only”” category

	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT
Single parent households	0.54	0.98	0.49**	0.37*	0.57*	0.65	0.30***	0.23*	0.50*	0.48*	0.93	0.78	0.55	1.07
One-person households	0.31***	0.70	0.93	0.24***	0.32***	0.65*	0.95	0.38***	0.76	0.44***	0.72**	1.02	0.81	1.26
Log equivalised income	5.56***	12.73***	3.92***	1.90*	4.84***	2.73***	2.24***	6.49***	1.63***	4.84***	2.82***	4.96***	2.21***	1.86***
Primary education or less	0.79	0.64	0.49	0.63	0.24***	0.53*	0.53*	0.77	0.44***	0.62*	0.59***	0.56**	0.37***	0.59**
Lower secondary	0.85	0.70	0.35***	0.64	0.55***	0.39***	0.57*	0.65	0.40***	0.46***	0.49***	0.63*	0.50***	0.77
Upper secondary	0.57**	1.26	0.43***	0.77	0.69**	0.51***	0.68	0.73*	0.49***	0.71*	0.71**	0.56***	0.71**	0.75
Born in a non-EU country	0.35***	0.54	0.22***	0.45	0.92	0.92	0.39	0.67	0.19***	0.57**	0.65*	0.96	0.70**	0.64
Very low work intensity	0.86	1.21	0.92	0.29***	0.66*	0.72	0.31***	1.06	1.02	0.78	0.72*	0.80	1.31	0.84
Bad health	0.64	0.92	0.47***	0.63	0.74	0.99	0.31*	0.77	0.66**	0.84	0.60***	0.49**	0.82	0.42***
	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	
Single parent households	0.23*	0.81	0.73	0.15***	0.50*	0.39***	0.29**	0.75	0.76	0.56	0.39***	0.29***	0.35***	
One-person households	0.23***	0.73*	0.63	0.40**	0.52**	0.63**	0.57	0.93	0.99	0.89	0.37***	0.48***	0.63*	
Log equivalised income	6.44***	4.09***	4.13***	2.62***	3.37***	3.30***	3.28***	4.37	4.47***	3.27***	4.36***	2.28***	2.27***	
Primary education or less	0.97	0.50***	0.29***	0.19***	1.05	0.53***	0.66	0.52	0.34***	0.33***		0.36***		
Lower secondary	1.67	0.54***	0.34***	0.32***	0.47**	0.60***	0.68	0.68	0.38***	0.58***	0.47***	0.47**	0.54**	
Upper secondary	1.22	0.64***	0.62	0.56*	0.58*	0.73***	0.94	0.92	0.59***	0.73**	0.54***	0.43***	0.61**	
Born in a non-EU country	0.52	3.15	0.80	0.41**	0.28***	0.88	2.30	1.09	0.68**	0.03	0.20***	0.24***	0.33***	
Very low work intensity	0.99	1.08	0.70	0.28***	0.92	0.86	0.91	0.71	1.23	0.74	0.54**	0.23***	0.39***	
Bad health	0.14***	0.60***	0.80	0.88	0.64	0.70***	0.69	0.72	0.58***	0.61***	0.69	0.36***	0.78	

Note: See Table 2.

Source: EU-SILC 2009 cross-sectional data, Users' database – August 2011, authors' computation

8. CONCLUSIONS

Guio, Gordon and Marlier (2012) have proposed a theory based analytical framework for developing robust (i.e. 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, and as a result of their 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 more accurate and precise measurement of deprivation than the current EU MD indicator.

Our analysis shows 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+) 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 PT, HU and RO.

The seven additional items needed for calculating the alternative indicator will be collected in the 2013 wave of EU-SILC, which should then allow for additional change over time analysis to be finalised by early 2015 - i.e., in time for the mid-term review of the Europe 2020 Strategy which will include a review of the EU headline target on social inclusion and the way it is measured.

9. REFERENCES

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10. ANNEXES

Annex 1: EU countries' official abbreviations

“Old” Member States		“New” Member States	
BE	Belgium	<i>2004 Enlargement</i>	
DK	Denmark	CZ	Czech Republic
DE	Germany	EE	Estonia
IE	Ireland	CY	Cyprus
EL	Greece	LV	Latvia
ES	Spain	LT	Lithuania
FR	France	HU	Hungary
IT	Italy	MT	Malta
LU	Luxembourg	PL	Poland
NL	The Netherlands	SI	Slovenia
AT	Austria	SK	Slovakia
PT	Portugal	<i>2007 Enlargement</i>	
FI	Finland		
SE	Sweden	BG	Bulgaria
UK	United Kingdom	RO	Romania

EU-27 averages are weighted averages covering all 27 EU Member States, in which each country is weighted by their population sizes.

Annex 2: MD rates according to different thresholds applied to the alternative 13-item MD indicator and current MD indicators by country, 2009, (%)

	Alternative 13-item MD indicators					Current MD indicators	
MD	MD 5 +	MD 6 +	MD 7 +	MD 8 +	MD 9 +	EU MD	EU SMD
BE	11.5	8.6	6.1	4.0	2.4	11.4	5.2
BG	62.6	54.0	44.9	37.1	28.3	55.5	41.9
CZ	12.5	8.1	5.5	3.3	2.0	15.6	6.1
DK	4.8	3.0	1.8	1.2	0.6	6.0	2.3
DE	15.5	10.9	7.5	4.8	2.6	12.5	5.4
EE	14.5	9.1	5.7	3.4	1.9	17.1	6.2
IE	11.9	8.4	4.9	2.5	1.4	17.1	6.1
EL	20.7	13.6	8.1	5.0	2.4	23.0	11.0
ES	10.9	7.2	4.3	2.5	1.3	11.3	3.5
FR	13.9	10.1	6.8	4.5	2.8	13.5	5.6
IT	13.5	9.3	6.0	3.8	2.1	15.6	7.0
CY	12.0	6.6	3.9	2.0	1.1	21.2	7.9
LV	42.8	33.7	25.5	18.3	12.2	39.7	21.9
LT	30.5	24.9	18.4	13.1	9.1	27.0	15.1
LU	5.9	4.0	2.6	1.2	0.7	4.0	1.1
HU	43.9	35.2	26.4	18.5	11.7	40.9	20.8
MT	18.6	11.8	7.0	3.8	2.0	14.8	4.7
NL	5.0	3.0	1.9	1.1	0.7	5.2	1.4
AT	10.7	7.7	5.5	3.3	1.8	10.9	4.8
PL	26.2	18.9	13.5	9.3	6.4	29.5	15.0
PT	28.3	22.0	16.1	10.1	6.5	21.5	9.1
RO	60.4	50.5	40.0	29.2	19.0	49.3	32.2
SI	15.5	10.6	7.0	4.2	2.1	16.2	6.1
SK	19.6	13.7	9.1	6.3	4.0	24.5	11.1
FI	5.3	3.4	1.8	1.0	0.5	8.2	2.8
SE	2.6	1.7	0.9	0.5	0.2	4.8	1.6
UK	11.3	7.7	4.4	2.3	1.4	10.2	3.3
EU-27	17.7	13.1	9.2	6.2	3.8	17.1	8.1

Note: “MD 5+”... “MD 9+” refer to a lack of 5+... 9+ items in the alternative 13-item indicator. “EU MD” refers to the current standard EU indicator of MD (3+ lacks out of 9) whereas “EU SMD” refers to the current EU indicator of “severe” MD used in the definition of the Europe 2020 social inclusion target (4+ lacks out of 9).

Source: Guio, Gordon and Marlier (2012).

Annex 3: “Heat map” providing for each item and country the ratio between the proportion of people lacking the item in the country and the proportion of people lacking the same item at EU-27 level, 2009

	BG	RO	LV	HU	LT	PT	PL	SK	EL	MT	EE	SI	CY	CZ	DE	FR	IT	IE	BE	ES	UK	AT	FI	DK	NL	LU	SE
Inadequate warmth	7.1	2.4	1.8	1.0	2.7	3.2	1.8	0.4	1.8	1.2	0.2	0.6	2.1	0.6	0.6	0.7	1.2	0.4	0.6	0.7	0.7	0.3	0.1	0.1	0.1	0.0	0.1
Clothes	5.4	3.3	3.3	3.1	2.3	2.0	1.5	1.0	1.0	1.6	0.9	1.3	0.6	0.5	0.7	0.8	0.8	0.5	0.6	0.3	0.6	0.6	0.6	0.6	0.2	0.4	0.2
Computer & Internet	4.6	3.8	1.4	1.8	1.8	1.6	2.0	2.0	2.2	0.2	1.2	0.6	0.4	1.4	0.4	0.8	1.0	0.8	1.0	0.8	0.4	0.8	0.6	0.2	0.2	0.2	0.0
Meat, fish...	4.1	2.7	2.6	3.0	2.2	0.4	1.9	2.7	0.9	1.1	0.8	1.2	0.4	1.1	1.0	0.8	0.7	0.2	0.6	0.2	0.4	1.1	0.3	0.1	0.2	0.1	0.1
Shoes	3.7	3.0	3.3	1.0	0.7	2.3	1.0	1.0	0.3	0.3	0.7	0.7	0.3	0.3	1.0	1.3	0.7	0.7	0.3	0.3	0.7	0.3	0.3	0.3	0.3	0.3	0.0
Arrears	3.2	2.5	2.0	2.0	0.9	0.8	1.3	1.2	2.6	0.7	1.1	1.6	1.9	0.5	0.5	1.0	1.2	1.3	0.6	0.8	0.4	0.6	1.0	0.5	0.4	0.4	0.6
Drink/meal	3.0	3.8	1.6	2.6	1.7	1.5	0.9	0.6	0.4	1.3	0.6	0.4	0.3	0.2	1.5	0.4	0.7	0.6	0.7	0.5	0.7	0.5	0.1	0.1	0.1	0.3	0.5
Furniture	2.9	2.6	2.3	2.1	1.7	2.0	1.3	1.5	1.7	1.7	1.6	1.3	1.7	1.7	0.7	1.2	0.1	0.6	0.7	1.3	0.5	0.4	0.4	0.4	0.7	0.5	0.2
Car	2.8	5.2	2.9	2.3	1.7	1.1	1.6	2.1	0.9	0.2	2.0	0.3	0.1	1.1	0.7	0.4	0.2	1.0	0.8	0.4	0.6	0.6	0.9	0.9	0.4	0.2	0.2
Pocket money	2.8	2.9	1.9	2.1	1.9	1.4	1.2	1.1	0.6	0.8	0.7	0.6	0.3	0.7	0.8	0.8	1.0	0.8	0.6	0.6	1.0	0.7	0.1	0.3	0.3	0.4	0.2
Leisure activity	2.5	3.2	1.9	1.8	2.0	1.4	1.4	0.6	1.1	0.9	0.5	0.9	0.4	0.4	1.1	0.6	0.9	0.4	0.7	0.5	0.8	0.8	0.2	0.2	0.4	0.3	0.2
Unexpected expenses	1.7	1.2	2.0	2.1	1.5	0.8	1.4	1.0	0.8	0.8	0.9	1.2	1.1	1.1	1.0	0.9	0.9	1.4	0.7	0.9	0.9	0.7	0.8	0.7	0.5	0.7	0.5
Holidays	1.6	2.1	1.6	1.8	1.0	1.7	1.6	1.5	1.2	1.7	1.3	0.8	1.1	1.1	0.6	0.8	1.1	1.1	0.7	1.1	0.7	0.7	0.4	0.3	0.4	0.4	0.2

Reading note: A ratio higher than one indicates that the national proportion of people deprived for a particular item is higher than the EU-27 average. For example, the proportion of people unable to avoid arrears is only 40 % of the EU-27 weighted average in the UK, the Netherlands and Luxembourg, whereas in Bulgaria it is 3.2 times higher than in the EU as a whole. The table is colour coded as a “heat map” to help highlight national patterns. High incidences of deprivation above the EU average are highlighted in red/orange and low incidences of deprivation are shown in blue.

Notes: The table is sorted horizontally according to the national mean MD level and vertically according to the national ratios of the country with the highest mean MD level (i.e. BG in this case), with the most materially deprived countries on the left and with the items sorted highest to lowest. “~0” refers to values that are below 0.05.

Source: Guio, Gordon and Marlier (2012).

Annex 4: People at risk of poverty or social exclusion, using either the current EU severe MD indicator or the alternative MD 7+ indicator, 2009

	AROPE (EU SMD)	AROPE (MD 7+)
BE	20.2	20.6
BG	46.2	49.3
CZ	14.0	13.4
DK	17.6	17.3
DE	20.0	20.9
EE	23.4	23.3
IE	25.7	24.8
EL	27.6	25.6
ES	23.4	23.5
FR	18.5	19.1
IT	24.7	24.4
CY	22.9	19.5
LV	37.4	39.7
LT	29.5	31.2
LU	17.8	18.4
HU	29.9	34.0
MT	20.2	22.0
NL	15.1	15.1
AT	17.0	17.0
PL	27.8	26.7
PT	24.9	29.0
RO	43.1	50.0
SI	17.2	17.7
SK	19.6	18.2
FI	16.9	16.7
SE	15.9	15.7
UK	22.0	22.5
EU-27	23.1	23.7

Source: EU-SILC 2009 cross-sectional data, Users' database – August 2011, authors' computation.

Annex 5: Overlap between the current and alternative MD measures

Annex 5a: Overlap between the current EU standard MD indicator (EU MD, i.e. 3+ lacks out of 9) and the alternative MD 5+ indicator (5+ lacks out of 13), 2009, %

	MD 5+	EU MD only	MD 5+ only	Both	Share of overlap
BE	11,5	2,5	2,5	9,0	0,78
BG	62,6	3,3	10,5	52,2	0,83
CZ	12,5	5,1	2,1	10,5	0,84
DK	4,8	2,2	1,0	3,8	0,79
DE	15,5	2,4	5,5	10,1	0,65
EE	14,5	5,9	3,4	11,1	0,77
IE	11,9	7,3	2,1	9,8	0,82
EL	20,7	6,6	4,3	16,4	0,79
ES	10,9	4,2	3,7	7,2	0,66
FR	13,9	2,6	3,0	10,9	0,79
IT	13,5	5,0	2,9	10,5	0,78
CY	12,0	10,8	1,6	10,4	0,87
LV	42,8	5,5	8,6	34,2	0,80
LT	30,5	4,8	8,4	22,2	0,73
LU	5,9	1,1	2,9	3,0	0,51
HU	43,9	6,8	9,8	34,2	0,78
MT	18,6	4,6	8,5	10,1	0,54
NL	5,0	1,8	1,5	3,5	0,70
AT	10,7	2,8	2,5	8,2	0,76
PL	26,2	8,5	5,2	21,0	0,80
PT	28,3	3,6	10,4	17,9	0,63
RO	60,4	3,9	15,0	45,4	0,75
SI	15,5	4,0	3,3	12,2	0,78
SK	19,6	7,8	2,9	16,7	0,85
FI	5,3	3,7	0,8	4,5	0,84
SE	2,6	2,8	0,5	2,1	0,79
UK	11,3	3,3	4,3	7,0	0,62
EU-27	17,7	4,0	4,6	13,1	0,74

Note: The “share of overlap” provides the proportion (%) of people deprived according to MD5+ who are also deprived according to EU MD.

Source: EU-SILC 2009 cross-sectional data, Users’ database – August 2011, authors’ computation.

Annex 5b: Overlap between the current EU severe MD indicator (EU SMD, i.e. 4+ lacks out of 9) and the alternative MD 7+ indicator (7+ lacks out of 13), 2009, %

	MD 7 +	EU SMD only	MD 7 + only	Both	Share of overlap
BE	6.1	1.6	2.4	3.7	0.60
BG	44.9	5.2	8.3	36.7	0.82
CZ	5.5	2.4	1.8	3.8	0.68
DK	1.8	1.2	0.8	1.1	0.58
DE	7.5	1.3	3.4	4.1	0.55
EE	5.7	2.7	2.2	3.5	0.62
IE	4.9	2.6	1.3	3.6	0.73
EL	8.1	4.8	2.0	6.1	0.76
ES	4.3	1.3	2.2	2.1	0.49
FR	6.8	1.7	3.0	3.9	0.56
IT	6.0	2.6	1.6	4.4	0.74
CY	3.9	4.6	0.6	3.3	0.85
LV	25.5	3.8	7.3	18.1	0.71
LT	18.4	2.6	5.9	12.4	0.68
LU	2.6	0.3	1.8	0.8	0.31
HU	26.4	4.1	9.6	16.7	0.63
MT	7.0	1.7	4.0	3.0	0.43
NL	1.9	0.5	1.0	0.9	0.49
AT	5.5	1.3	2.0	3.5	0.64
PL	13.5	5.3	3.7	9.7	0.72
PT	16.1	1.6	8.6	7.5	0.47
RO	40.0	5.1	12.8	27.2	0.68
SI	7.0	1.9	2.9	4.2	0.59
SK	9.1	4.7	2.7	6.4	0.70
FI	1.8	1.5	0.5	1.3	0.70
SE	0.9	1.0	0.3	0.6	0.64
UK	4.4	1.4	2.4	1.9	0.44
EU-27	9.1	2.3	3.3	5.8	0.64

Note: The “share of overlap” provides the proportion (%) of people deprived according to MD7+ who are also deprived according to EU SMD.

Source: EU-SILC 2009 cross-sectional data, Users’ database – August 2011, authors’ computation.



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