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**CHILD DEPRIVATION,  
MULTIDIMENSIONAL POVERTY AND  
MONETARY POVERTY IN EUROPE**

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# Child Deprivation, Multidimensional Poverty and Monetary Poverty In Europe

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**Abstract.** Together with the Innocenti Working paper on relative income poverty of children in rich countries (Bradshaw et al, 2012), this paper on multidimensional child poverty and child deprivation forms the background studies on which the Innocenti Report Card 10 is based (Measuring Child Poverty: New league tables of child poverty in the world's rich countries). The paper focuses on child deprivation in Europe and studies the degree to which it is experienced by children in 29 countries using a child specific deprivation scale. The paper discusses the construction of a child deprivation scale and estimates a European Child Deprivation Index for the 29 countries using 14 specific child related variables made available by the child module of the EU-SILC 2009 survey. The 29 countries are ranked according to the degree of child deprivation: the results show considerable differences between the countries. The (non-)overlap between child deprivation and child monetary poverty is considerable but limited. In general the results indicate where policy interventions can produce improvements.

**Keywords:** child well-being, material deprivations, overlapping deprivations, multidimensional poverty, Cronbach's alpha coefficient

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## **1. INTRODUCTION**

Using deprivation indicators to measure poverty among adults as well as children has led to a growing number of publications either combining deprivation indicators with indicators of monetary poverty in a single index or supplementing measures of monetary poverty with indices of deprivation. Following the arguments provided in detail elsewhere (de Neubourg and Plavgo, 2012), this paper and its companion background paper to the UNICEF Innocenti Research Centre *Report Card 10* (Bradshaw et al, 2012) discuss monetary poverty and deprivation as related but conceptually distinct. The main arguments for this separate treatment relate to the fact that traditional monetary poverty measures and deprivation measures tell two different stories. While money-metric indicators of poverty give an indication of the financial means of the household to satisfy its needs, deprivation indicators provide information on the degree to which some of these needs are actually met. The latter is the result of a mixture of variables including the income and resources available to the households, spending decisions by the households, the availability of (public) goods and services and the state of the economy in general. Mixing deprivation indicators with monetary poverty data in a single index leads to a loss of dimensions rather than further insights gained from adding dimensions. As argued below, this holds true especially for children. At the end of this paper the empirical relation between monetary poverty and deprivation in the case of children is, however, discussed in detail.

This paper first briefly summarises the arguments for studying deprivation alongside monetary poverty. It then constructs a child deprivation scale using the most recent EU-SILC data (2009). The scale enables us to construct a child headcount deprivation index and an adjusted child population deprivation index each allowing us to rank countries on the basis of the observed level of deprivation and its depth. As a logical next step the paper describes the profile of children who lack two or more items on the deprivation scale and compares the outcomes between countries. In Section three, the paper studies the overlap in the deprivation counts for the various domains identified in the study; this section analyses the profile of the children who suffer from two, three or four deprivations simultaneously. Section four is devoted to decomposition of the adjusted European Child Deprivation Index. In the final section, the overlap between the child deprivation measures and the monetary poverty measures for children is studied.

## **2. WHY STUDY CHILD DEPRIVATION?**

Many arguments lead to the conclusion that the assumed conceptual clarity of money-metric poverty counts is largely built on wishful thinking and that using multidimensional poverty estimates only seems to be more complicated.<sup>1</sup> This is especially true for developing economies where a good deal of the economy is non-monetary, especially for the poor. When considering child poverty the situation is even more complicated since (young) children can hardly be expected to “have money”; categorizing a child as poor or non-poor depends

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<sup>1</sup> Many of these arguments are summarised in Notten and de Neubourg (2007; 2011), Roelen et al (2010; 2011), Thorbecke (2008), Tsui (2002).

therefore on the categorization of the household that he or she is living in: using money-metric poverty estimates obviously implies that poor children are those that live in a poor household.

The consumer sovereignty of individuals which underlies the assumption that “if you have enough money you can satisfy your (basic) needs” is often not observed in the daily experiences of many households, and especially not in poor households. The underlying rationale implies that all attributes needed to fulfil basic needs can be purchased on markets and can be expressed in monetary terms. Markets for basic goods, however, often do not exist, are incomplete or function imperfectly (Bourguignon and Chakravarty, 2003; Thorbecke, 2008; Tsui, 2002). Obviously, goods and services related to basic needs such as clean water and accessible healthcare and education, are semi-public or public goods in many countries, thus making households dependent on the production of these goods and services by public authorities. The availability of purchasing power among households may not be sufficient to gain access to these goods as supply constraints may restrict the possibility of consumption. In other circumstances, some private goods, such as food, may not be available due to extreme situations (drought, famine, natural disasters and armed conflicts). Again, a higher disposable income will be of some help to households, but will not guarantee access to basic goods and services due to lack of availability or rationed supply to private markets. Supply constraints do not generally affect rich economies but in many cases are significant in low- and middle-income countries including some of the poorer countries included in this study.

Equally important in querying the full consumer sovereignty assumption is the fact that intra-household distribution is not taken into consideration, and income and resources are usually measured at the household level (Hulme and McKay, 2008). Assuming that households with sufficient resources to cover the basic needs of all their members actually use them to do so, implies that either all household members have equal power (or at least enough power to secure the fulfilment of their own basic needs) or that there is perfect solidarity among the household members. The latter assumption is violated when the preferences of one of the household members dominates the consumption pattern of the household; this would be the case, for example, if one of the household members is a substance abuser. It may also be that girls are discriminated within the household while boys receive more favourable treatment. In both cases it is possible that the (basic) needs of some household members are not fully met and they can therefore be considered as poor, despite the fact that total household resources would theoretically be sufficient to cover the needs of all household members.

In this context, children are particularly vulnerable to deprivation of their specific needs. They cannot be regarded as full economic agents exercising consumer sovereignty: they are not able to secure their own income/resources until a certain age and they are not sovereign in making consumption decisions (White et al 2002). They are usually the weaker parties in the household. Moreover, for the fulfilment of their basic needs they have to rely more than adults on the production of goods and services by public authorities (especially in education and health, but also in public provisions and services) (Gordon et al 2003a, 2003b;



Minujin et al, 2005; Notten and de Neubourg, 2011; Waddington, 2004; White et al, 2002).<sup>2</sup> Discrimination against girls compared to boys in some countries, adds a specific gender dimension to child deprivation not only at the household level but also at the macro level. The specific position of children justifies a careful analysis of poverty and deprivation based on alternative approaches; multiple deprivation analyses play a crucial role in these approaches.

Deprivation indicators were first introduced into poverty measurement by Townsend (1979) in order to operationalize his relative concept of poverty, and to broaden the range of resources taken into account. He drew up a list of items and activities that he believed no one should go without and then asked respondents to his survey if they owned or had access to them. He counted as poor those lacking three or more items. His work was criticised: his choice of deprivation items was said to be arbitrary; he did not distinguish between those who did not have the items because they could not afford them or did not want them; and there was no specific reason why the threshold should be drawn at three items. His method was developed in the Breadline Britain studies. Initially Mack and Lansley (1985) developed the concept of socially perceived necessities. Items would only be included as deprivation indicators if more than half the population thought that they were necessities that people should not have to do without in modern Britain. They also only counted items as absent if respondents said they lacked them, that is, wanted them but could not afford them. The same methods were used by Gordon and Pantazis (1997) and techniques were developed (see Bradshaw et al, 1995) for weighting the items by the proportion of the population who already possessed them – now known as prevalence weighting. The last study in Britain using this method was the *Poverty and Social Exclusion Survey* (Pantazis et al, 2006). The UK government introduced a suite of deprivation items into the main income survey, the Family Resources Survey, drawing on the results of the PSE study, which was also influential when the EU Social Protection Committee developed indicators for EU SILC.

Amartya Sen's seminal work on the capability approach (Sen 1976, 1982) has also led to an expansion of multidimensional poverty studies including basic needs approaches (Streeten 1981, 1984) or social exclusion methods (Marlier et al, 2007). Many studies exploring either the conceptual and theoretical consideration behind deprivation and poverty estimates or the empirical associations/differences between the two approaches, come to the conclusion that the use of monetary and multidimensional/deprivation poverty measures results in different pictures of poverty, pointing towards modest, if not limited, overlap in results; this study comes to the same conclusion (Roelen et al, 2010, de Neubourg et al, 2009) (see section 5 for a similar analysis in this paper).

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<sup>2</sup> Bradshaw and Mayhew (2011) argue that deprivation analyses are also important to “correct” the monetary poverty count when it is measured using a relative poverty line; this is not the line of argument taken in this paper on child poverty. Notten and de Neubourg (2011) compared the results using a relative poverty line with the results using an “absolute” poverty for the same set of (rich) countries and conclude that both have their own properties that make it interesting and informative as a basis for further analysis and policy design.

### 3. MEASURING CHILD DEPRIVATION IN THE EUROPEAN CONTEXT

The availability of EU-SILC data for 32 European countries of child specific indicators alongside household variables, and our experiences with monetary poverty and deprivation analyses, have inspired us to construct a child specific deprivation analysis. The obvious start for such an analysis is the work of the Indicators Subgroup of the EU Social Protection Committee and the work of Guio (2009) who explored the deprivation indicators in EU SILC 2005. The results of the analysis for children based on the EU SILC data for 2009 are given in appendix 1.

The EU deprivation index, however, has problems in the case of children. Firstly, the items are not specifically child related, secondly they violate the full conceptual separation of financial and non-financial items developed in de Neubourg and Plavgo (2012) and finally the scalability of the items is not satisfactory. This is shown in Table 1. It is accepted that according to Cronbach's alpha a good scale needs to reach a coefficient of at least 0.7. The EU Deprivation Scale just misses that with an alpha coefficient of 0.695 if applied to all countries. This could be improved if TV and phone were dropped from the scale. But we have also carried out a scalability analysis for each individual country which shows that only Bulgaria (0.806), Latvia (0.703) and Romania (0.722) are acceptable. Countries where the alpha falls most notably are Denmark (0.560), Finland (0.554), Iceland (0.405), Luxembourg (0.503), Malta (0.551), and Netherlands (0.591).

**Table 1: Assessment of Guio's EU deprivation scale applied to children in EU-SILC 2009**

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted
Expenses	0.81	1.380	0.551	0.629
Holiday	0.82	1.367	0.573	0.621
Arrears	1.06	1.740	0.415	0.660
Meal	1.12	1.861	0.427	0.660
Warm	1.11	1.855	0.405	0.663
Wash	1.19	2.146	0.264	0.692
TV	1.20	2.224	0.133	0.703
Car	1.12	1.875	0.392	0.666
Phone	1.19	2.172	0.230	0.696

Source: authors' calculation based on EU-SILC 2009

The EU-SILC data referring to 2009, allow us to construct a scale that is both more child-specific and technically better. This is thanks to the inclusion of a special child well-being module consisting of 19 new items relevant to children. These are:

- Clothes: some new (not second-hand) clothes
- Shoes: two pairs of properly fitting shoes (including a pair of all-weather shoes)
- Fruit: fresh fruit and vegetables once a day
- Three meals: three meals a day
- Meat: one meal with meat, chicken or fish (or vegetarian equivalent) at least once a day

- Books: books at home suitable for their age
- Leisure: regular leisure activity (swimming, playing an instrument, youth organization etc.)
- Equipment: outdoor leisure equipment (bicycle, roller skates, etc.)
- Outdoor: outdoor space in the neighbourhood where children can play safely
- Games: indoor games (educational baby toys, building blocks, board games, etc.)
- Festivity: festivity on special occasions (birthdays, name days, religious events, etc.)
- Friends: invite friends around to play and eat from time to time
- School trips: participate in school trips and school events that cost money
- Homework: suitable place to study or do homework
- Holidays: go on holiday away from home at least 1 week per year
- Unmet need for GP specialist
- Reasons for not consulting GP specialist
- Unmet need for dentist
- Reasons for not consulting dentist.

Apart from the specific child indicators some household variables could be used for constructing a child deprivation scale. Table 2 lists the 33 deprivation indicators (both child-specific and household-specific) that are available from the 2009 EU-SILC database ordered in domains. The table also gives the proportion of the whole sample (across all countries) missing each item and Cronbach's alpha for the scale of each (sub) domain. From the table it can be seen that the scalability of the items poor in some domains.

In accordance with the arguments mentioned in the introduction and developed in the “lost in dimensions” paper (de Neubourg and Plavgo, 2012), we excluded the items related to the “financial” domain and the “durables” domain<sup>3</sup> for the construction of a deprivation index. While we consider the variables related to the quality of both housing (dwelling) and the physical environment (safety, etc.) to important for the quality of children's lives, during the iterative scaling procedures it appeared that these items or the combination of these items do not comply with the criteria set out for the minimum degree of scalability. We excluded these variables from the construction of the deprivation index by studying the item-inter-correlations and the iterative changes in Cronbach's alpha. While clearly important for children, these items do not technically scale on the same dimension as the others. This also points to the fact that constructing a deprivation indicator explicitly means reducing the underlying dimensions to one single dimension; items that do not scale on this, are then left out of the analysis (see de Neubourg and Plavgo, 2012 for more detail). In order not to lose the information revealed by these indicators we will take them again into consideration when discussing the overlap between the domains in section 4 of this paper. One item (holidays) was excluded because the data were lacking for 9 countries; an attempt to make a holiday composite by using the adult holiday question failed because we found that this was not a reliable proxy<sup>4</sup> for children's holidays.

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<sup>3</sup>Which are rather quasi-financial indicators because they ask whether the household could not afford the item.

<sup>4</sup>The correlation between adult holiday and child holiday for the countries for which we had data for both was too low in most countries (for example 0.47 in Norway and 0.48 in Estonia).

**Table 2: Classification into domains of all deprivation items in EU-SILC**

Item	% lacking	Description	Category	Domain	Cronbach's Alpha
<b>Financial</b>					
Expenses	39.6	The household could not afford to face unexpected expenses	Household	Financial	0.647
Arrears	14.6	The household could not afford to pay arrears (mortgage or rent, utility bills or hire purchase instalments)	Household		
Furniture	29.0	The household could not afford to replace worn-out furniture	Household		
Warm	8.9	The household could not afford to keep the house adequately warm	Household		
<b>Durables</b>					
Washing machine	1.4	The household could not afford (if wanted) to have a washing machine	Household	Durables	0.422
TV	0.4	The household could not afford (if wanted) to have a colour TV	Household		
Car	8.5	The household could not afford (if wanted) to have a personal car	Household		
Phone	1.1	The household could not afford (if wanted) to have a telephone	Household		
<b>Dwelling</b>					
Dark	7.8	The accommodation is too dark	Household	Dwelling	0.314
Damp	17.4	The dwelling has leaking roof / damp walls / floors / foundations or rot in the window frames	Household		
Lack of space	30.6	The dwelling has an insufficient number of rooms compared to the number of persons	Household		
Bath	3.3	The dwelling is not equipped with bath or shower	Household		
Toilet	3.7	The dwelling is not equipped with indoor flushing toilette	Household	0.913	
Hot water	4.1	The dwelling is not equipped with access hot running water	Household		
<b>Safety</b>					
Noise	21.5	Do you have any of the following problems related to the place where you live? Too much noise in your dwelling from neighbours or from outside (traffic, business, factory, etc.)?	Community Environment	Safety etc	0.447
Pollution	16.3	Do you have any of the following problems related to the place where you live? - Pollution, grime or other environmental problems in the local area such as: smoke, dust, unpleasant smells or polluted water?	Community Environment		
Outdoor space	11.6	Outdoor space in the neighbourhood where children can play safely	Community Environment/ Child		
<b>Food and nutrition habits</b>					
Fruit	4.2	Fresh fruit and vegetables once a day	Child	Food and nutrition habits	0.641
Three meals	0.9	Three meals a day	Child		
Meat	4.5	One meal with meat, chicken or fish (or vegetarian equivalent) at least once a day	Child		

Clothing and footwear					
Clothes	5.6	Some new (not second-hand) clothes	Child	Clothing and footwear	Coefficient missing
Shoes	4.3	Two pairs of properly fitting shoes (including a pair of all-weather shoes)	Child		
Education and educational assets					
Internet	7.6	Internet connection	Child/Household	Education and educational assets	0.530
Books	4.6	Books at home suitable for their age	Child		
Homework	5.1	Suitable place to study or do homework	Child		
Social relations and participation					
Festivities	5.4	Celebrations on special occasions (birthdays, name days, religious events, etc.)	Child	Social relations and participation	0.751
Friends	6.1	Invite friends around to play and eat from time to time	Child		
School trips	6.3	Participate in school trips and school events that cost money	Child		
Leisure and games					
Equipment	6.0	Outdoor leisure equipment (bicycle, roller skates, etc.)	Child	Leisure and games	0.751
Games	4.8	Indoor games (educational baby toys, building blocks, board games, etc.)	Child		
Leisure	11.1	Regular leisure activity (swimming, playing an instrument, youth organization etc.)	Child		
Child holiday	28.0	Child holiday away from home at least 1 week per year	Child		

Source: authors' calculation based on EU-SILC 2009

This process left us with a scale consisting of 14 items (see table 3). This produced a satisfactory Cronbach's alpha 0.889 for the whole sample, which would have improved only slightly if we had also dropped three meals. The scale was less than satisfactory for Finland 0.477, Iceland 0.369, Ireland 0.639, Netherlands 0.666, Norway 0.535 and Sweden 0.648. In all other countries the Cronbach alpha was greater than 0.7.

An additional problem occurs given that not all of these items are applicable to children of all ages; e.g. going on school trips is obviously only applicable to children of school age. As argued in de Neubourg and Plavgo (2012) this problem is specific to children and has fewer repercussions for adults. It is also important because it is theoretically necessary for constructing a consistent scale from which a deprivation index can be derived, that children of all ages have the same statistical probability to be deprived (i.e. must have the same risk in terms of being deprived in the same number and type of items/variables). It is not easy to find an acceptable solution to this problem. In this paper we choose to count children outside the relevant age group as non-deprived.

**Table 3: Scalability of 14 item scale for child deprivation**

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Fruit	0.73	3.639	0.571	0.881
Three meals	0.76	3.974	0.344	0.890
Meat	0.72	3.630	0.560	0.881
Clothes	0.71	3.567	0.576	0.881
Shoes	0.72	3.683	0.498	0.884
Internet	0.69	3.609	0.428	0.889
Books	0.72	3.539	0.669	0.877
Homework	0.71	3.706	0.411	0.888
Festivity	0.71	3.533	0.614	0.879
Friends	0.71	3.465	0.660	0.877
School trips	0.70	3.462	0.640	0.877
Equipment	0.71	3.429	0.703	0.874
Leisure	0.65	3.291	0.626	0.880
Games	0.72	3.505	0.694	0.876

Source: authors' calculation based on EU-SILC 2009

Table 4 gives the proportion of children in the relevant age group lacking each item.<sup>5</sup> Across all countries the items most commonly lacked are leisure equipment and access to the Internet. In contrast very few children lack three meals per day in the EU. It is also notable that only very small proportions lack these items in the richer European countries.

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<sup>5</sup> It should also be noted that the child related items are only available for households with at least 1 child older than 1 year; the questions are not asked for households with only children younger than 1 year.

**Table 4: Proportion of children lacking each item by country**

	fruit	three meals	meat	clothes	shoes	internet	books	home work	festivity	friends	school trips	equipment	leisure	games
Age	1 to 16	2 to 16	2 to 16	1 to 16	2 to 16	6 to 16	3 to 16	6 to 16	1 to 16	3 to 16	6 to 16	2 to 16	2 to 16	1 to 16
Overall	4.2	0.9	4.5	5.6	4.3	7.6	4.6	5.1	5.4	6.1	6.3	6.0	11.1	4.8
AT	1.0	0.1	2.2	3.0	1.0	3.9	1.5	3.1	3.7	5.3	3.0	2.4	10.5	1.4
BE	1.6	2.1	2.7	5.9	3.4	5.4	3.2	5.1	3.0	3.0	2.8	3.2	7.2	1.8
BG	35.1	7.4	31.0	35.1	43.5	24.7	26.7	16.6	26.1	44.0	33.1	44.7	47.7	34.0
CY	0.7	0.0	0.6	0.7	0.5	5.8	2.8	3.5	4.6	2.3	0.7	2.9	6.7	2.3
CZ	2.2	0.1	3.9	4.9	2.1	7.4	1.8	5.5	2.1	2.6	3.2	5.9	4.5	2.5
DE	2.4	1.1	4.9	3.1	3.7	3.0	2.4	4.4	2.6	2.7	2.1	2.3	6.7	0.9
DK	.5	0.1	0.5	1.6	1.0	0.5	0.8	2.2	0.4	1.4	0.7	1.4	2.5	0.6
EE	9.8	0.5	5.8	5.1	4.1	4.4	3.6	3.1	4.0	4.3	3.9	6.3	5.5	2.2
ES	0.6	0.3	0.5	3.1	1.4	12.1	0.7	2.6	5.0	3.8	4.4	2.4	4.3	1.3
FI	0.5	0.1	0.0	3.2	0.9	0.4	0.3	2.0	0.0	0.0	1.0	0.7	1.3	0.3
FR	4.7	0.3	2.1	5.2	5.5	4.9	2.0	3.1	3.0	3.0	4.1	2.0	6.7	1.1
GR	1.4	0.3	4.4	0.6	0.9	15.2	6.1	11.0	10.0	4.7	6.3	5.6	10.2	3.9
HU	17.0	0.9	12.4	22.0	5.1	17.2	12.2	6.0	8.9	28.0	11.6	17.9	23.4	13.0
IE	0.7	0.5	1.9	2.6	3.8	9.9	1.1	2.2	0.9	1.1	3.6	1.2	5.2	0.4
IS	0.5	0.3	0.6	1.3	0.5	0.4	0.1	0.2	0.0	0.0	0.5	0.1	1.1	0.0
IT	2.5	1.2	4.4	6.2	2.6	5.0	6.0	9.3	6.1	6.7	6.1	4.0	12.2	4.6
LT	8.6	1.3	8.5	14.1	1.0	11.4	7.8	4.9	10.2	9.2	7.3	9.7	14.8	6.9
LU	0.3	0.1	0.6	2.4	0.5	2.1	0.6	5.5	2.5	2.7	2.7	1.6	2.7	1.0
LV	15.1	5.1	10.6	24.4	10.6	11.1	12.0	4.1	13.9	19.9	12.2	18.8	22.0	11.6
MT	2.1	4.6	4.3	6.0	2.6	3.0	1.0	3.1	3.8	4.0	.9	4.7	3.9	1.5
NL	0.6	0.1	0.7	1.4	2.5	0.4	0.2	2.7	0.5	0.6	0.2	0.4	3.3	0.2
NO	0.7	0.0	1.1	0.4	0.5	0.7	0.3	2.0	0.1	0.2	0.7	0.1	1.9	0.4
PL	6.9	0.9	5.2	3.6	3.0	14.1	8.4	4.0	11.3	7.5	10.3	9.3	19.2	7.7
PT	4.3	2.1	4.7	14.1	4.6	14.8	12.0	12.3	11.6	19.7	11.5	7.4	26.6	10.8
RO	24.2	4.0	29.2	25.4	19.0	32.9	32.9	21.7	34.2	37.0	48.2	57.8	64.4	52.7
SE	0.1	0.1	0.1	0.4	0.9	0.2	0.3	1.6	0.6	0.7	0.4	0.6	1.1	0.2
SI	1.6	0.2	2.1	9.9	2.1	2.7	1.0	4.3	2.4	1.8	1.4	0.5	7.9	0.8
SK	10.2	3.1	13.5	12.9	7.0	13.1	9.4	6.9	7.5	11.7	10.7	11.3	6.9	6.3
UK	1.0	0.3	0.5	1.8	2.5	4.6	0.4	2.2	0.9	1.5	2.2	1.4	6.5	0.7

Source: authors' calculation based on EU-SILC 2009

### *European Child Deprivation Index*

Table 5 provides the basis for the European Child Deprivation Index. The table shows the distribution of the number of items lacking in each country. Over all countries 78 per cent of the children lacked no items ranging from 97.3 per cent in Sweden to 19.3 per cent in Romania.<sup>6</sup>

In general the countries fell into four groups: in the Scandinavian countries and the Netherlands less than 10 per cent of children lack one of the items on the deprivation scale (Denmark, Finland, Iceland, the Netherlands, Norway and Sweden); the large economies of “old Europe” (Germany, France, Spain and the UK) plus smaller countries like Austria, Belgium, Cyprus, Czech Republic, Ireland, Luxemburg, Malta and Slovenia show a score between 80 and 89 per cent of children who do not suffer from deprivations measured by the scale indicators. Approximately a quarter of children in Estonia, Greece, Italy, Lithuania, Poland and Slovakia suffer from deprivation in at least one indicator compared to 40 per cent of children in Portugal, while only one fifth of children in Romania and slightly more than one third in Bulgaria do not suffer from any deprivation. Table 5 indicates the depth of child deprivation in each country and reveals the pattern of grouped countries; figures in all 14 columns indicate deprivation of all 14 items. In Bulgaria and Romania for example, respectively 1.6 and 2.2 per cent of children lack all 14 items; in Iceland 4.3 per cent lack just one item while the Scandinavian countries do not exceed four, and so on. All values of one per cent or less are omitted in the table.

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<sup>6</sup> A general problem with the items available relates to the degree of variance in the items for the richer countries (this also explain why the scale performs worse for these countries). This may reflect a technical measurement problem (we have no items that allow to identify the deprived children in richer countries) or the fact that there simply are few deprived children in richer countries.



**Table 5: Distribution of items lacking in each country and overall (all results = or < than 1 are omitted)**

Items lacking	1+	2+	3+	4+	5+	6+	7+	8+	9+	10+	11+	12+	13+	14
Overall	22.0	13.3	9.8	7.4	5.8	4.5	3.4	2.4	1.8	1.3				
AT	16.6	8.7	5.3	3.7	2.4	1.5								
BE	18.6	9.1	6.6	4.7	3.1	2.3	1.6	1.1						
BG	66.6	56.6	49.2	41.1	36.3	30.1	25.6	20.2	15.9	14.1	11.8	9.1	5.8	1.6
CY	14.9	7.0	5.0	3.8	2.1									
CZ	17.8	8.8	6.1	4.7	3.1	2.5	1.8	1.3						
DE	16.0	8.8	6.2	3.9	2.8	2.0	1.1							
DK	5.9	2.6	1.5	1.2										
EE	21.5	12.4	7.7	4.5	3.3	2.5	2.1	1.7	1.6	1.3	1.0			
ES	18.5	8.1	5.3	3.2	2.1	1.6	1.1							
FI	6.9	2.5												
FR	19.9	10.1	6.5	3.9	2.6	1.5	1.1							
GR	29.1	17.2	11.7	8.4	6.1	3.5	1.8	1.1						
HU	43.6	31.9	25.1	20.6	16.7	13.2	10.2	7.6	5.6	3.5	2.1	1.3		
IE	17.5	4.9	2.5	1.4										
IS	4.3													
IT	22.0	13.3	10.3	8.3	6.2	4.6	3.1	2.3	1.7	1.1				
LT	31.6	19.8	13.8	11.6	10.4	8.3	7.1	3.8	3.0	1.5	1.1			
LU	11.5	4.4	3.1	1.7	1.3									
LV	44.4	31.8	25.2	20.7	15.9	12.7	9.1	6.9	4.6	3.6	2.9	2.2		
MT	17.2	8.9	5.4	3.5	2.5	2.0	1.2							
NL	8.2	2.7	1.2											
NO	5.9	1.9												
PL	33.6	20.9	15.3	10.8	8.5	6.6	4.8	3.4	2.3	1.5	1.0			
PT	41.3	27.4	23.0	17.8	13.8	10.3	7.4	4.7	3.6	2.5	1.2			
RO	80.7	72.6	62.0	53.8	46.8	40.1	33.9	27.0	22.3	16.7	11.3	7.6	3.4	2.2
SE	2.7	1.3												
SI	18.2	8.3	4.4	2.6	1.5	1.0								
SK	31.2	19.2	15.2	12.1	10.3	8.7	7.0	5.4	4.1	3.4	2.5	1.5	1.1	
UK	13.4	5.5	2.8	1.7	1.3									

Source: authors' calculation based on EU-SILC 2009

On the basis of the data in table 5 decisions on the European Child Deprivation Index could be taken. Figure 1 gives the distribution of countries lacking one, two, three and four items ranked by lack of two or more. It is a matter of judgement where the threshold for the index is drawn. There are some re-rankings of countries in table 6 depending on the threshold used but overall the results are quite stable. If we were to choose lack of one item, there is a risk of giving particular importance to one indicator. If we take three or more indicators the numbers for richer countries are very small, therefore we select “lacking two or more items” as the threshold. Iceland with less than one per cent of children lacking two or more items shows the best score, and Romania with more than 70 per cent of children deprived of more than one item shows the worst. Roughly the countries fall into 7 groups:

Group 1: child deprivation index lower than 3 per cent (Iceland, Sweden, Norway, Denmark, Finland and the Netherlands)

Group 2: index between 4 and 7 per cent (Luxemburg, the United Kingdom, Ireland and Cyprus)

Group 3: index between 8 and 10 per cent (Spain, Slovenia, Austria, Czech Republic, Germany, Malta, Belgium and France)

Group 4: index approximately 13 per cent (Italy and Estonia)

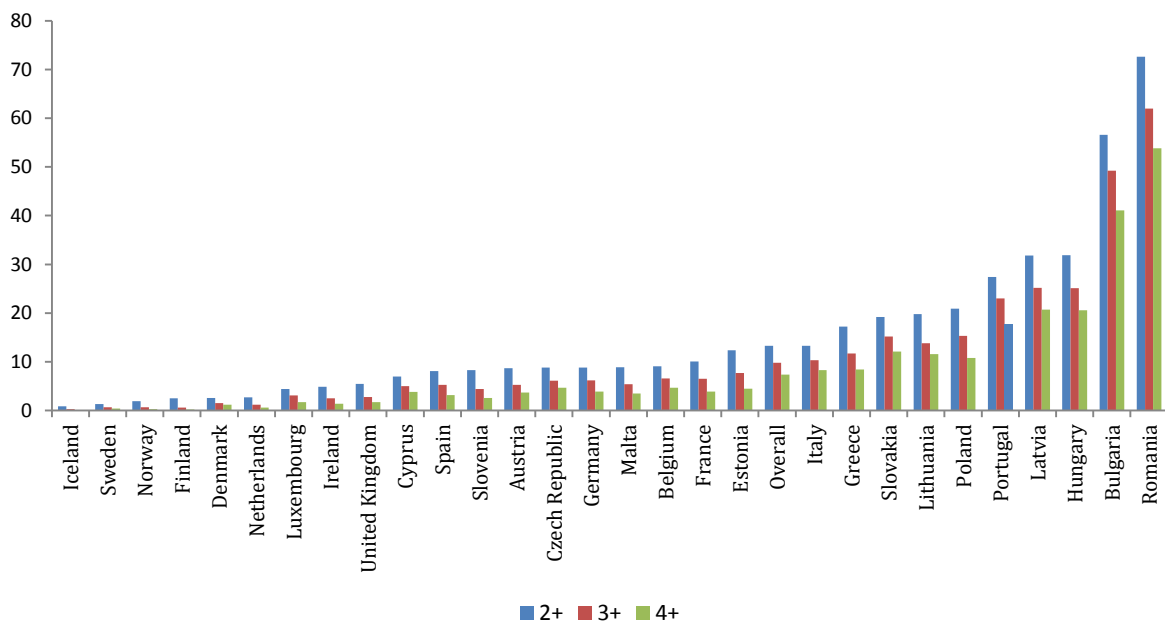
Group 5: index between 16 and 20 per cent (Greece, Lithuania, Slovakia and Poland)

Group 6: index between 27 and 31 per cent (Portugal, Latvia and Hungary)

Group 7: index above 50 per cent (Bulgaria and Romania).

Apart from the North European countries (Nordic countries and the Netherlands) and the poorest countries (Bulgaria and Romania), it is hard to detect consistent groupings. GDP per capita gives some rough indication for the ranking, but cannot explain the relatively big differences between countries with a comparable GDP/capita in the north and the centre of Europe. Obviously, two broad categories of explanations should be investigated: policy and composition. Policy variables may indicate that countries systematically adopting a specific policy towards children, their families and their schools succeed in achieving a low deprivation score (the case of Cyprus for example is partially explained by a generous child benefit system). It may also be the case that the characteristics of the children and the families they live in differ on crucial variables explaining why some countries show higher deprivation rates. We do not analyse data on the policy variables in this paper, but data on the characteristics of the children and their families is available. The next section digs deeper into the profile of the deprived children and tries to understand whether international differences in these profiles may reveal mechanisms that (partially) explain these differences.

**Figure 1: Countries by number of child deprivation items lacking ranked by 2+**



Source: authors' calculation based on EU-SILC 2009

**Table 6: Re-rankings of countries on the deprivation scale using different thresholds**

1+	2+	3+	4+	5+
RO	RO	RO	RO	RO
BG	BG	BG	BG	BG
LV	HU	HU	HU	HU
HU	LV	LV	LV	LV
PT	PT	PT	PT	PT
PL	PL	SK	SK	SK
LT	LT	PL	LT	LT
SK	SK	LT	PL	PL
GR	GR	GR	GR	GR
Overall	Overall	IT	IT	IT
EE	IT	Overall	Overall	Overall
IT	EE	EE	EE	EE
FR	FR	BE	BE	BE
BE	BE	FR	CZ	CZ
ES	MT	DE	FR	DE
SI	DE	CZ	DE	FR
IE	CZ	MT	CY	MT
CZ	AT	ES	AT	AT
MT	SI	AT	MT	ES
AT	ES	CY	ES	CY
DE	CY	SI	SI	SI
CY	UK	LU	UK	UK
UK	IE	UK	LU	LU
LU	LU	IE	IE	DK
NL	NL	DK	DK	IE
FI	DK	NL	NL	NL
NO	FI	NO	SE	NO
DK	NO	SE	NO	FI
IS	SE	FI	FI	IS
SE	IS	IS	IS	SE

Source: authors' calculation based on EU-SILC 2009

### *Characteristics of deprived children*

There is a clear association between the number items lacking and educational level, work intensity, the number of children, family type, urbanisation and income poverty at both 50 and 60 per cent national median income. These results hold for the pooled data of all the countries (see Appendix 2), but not necessarily at country level given the heterogeneity between the countries. Table 7 presents the data at country level for the percentage of children lacking two or more items by a number of characteristics.

Some conclusions are obvious and others point to explanations that require further study at country level.

It is clear that across all countries children living in families with parents that have a lower *educational level* have a much higher risk of being deprived compared to children living in families where the adults are better educated. However, two observations have to be made. First, in many of the new EU members states (Bulgaria, Estonia, Hungary, Latvia, Romania and Slovakia) the risks for children of being deprived even if they live in families with highly educated parents is still considerable; this relates most probably to the employment opportunities of higher educated parents (see also below). Second, in all the Nordic countries and Luxemburg, the percentage of deprived children among lower educated parent families is relatively small (albeit still higher than for those with better-educated parents). It is safe to say that the success of these countries in keeping child deprivation at a low overall level is at least partially due to their success in assisting “low human capital families” in one way or another.

It is also clear that high *work intensity* in the family is positively associated with lower levels of deprivation in all countries. However, relatively high rates of child deprivation are observed among children of “working parent families” in nearly all new EU member states (Bulgaria, Estonia, Hungary, Lithuania, Latvia, Poland, Romania and Slovak Republic) and in Greece and Portugal. This may be due to a “working poor syndrome”, but this has to be investigated further.

*Lone parent* families show a higher degree of child deprivation than families with two adults, although again the effects in Iceland and Sweden are relatively small indicating that these countries may be politically successful in counteracting the effect of single parent households more effectively than other countries.

In some countries deprivation is typically an urban problem: Austria, Belgium, France and the UK. In Bulgaria and Romania however, child deprivation is predominantly a rural problem. In the vast majority of countries there are only mild differences between child deprivation rates in *urban and rural* areas. This is in contrast with what we found for child income poverty, which shows large urban/rural differentials (see Bradshaw et al. 2012).

Looking at the *migrant status* of the families some interesting differences are revealed:

- In the old EU member states of Austria, Belgium, France, Italy, Portugal and Spain, almost, or well over, one fifth of the children living in “migrant households” is deprived;
- This also the case for a number of new EU member states (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Romania and Slovakia) but for a much lower absolute number of immigrants;
- The most remarkable result is that among the group of rich countries that manages to keep the child deprivation rates for “non-migrant” children around or below 5 per cent (Austria, Belgium, Denmark, Finland, Iceland, Luxemburg, the Netherlands, Norway,

Sweden and the UK) three countries stand out particularly in “doing a much worse job” for the children in the migrant population: Austria, Belgium and France. In Austria and Belgium the case is so extreme that almost two-thirds of the deprived children are in migrant families (the same holds for Luxemburg at much lower absolute levels of deprivation) (see table 7).

Evidently these international variations may reflect differences in policy design and policy effectiveness. However, they may also reflect the effects of demographic and other differences between the countries. While the scope of this paper does not allow detailed study of these differences, table 7 summarises the incidence statistics for children living in the groups most vulnerable to deprivation (low educational level, low work intensity, household with 3+ children, lone parents and migrant status). From table 8 it can be seen that the percentage of children living in migrant families is around 30 per cent or higher in Austria, Belgium and Luxemburg and above 20 per cent in Cyprus, France, Ireland, Sweden and the UK, but (much) lower in other countries. It seems that countries with a high number of children in migrant families have relatively more difficulty in maintaining low levels of deprivation for these children. It should, however, be noted that Sweden and the UK combine a relatively high proportion of “migrant children” with modest child deprivation scores for that part of the population. The problem of children living in “migrant families” in the “high migration prevalence” countries is also reflected in table 9: approximately two-thirds of all the deprived children in Austria, Belgium and Luxemburg are found among children in migrant families. If these countries were able to solve the problems for these children, the deprivation rates in these countries would be very low. Referring to the Report Card background paper on income poverty (Bradshaw et al. 2012), it should also be noted that the children in migrant families show a much higher child financial poverty rate in many countries, and especially so in Belgium (to a lesser extent in Austria and Luxemburg) (Dierckx et al, 2011). The tables in appendix 3 provide information on the composition of the group of deprived children according to the European Child Deprivation Index by the characteristics of the households they live in.

**Table 7a: Characteristics of children lacking 2+ items on the child deprivation index in percentages of total number of children by country**

	Education level of hh head			Work intensity			Number of children		
	None, primary /lower sec	Upper sec, post sec non-tertiary	Tertiary and above	WI=0-<0.2	0.2<WI<0.8	0.8<=WI<1	1	2	3+
AT	19.2	10.8	1.9	41.1	11.4	1.8	5.5	6.7	16.4
BE	26.7	10.8	2.7	40.6	11.5	2.9	5.1	8.7	12.7
BG	89.6	57.9	27.1	86.7	59.0	46.3	44.7	59.1	82.3
CY	22.6	12.1	1.1	62.9	9.7	3.2	8.4	3.7	20.9
CZ	59.5	8.5	1.5	50.1	7.4	4.4	7.0	6.5	21.6
DE	35.6	11.9	3.5	41.5	6.6	5.5	8.9	7.5	11.7
DK	11.7	2.1	1.0	22.5	6.5	0.4	1.4	1.0	7.1
EE	29.4	17.6	5.5	46.3	15.0	7.5	8.4	9.5	25.1
ES	19.2	6.9	1.6	31.5	11.0	3.0	6.5	6.4	25.9
FI	2.5	4.2	0.7	21.3	2.4	0.5	0.9	2.3	3.9
FR	34.0	11.6	2.4	42.2	13.4	4.5	6.2	8.4	16.2
GR	50.8	16.5	5.2	21.5	24.7	10.3	16.7	16.4	26.2
HU	74.5	32.6	10.9	62.6	32.6	17.5	19.4	28.2	50.0
IE	12.0	5.4	1.5	18.8	2.9	0.8	3.9	2.7	8.8
IS	3.9	1.1	0.2	13.2	0.3	0.8	1.8	0.8	0.2
IT	27.9	10.4	2.8	34.9	17.2	6.2	10.2	12.7	23.7
LT	54.7	29.2	4.9	48.5	24.6	14.1	13.6	20.7	29.8
LU	9.9	3.6	1.8	26.1	3.4	3.1	4.4	4.4	4.1
LV	67.6	42.4	9.8	63.2	36.5	22.5	24.4	30.7	47.7
MT	15.8	3.4	2.2	38.5	9.3	2.2	6.0	7.5	19.2
NL	13.8	2.8	0.7	23.7	3.9	0.8	2.6	2.0	3.6
NO	5.9	2.0	0.7	15.5	1.5	1.3	0.6	1.7	2.9
PL	61.0	25.2	3.8	47.7	24.8	12.5	12.5	16.9	42.4
PT	37.9	19.7	4.9	72.2	37.9	15.7	22.2	23.5	58.8
RO	92.4	73.0	34.1	96.4	78.3	63.7	54.3	76.9	91.5
SE	6.5	1.4	0.9	14.2	1.9	0.5	0.6	1.0	2.7
SI	32.9	10.8	1.7	37.6	14.0	4.6	5.5	7.4	14.7
SK	83.8	22.8	6.4	71.6	21.1	11.0	11.3	16.3	36.9
UK	19.3	6.2	1.6	13.3	4.2	2.5	3.3	4.5	8.9

Source: authors' calculation based on EU-SILC 2009

**Table 7b: Characteristics of children lacking 2+ items on the child deprivation index in percentages of total number of children by country**

	Family structure			Degree of urbanisation			Migrant status		Income	
	LP	Couple	Other	Densely	Intermediate	Thinly	Not migrant	Migrant	Over 60% median	Under 60% median income
AT	16.9	7.7	8.9	14.1	7.8	4.1	3.8	17.9	4.8	33.8
BE	20.0	7.6	5.6	13.1	4.2	6.9	4.8	19.6	4.4	35.5
BG	76.0	55.0	56.8	42.7	70.4	65.6	56.5	70.8	46.0	90.3
CY	34.3	5.0	4.0	7.8	4.2	6.9	4.3	14.4	4.2	27.2
CZ	29.7	6.2	11.0	7.6	8.0	10.2	8.1	18.8	5.1	34.0
DE	23.8	6.4	8.5	10.1	6.5	11.0	7.8	16.7	5.9	26.5
DK	10.1	1.2	0.3	4.6	2.0	1.4	1.7	7.9	1.3	13.9
EE	22.3	10.7	13.5	11.6	NA	13.0	11.6	16.6	7.0	33.7
ES	15.3	6.9	14.7	8.1	8.3	7.8	5.8	19.4	3.8	22.0
FI	6.8	2.0	2.8	2.3	2.7	2.6	1.5	11.8	1.3	11.9
FR	21.5	7.6	19.2	13.3	7.5	7.0	7.4	20.5	5.7	32.0
GR	24.3	16.1	27.0	16.0	7.9	21.0	11.4	42.2	8.6	43.8
HU	47.3	30.4	31.5	24.3	33.2	35.4	32.1	24.1	25.2	57.8
IE	13.0	2.8	3.3	5.5	5.1	4.2	5.6	3.1	2.1	16.7
IS	4.4	0.3	0.7	0.9	NA	0.9	0.5	3.6	0.9	0.8
IT	17.6	11.9	20.3	14.3	13.3	10.3	11.1	23.7	7.8	30.7
LT	32.7	15.9	25.8	12.6	NA	24.6	18.8	31.5	14.1	36.2
LU	23.4	2.3	6.1	4.9	4.3	3.4	3.2	5.0	1.8	14.1
LV	50.6	30.4	28.1	25.2	NA	36.9	32.3	28.9	22.1	61.0
MT	31.2	7.0	10.2	9.0	8.4	NA	8.7	10.1	6.0	20.8
NL	14.9	1.4	2.2	NA	NA	NA	2.0	7.8	1.1	11.5
NO	4.1	1.4	2.0	2.9	1.4	0.7	1.7	3.4	0.5	13.0
PL	42.6	17.6	24.4	16.7	23.4	23.3	21.0	12.6	13.2	46.9
PT	46.5	22.6	38.1	28.6	29.8	21.0	26.2	33.6	19.7	54.9
RO	85.4	72.3	71.4	58.8	16.0	79.2	72.6	100.0	63.8	91.0
SE	4.3	0.8	0.2	1.1	1.2	1.5	1.0	2.7	0.5	6.9
SI	17.3	7.2	10.6	NA	NA	NA	7.2	15.5	6.0	26.7
SK	23.1	15.4	28.1	14.8	18.4	22.2	19.2	19.0	13.2	48.5
UK	12.2	4.1	4.4	6.5	2.2	1.6	5.0	7.4	3.2	14.4

Source: authors' calculation based on EU-SILC 2009

**Table 8: Children living in the most vulnerable households by country  
(as a percentage of total number of households with children)**

	None, primary/lower sec	WI<0.3	3+	LP	Migrant
AT	19.2	41.1	16.4	16.9	17.9
BE	26.7	40.6	12.7	20.0	19.6
BG	89.6	86.7	82.3	76.0	*
CY	22.6	62.9	20.9	34.3	14.4
CZ	59.5	50.1	21.6	29.7	18.8
DE	35.6	41.5	11.7	23.8	16.7
DK	11.7	22.5	7.1	10.1	7.9
EE	29.4	46.3	25.1	22.3	16.6
ES	19.2	31.5	25.9	15.3	19.4
FI	2.5	21.3	3.9	6.8	11.8
FR	34.0	42.2	16.2	21.5	20.5
GR	50.8	21.5	26.2	24.3	42.2
HU	74.5	62.6	50.0	47.3	*
IE	12.0	18.8	8.8	13.0	3.1
IS	3.9	13.2	0.2	4.4	3.6
IT	27.9	34.9	23.7	17.6	23.7
LT	54.7	48.5	29.8	32.7	31.5
LU	9.9	26.1	4.1	23.4	5.0
LV	67.6	63.2	47.7	50.6	28.9
MT	15.8	38.5	19.2	31.2	10.1
NL	13.8	23.7	3.6	14.9	7.8
NO	5.9	15.5	2.9	4.1	3.4
PL	61.0	47.7	42.4	42.6	*
PT	37.9	72.2	58.8	46.5	33.6
RO	92.4	96.4	91.5	85.4	*
SE	6.5	14.2	2.7	4.3	2.7
SI	32.9	37.6	14.7	17.3	15.5
SK	83.8	71.6	36.9	23.1	*
UK	19.3	13.3	8.9	12.2	7.4

\*Data not available due to small sample size for this category  
Source: authors' calculation based on EU-SILC 2009



**Table 9: Percentage of children living in migrant households (at least one of the parents is foreign born) and percentage of deprived in migrant families<sup>7</sup>**

	% children living in migrant families	% of deprived children in migrant families
Overall	15.0	
AT	35.1	72
BE	28.9	62
BG	0.9	*
CY	26.9	55
CZ	6.0	13
DE	11.5	22
DK	14.4	44
EE	15.3	21
ES	16.7	40
FI	9.7	46
FR	20.4	41
GR	18.7	46
HU	2.6	*
IE	27.2	17
IS	12.2	50
IT	17.3	31
LT	7.2	12
LU	65.9	75
LV	15.6	14
MT	11.6	13
NL	11.3	33
NO	15.1	26
PL	0.9	*
PT	16.6	20
RO	0.1	*
SE	20.5	41
SI	13.8	26
SK	2.6	*
UK	19.6	26

\*Data not available due to small sample size for this category  
Source: authors' calculation based on EU-SILC 2009

<sup>7</sup> Note that the estimates are based on the EU-SILC sample; figures for some countries may differ from figures based on census data or on other surveys.

Obviously, more detailed analysis is beyond the scope of this paper and is still to be undertaken on the country level for all countries. Analysis of the combination of deprivations that children experience and of the combination of household and personal characteristics that identifies deprived children in more detail, are the next logical step. A first approximation of the overlap analysis is given in the next section.

Before undertaking this step a simple regression can be estimated thus already taking into account the fact that certain characteristics overlap in their effect (the interaction between characteristics). This analysis is presented on the pooled data for all countries in table 10. It treats the country as a dummy with Austria as the reference case and estimates the odds of a child lacking 2+ items, having controlled for some socio-economic characteristics. As we have seen, the odds vary significantly according to family type, number of children, age of the youngest child, highest level of education and work intensity. When these characteristics are controlled for, the countries highlighted in green have significantly lower deprivation than Austria and those highlighted in yellow have significantly higher deprivation. After having controlled for international differences in the characteristics of families with children, we have then two groups of countries (all country dummies are significant):

*Countries with significantly fewer children deprived than Austria after controlling for household variables* (8.7 per cent of all children are deprived in Austria): Belgium, Denmark, Estonia, Finland, Iceland, Ireland, Luxemburg, Malta, the Netherlands, Norway, Sweden, and the UK;

*Countries with significantly more children deprived than Austria after controlling for household variables:* Bulgaria, Cyprus, Czech Republic, Estonia, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Poland, Portugal, Romania, Slovak Republic, Slovenia, and Spain.

As mentioned, more country specific analyses should provide more details in order to inform country specific policy to counteract child deprivation.

**Table 10: Odds of lacking 2+ deprivation items**

		S.E.	Sig.	Odds ratio
Lone parent (our definition)	Lone parent	0.001	0.000	2.309
Number of children (1 as reference)	2	0.001	0.000	1.487
	3+	0.001	0.000	33.301
Age of youngest child (0-5 as reference)	6 to 12	0.001	0.000	1.177
	13+	0.001	0.000	1.406
Education level (lower sec or below as reference)	Upper secondary	0.001	0.000	0.370
	Further/higher	0.001	0.000	0.092
Work intensity (0<0.2 as reference)	0.2-<0.8	0.001	0.000	0.431
	0.8+	0.001	0.000	0.189
Country (AT as reference)	BE	0.005	0.000	0.855
	BG	0.004	0.000	19.424
	CY	0.013	0.000	0.547
	CZ	0.004	0.000	1.078
	DE	0.003	0.000	1.265
	DK	0.009	0.000	0.501
	EE	0.008	0.000	1.198
	ES	0.004	0.000	0.916
	FI	0.008	0.000	0.269
	FR	0.003	0.000	1.175
	GR	0.004	0.000	3.031
	HU	0.004	0.000	4.168
	IE	0.006	0.000	0.557
	IS	0.048	0.000	0.262
	IT	0.003	0.000	1.360
	LT	0.005	0.000	3.295
	LU	0.020	0.000	0.584
	LV	0.006	0.000	6.075
	MT	0.015	0.000	0.479
	NL	0.005	0.000	0.310
	NO	0.010	0.000	0.258
	PL	0.003	0.000	3.437
	PT	0.004	0.000	2.999
	RO	0.003	0.000	29.792
SE	0.008	0.000	0.365	
SI	0.007	0.000	1.494	
SK	0.004	0.000	3.377	
UK	0.004	0.000	0.271	
	Constant	0.0004	0.000	0.379

Source: authors' calculation based on EU-SILC 2009

#### **4. OVERLAPPING DEPRIVATIONS**

The analysis can and should go beyond the score of each country on the European Child Deprivation Index as discussed in the previous two sections. It is interesting to study the overlap (or lack thereof) in the deprivations that children experience in each country. This section gives the building blocks for such a detailed analysis and illustrates the outcomes for the (non-) overlap between three domain deprivations in two countries.

Studying the overlap on the basis of the 14 indicators used in the scale would have two major drawbacks: firstly it would produce a very large number of overlap analyses to be executed and secondly it would leave out the domains that we could not use in the European Child Deprivation Index because they did not scale properly on the (by definition one-dimensional) European Deprivation Index scale (see section 2). That would create an avoidable loss of information. In fact only by executing an overlap-analysis, can a truly multidimensional analysis be made. Therefore we have chosen to construct domain deprivation scores in eight domains based on the available dataset in EU-SILC 2009. The eight domains are: financial strain, housing, community, food, clothing, education, social and leisure.

For each of the domains a number of meaningful variables are chosen out of the list of table 2. For the housing, community and financial domains four or five variables were chosen; for the other domains three or two indicators were available (see table 11). For the financial, housing and community domains we counted children as deprived if they lacked two or more out of the four/five items. For the food, clothing, education, social and leisure domains we counted children as deprived if they lacked one of the items. Table 12 gives the proportion lacking each item and the proportion lacking each domain for the pooled data set of all countries.

Table 12 shows the correlations between the domains. It is noticeable that ‘community’ has much lower correlations with the other domains.

**Table 11: Child deprivation levels by domain**

		Domain	
Expenses	39.6	Financial	30.0
Arrears	14.6		
Furniture	29.0		
Warm	8.9		
Car	8.5		
Dark	7.8	Housing	12.4
Damp	17.4		
Overcrowd	30.6		
Hot water	4.1		
Noise	21.5	Community	17.7
Pollution	16.3		
Crime	17.1		
Outdoor	11.6		
Fruit	4.2	Food	6.5
Three meals	0.9		
Meat	4.5		
Clothes	5.6	Clothing	7.5
Shoes	4.3		
Internet	7.6	Education	13.6
Books	4.6		
Homework	5.1		
Festivity	5.4	Social	11.2
Friends	6.1		
School trips	6.3		
Equip	6.0	Leisure	13.2
Games	4.8		
Leisure	11.1		

Source: authors' calculation based on EU-SILC 2009

**Table 12: Correlation matrix of deprivation by domains**

	clothing	education	social	leisure	Financial	Housing	Community
Food	0.473	0.387	0.473	0.461	0.329	0.278	0.110
Clothing	1	0.374	0.448	0.438	0.346	0.256	0.095
Education		1	0.502	0.504	0.404	0.310	0.114
Social			1	0.629	0.420	0.299	0.112
Leisure				1	0.427	0.309	0.121
Financial					1	0.264	0.130
Housing						1	0.143

Source: authors' calculation based on EU-SILC 2009

Table 13 shows the proportion of children in each country deprived on each of the domains. Overall financial hardship has the highest deprivation rate and food the lowest. Financial hardship is also highest for every country but food is not the lowest in every country; in Bulgaria, Hungary and Romania the community domain is lowest; the latter is most probably

due to the rural character of deprivation in these countries (see section 3). To test the consistency with the outcomes of the European Child Deprivation Index we estimated the association between country scores on the European Child Deprivation Index and the domain deprivations if we counted all children deprived in three domains or more as deprived. This gives us a more than sufficient basis to work with the domains in the overlap-analysis.

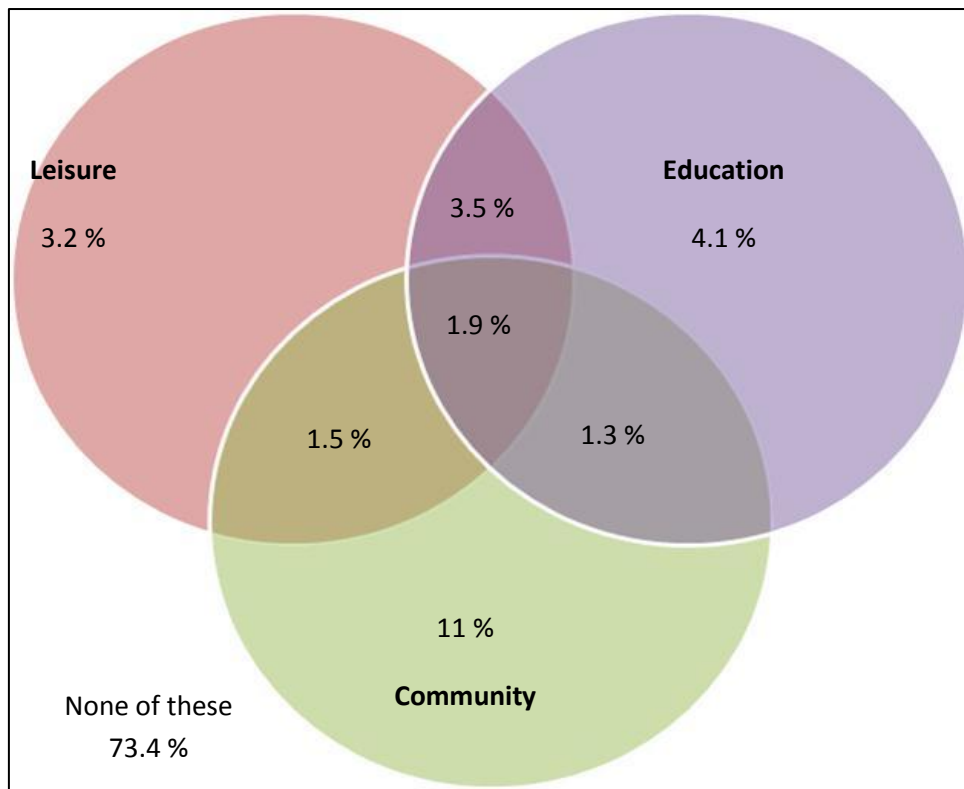
A fully fledged overlap analysis should ultimately be made at the country level since the number of overlaps to be studied is very high. Just to illustrate what kind of results such an analysis can yield we present two figures depicting overlap between three domains in two of the countries.

In figure 2a the overlapping deprivations in the three domains of education, leisure and community are given for Belgium. From the graphs it can be seen that 73.4 per cent of children are not deprived at all in one of these three domains while 1.9 per cent of the children are simultaneously deprived in all three. Approximately 3.5 per cent of the Belgian children are deprived in leisure and education only against 11 per cent in community only. Overlapping deprivations in leisure and community exist for 1.5 per cent, in education and community for 1.3 per cent, and in leisure and education for 3.5 per cent. In general we can conclude that relatively few of the children living in Belgium are confronted with multiple overlapping deprivations while, for those who are deprived, deprivation in the community domain is dominant.

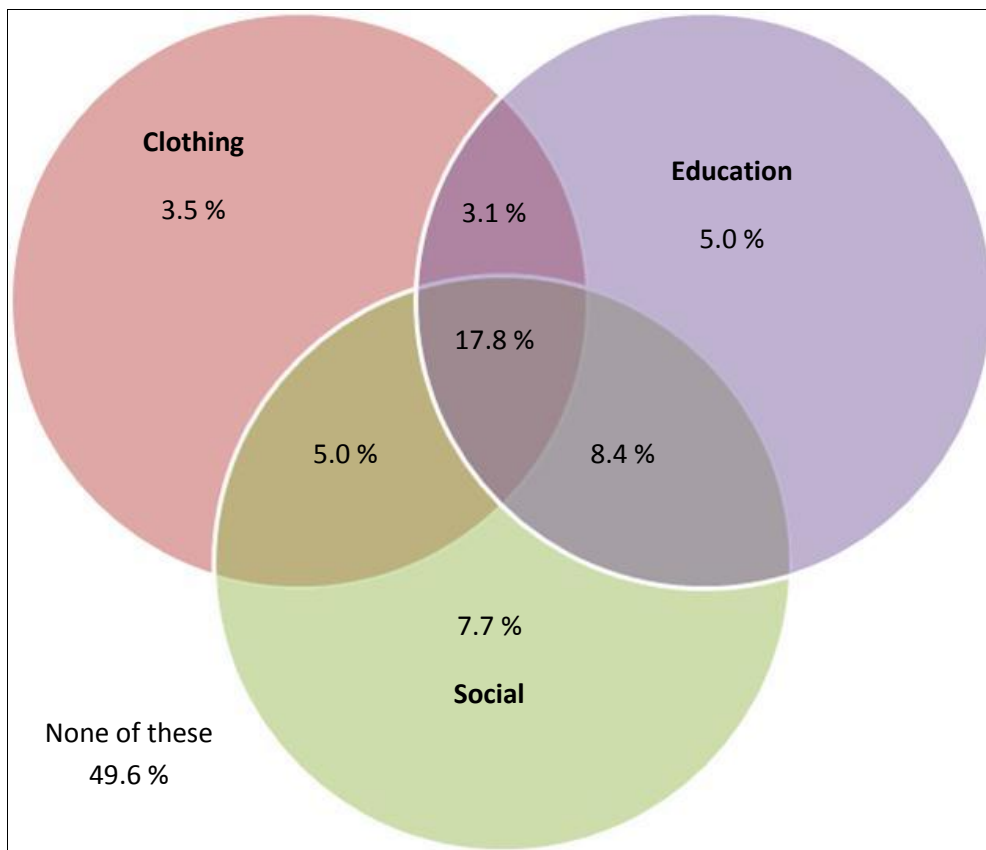
A very different picture is seen in figure 2b, providing information about the overlap between the clothing, education and social domains in Hungary. 17.8 per cent of Hungarian children are simultaneously deprived in the three domains and only roughly half of the children are not deprived in any of the domains. Among the single deprivations the social domain shows the highest score (7.7) compared with 5.0 and 3.5 per cent for the education and clothing domains respectively. The dual overlap is the highest for the education and social domains (8.4 per cent) with more modest figures for the combinations between clothing and the remaining two domains. In Hungary multiple and overlapping deprivations are much higher than in Belgium, indicating that policy initiatives to reduce deprivation for Hungarian children need more attention to simultaneous actions in the three domains; in Belgium an important part of the deprivations would disappear if issues regarding the community domain could be tackled.

It is possible to use the multiple overlapping deprivation analysis (MODA) further for policy guidance. Each of the groups of children with no, single and multiple deprivations can be profiled using the same variables as in the previous section hence contributing to our understanding of which groups the deprivations are concentrated in (urban-rural, single parents, multi-children families, families with lower labour market attachment or migrant families). Obviously, such a detailed analysis reaches beyond the scope of this paper and should be undertaken within the context of country specific analyses either based on the ECDI scale used in this paper or on a country specific child deprivation scale.

**Figure 2a. Belgium: overlapping deprivations in education, leisure, community dimensions**



**Figure 2b. Hungary: overlapping deprivations in clothing, education and social dimensions**



Source: authors' calculation based on EU-SILC 2009

**Table 13: Proportion of children deprived in each of the domains by country**

	Financial	Housing	Community	Food	Clothing	Education	Social	Leisure
Overall	30.0	12.4	17.7	6.5	7.5	13.6	11.2	13.2
AT	17.9	10.7	12.1	2.8	3.4	7.6	8.9	11.8
BE	25.3	7.4	15.3	4.2	7.3	11.1	6.2	9.8
BG	74.3	49.5	28.6	42.3	47.1	42.6	54.7	62.0
CY	38.9	2.3	30.5	0.8	0.9	10.0	5.6	9.1
CZ	35.4	13.2	20.5	4.5	6.0	12.2	5.9	8.1
DE	24.4	8.0	20.9	6.3	5.7	8.3	5.3	8.0
DK	13.5	3.8	9.7	0.9	2.3	4.1	2.7	3.1
EE	32.7	23.4	12.8	11.0	7.3	9.3	7.9	10.1
ES	31.0	5.3	18.3	0.8	3.3	14.1	9.0	5.9
FI	18.3	2.4	10.1	0.5	3.6	2.7	1.1	2.0
FR	31.9	8.4	13.8	5.7	8.9	8.7	7.4	7.9
GR	35.8	13.0	28.7	5.3	1.2	23.3	14.6	12.5
HU	66.8	20.6	12.2	20.2	23.0	34.1	43.0	28.9
IE	34.1	4.5	7.3	2.5	5.2	19.3	5.3	6.0
IS	18.2	4.5	4.1	1.1	1.7	0.8	0.6	1.1
IT	19.4	14.8	22.2	5.4	7.1	15.0	11.7	13.8
LT	43.0	28.7	15.4	13.2	14.1	18.8	14.9	18.0
LU	15.5	8.4	16.0	0.8	2.6	7.9	5.5	3.5
LV	61.9	37.5	26.9	18.7	26.4	23.1	30.3	30.2
MT	31.1	4.3	35.8	6.3	6.8	6.9	7.1	8.0
NL	13.2	2.1	16.8	1.1	3.4	3.1	1.1	3.5
NO	14.6	3.0	5.2	1.8	0.9	2.9	1.0	2.1
PL	40.4	21.1	13.1	9.7	5.2	21.3	18.1	22.6
PT	43.3	12.2	20.8	6.4	15.0	25.8	26.4	29.4
RO	70.6	55.0	27.4	33.9	28.8	54.6	60.6	73.8
SE	8.8	3.2	7.0	0.2	1.1	2.2	1.9	1.8
SI	31.8	28.3	13.1	2.7	10.7	7.1	4.4	8.3
SK	37.7	9.0	19.4	16.9	15.0	23.3	20.9	14.9
UK	23.4	9.9	16.8	1.5	3.6	7.0	3.8	7.4

Source: authors' calculation based on EU-SILC 2009

### ***Decomposition of the adjusted European Child Deprivation Index***

The Adjusted European Child Deprivation Index (A-ECDI) adjusts the child deprivation headcount as given in the previous sections for the depth (breadth) of the deprivation in each country (Alkire and Foster, 2008; 2011). This is done by calculating A (the average deprivation share among the deprived or the proportion of items lacked) defined as

$$A_x = [(\text{mean \# of items lacked for all those lacking } x \text{ items}) / \# \text{ of items}] * 100 \text{ (for } x > 0\text{);}$$

If then H = the proportion of the population lacking x items ( $x > 0$ )

$$A_x\text{-ECHI} = (A_x * H/100)$$



Since for the European Child Deprivation Index (ECDI) we choose 2+ items lacking as the cut-off point, it is logical to define the adjusted ECDI (A-ECDI) for  $A_2$ . We also calculated the adjusted headcount for  $A_1$ .<sup>8</sup> The A-ECDI (and the corresponding  $A_1$ -ECDI) can now be decomposed for the contribution of each of the deprivation items in the index for each country (an attribute demonstrated by Alkire and Foster, 2008; 2011).

Table 14 ranks the countries according to the Adjusted European Child Deprivation Index (A-ECDI). The A-ECDI adjusts the index for the depth of deprivation in each of the countries. Comparing the results for the A-ECDI with the results for the index in table 5 or figure 1 does not reveal major differences because the vast majority of the countries have the same ranking.

**Table 14: Adjusted European Child Deprivation Index ( $A_2 = 2+$  items lacking)**

Country	Index
IS	0.15
SE	0.27
NO	0.36
FI	0.42
NL	0.57
DK	0.68
IE	1.11
LU	1.20
UK	1.27
CY	1.85
SI	1.99
ES	2.21
AT	2.30
MT	2.46
DE	2.49
FR	2.67
CZ	2.79
BE	2.80
EE	3.71
IT	4.65
GR	4.83
PL	6.92
LT	7.23
SK	7.86
PT	10.01
LV	12.03
HU	12.16
BG	26.72
RO	33.74

Source: Authors' calculation based on EU-SILC 2009

<sup>8</sup> As explained in de Neubourg and Plavgo (2012), this is necessary to check for potential biases in decomposing the index; depending on the empirical distribution of single deprivations, censoring for  $x > 1$ , can lead to underestimating the contribution of items that are relatively frequently experienced in isolation (not combined with deprivation in other variables).

Table 15 decomposes the A-ECDI for each country into the effects of the contributing elements of the index. The table should be interpreted with care and the numerical values of the percentages are NOT internationally comparable; they indicate how much each of the indicators contributes to the level of deprivation in that particular country. The figures allow national policy makers to make decisions on where to concentrate their policy efforts when the objective is to lower the overall level of child deprivation. Given the results in table 15, policy makers in France for example should concentrate on combating deprivations in fruit intake, clothes, shoes and leisure, if they want to reduce the overall child deprivation level. In Bulgaria, on the other hand, it is clear that all deprivation variables contribute more or less equally to the high level of child deprivation (as indicated in table 5). In contrast, the data for Iceland (with an extremely low level of child deprivation – see table 5) show that six dimensions do not contribute at all to the overall deprivation level: the resulting deprivation score is entirely due the remaining eight variables.

The limitations of this kind of analysis are evident here. Firstly, the scale is built on “indicators” each trying to capture a kind of deprivation that children might experience. However, “indicators” are by definition “indicative” and may reflect larger issues than that specifically measured. The intake of fruit and vegetables may point to dietary shortcomings while the lack of a place for doing school homework may point to problems in the housing situation. Therefore, analysts should be careful in translating indicators directly into policy advice (see also de Neubourg and Plavgo, 2012).

Secondly, the country analyses are based on a child deprivation index constructed on a uniform scale fitting data for a large number of countries. While yielding results that are relatively well suited for international comparisons of the level of deprivation, internationally constructed scales are less informative when considering single countries. Underlying features of the analysis are responsible for this. The scale used is constructed to perform (statistically) well for the pooled data for all countries in the sample and may perform less well for single countries (see section 2). Consequently, the variables used in the scale are the same for all countries, while their discriminatory power may be much weaker for the outlying countries in the distribution. In the case of the EU-SILC data and variables, it may be that the items used are relatively weak indicators for high-income-low-deprivation countries. This leads to the conclusion that further country specific analyses could perform better using country specific variables and scales.

**Table 15: The decomposition of the Adjusted European Child Deprivation Index**

	fruit	three meals	meat	clothes	shoes	internet	books	Home-work	festivity	friends	school trips	Equip-ment	leisure	games
AT	2.7	0.2	6.2	7.4	2.4	8.5	4.2	5.7	9.4	14.6	8.3	7.1	19.3	4.2
BE	3.4	5.3	6.3	11.4	7.4	7.8	7.5	9.0	6.8	6.5	4.8	7.2	12.4	4.2
BG	8.2	1.8	7.3	8.1	10.0	5.5	6.4	3.7	5.4	9.7	7.7	9.5	9.8	7.1
CY	2.3	0.0	2.4	2.0	1.8	12.3	10.4	7.4	13.5	9.0	2.4	10.0	18.0	8.5
CZ	5.2	0.2	8.7	9.5	4.5	10.6	4.6	7.8	5.1	6.2	7.5	13.1	10.8	6.3
DE	6.4	3.0	11.7	6.7	9.1	5.6	6.3	7.4	7.0	7.2	5.5	6.5	15.0	2.7
DK	4.4	0.7	3.2	11.2	7.3	3.7	7.2	6.9	3.3	10.1	6.6	12.5	18.4	4.5
EE	14.4	1.0	10.0	8.0	6.2	6.5	6.4	2.8	7.3	7.7	6.7	10.4	8.7	4.0
ES	1.9	0.8	1.7	8.5	4.0	15.9	2.3	5.7	13.4	11.6	11.2	6.9	11.9	4.2
FI	5.6	0.7	0.0	26.9	9.8	4.3	3.3	9.0	0.5	0.5	12.1	10.1	14.1	3.0
FR	10.5	0.8	4.8	11.1	10.6	8.1	5.2	5.0	6.3	7.7	8.6	5.0	13.7	2.8
GR	2.0	0.4	6.2	0.8	1.3	14.4	8.6	11.5	12.6	6.3	8.5	8.3	13.4	5.6
HU	8.8	0.5	6.6	10.9	2.6	7.6	6.7	3.0	4.6	14.2	6.0	9.5	12.0	7.0
IE	3.3	2.5	8.9	8.8	11.9	11.9	3.4	5.7	3.6	5.1	9.8	5.0	18.4	1.8
IS	8.6	10.4	19.3	15.8	10.6	0.0	0.0	0.0	0.0	0.0	15.5	6.7	13.2	0.0
IT	3.4	1.8	5.9	8.1	3.7	6.2	8.8	8.4	8.3	9.7	8.7	5.7	14.9	6.5
LT	7.9	0.6	8.3	10.4	1.0	7.8	7.3	3.8	9.2	8.7	6.9	9.0	12.4	6.6
LU	1.6	0.6	2.1	9.4	3.0	9.1	3.0	9.6	12.1	14.9	8.7	7.5	13.1	5.4
LV	8.0	2.8	5.9	11.8	5.5	5.3	6.2	2.1	7.3	10.7	6.9	10.0	11.2	6.3
MT	5.8	10.1	11.6	12.5	6.8	4.9	2.7	4.2	8.1	10.2	2.3	9.4	7.5	3.9
NL	6.7	1.1	5.2	11.3	18.7	4.9	2.3	10.0	2.8	5.5	3.1	4.1	21.8	2.3
NO	11.3	0.8	13.3	2.1	4.9	8.2	3.9	12.7	2.1	3.3	6.5	1.1	22.3	7.3
PL	6.5	1.0	5.0	3.6	3.0	9.1	8.3	3.5	10.8	7.4	9.4	9.2	15.7	7.6
PT	3.0	1.5	3.3	8.6	3.1	8.2	8.2	7.6	8.0	13.5	7.5	5.1	15.3	7.2
RO	5.1	0.8	6.1	5.3	4.0	6.6	6.9	4.4	7.2	7.7	9.9	12.0	13.0	10.9
SE	1.2	1.2	2.4	4.9	13.4	3.9	5.4	13.4	7.4	10.4	7.0	8.9	16.3	4.2
SI	5.6	0.9	6.4	21.1	6.5	6.6	3.4	8.3	7.4	5.8	4.7	1.3	19.2	2.8
SK	7.9	2.6	10.1	9.6	5.7	8.0	7.9	4.8	6.1	9.7	7.9	9.0	5.5	5.2
UK	5.3	1.4	2.6	7.3	10.3	11.0	1.9	7.6	4.2	8.1	9.6	6.9	20.6	3.2

Source: authors' calculation based on EU-SILC 2009

## 5. OVERLAP BETWEEN CHILD INCOME POVERTY AND THE EUROPEAN CHILD DEPRIVATION INDEX

Income (or expenditure) based approaches to measuring poverty have been dominant in most countries and internationally, and for practical reasons much of the empirical research on poverty has used one measure at a time. This is partly because early surveys using deprivation indicators tended not to include income questions – this was certainly the case for the first two Breadline Britain surveys that developed deprivation indicator methodology. Similarly, income and expenditure surveys tended not to include questions on deprivation. However the European Community Household Panel (ECHP) survey began to collect data on a selection of deprivation indicators, as well as income. In Ireland this data was used to

explore the overlap between deprivation and income, and the Irish Government adopted an overlaps measure as one of the official poverty measures. It was called “consistent poverty”, though not (in our opinion) very accurately, as it was entirely cross-sectional. The third Poverty and Social Exclusion survey in Britain was used to explore overlaps between income, deprivation, subjective poverty and benefit receipt (Bradshaw and Finch, 2003). Others began to use the ECHP income and deprivation measures together (Heikkila et al, 2006). We have used similar techniques in child poverty assessments in Armenia, Bosnia, Bulgaria, Georgia, Kosovo, Kyrgyzstan, Serbia and South Africa.<sup>9</sup> Curiously, since SILC developed, there have been very few examples of overlaps analysis (but see: Whelan and Maitre (2009; 2010); Fusco et al (2010)). Both the EU projects on child poverty and child well-being based on SILC used income thresholds and deprivation measures separately (for more details see TARKI (2010)). However a number of countries have followed the Irish example and are using an overlaps measure in their official poverty measurement.<sup>10</sup>

- There are a number of reasons for employing income and deprivation measures together.<sup>11</sup> It is possible that data collected on deprivation may be unreliable.
  - Deprivation may not be “enforced” – it may be a life-style choice by someone who is capable of purchasing the indicator. In some surveys (though not SILC) this is dealt with by counting only items which are lacking because they cannot afford them. Some households may say they lack assets because they cannot afford them, but in reality they do not acquire them because they are not a high priority in their budget. This kind of problem is unlikely to occur with a Child Deprivation Index if the deprivation items are properly chosen and reflect, for example, children’s rights as defined in the UN CRC.
  - Deprivation items may be possessed but broken; this evidently only applies to material goods; none of the items in the ECD Index are of this kind.
- It could also be argued that we need income data for policy purposes. Policy can and does intervene by providing income, but income measures may be less relevant for children, as is argued in Section one. Policy can intervene at the deprivation level when it concerns access to (social) services.
- Gordon et al (2000) has argued that it is important to collect data in income and deprivation because they may capture change. They argue that households with high living standards but low income are “vulnerable” and those with low living standards but high incomes may be rising out of poverty.
- De Neubourg et al (2009) and Roelen et al (2011) have argued that income poverty or financial poverty indices reveal different types of policy relevant information which would be lost if only one type of index is used.

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<sup>9</sup> For more information see: <http://www.york.ac.uk/inst/spru/research/summs/extreme.html>

<sup>10</sup> In Ireland the official poverty threshold is still based on a ‘consistent’ poverty threshold which combines low income and enforced lack of deprivation items. Austria, Finland and the UK are now also using an overlaps measure in their portfolio of official poverty thresholds, and Island and Spain have independent research on the topic.

<sup>11</sup> As also supported by moral philosophers (see Wolff and De-Shalit (2007)).

- Bradshaw and Mayhew (2011) have argued that the strict overlap approach (see below) provides a reliable indicator for revealing the core of poverty.

A decision needs to be made about which overlaps threshold to use – which income threshold and which deprivation threshold? Gordon (2006a; 2006b) developed a statistical method for drawing links between deprivation scores and income thresholds but we found that the deprivation threshold this produced was much too low, and the income much too high.<sup>12</sup> In this paper another approach is used combining the European relative poverty count (60 per cent of median thresholds) and the European Child Deprivation Index (based on lacking two or more items from ECDP).

Table 16 explores the overlap and non-overlap between income poverty and deprivation for the 29 European countries. The proportion of children who are simultaneously income poor and deprived varies from 0.1 per cent in Iceland to 29.6 per cent in Romania. Looking at percentages of the children who are neither income poor nor deprived, the countries fall into 4 major categories:

*Countries where more than 87 per cent of children are neither poor nor deprived: this group includes all the Nordic countries;*

*Countries where approximately 80 per cent (between 76.8 and 84.2) of children are neither poor nor deprived: Austria, Belgium, Cyprus, Czech Republic, Germany, France, Luxemburg, the Netherlands, Slovenia and the UK;*

*Countries where approximately 70 per cent of children are neither poor nor deprived: Estonia, Spain, Greece, Italy, Lithuania, Malta, Poland and Slovak Republic;*

*Countries where (considerably) less than 62 per cent of the children are neither poor nor deprived: Bulgaria, Hungary, Latvia, Portugal and Romania.*

In nearly all countries there are more children only poor than children only deprived (except in Bulgaria, Hungary, Romania and Slovakia).

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<sup>12</sup> The method starts by excluding outliers (the top 5% of the income distribution). Then the relationship between deprivation and income level is explored by looking at those missing 0 as opposed to those missing 1+ items and test if their incomes come from different distributions, then go on to comparing those missing 0-1 items with those missing 2+ items, etc. The aim is to cut the population into half so that the variability of income is smallest within groups and largest between groups (i.e.: variance from the within group mean income is smallest and variance from the between groups mean income is largest). The larger the F value the more likely it is that the two deprivation groups come from different income distributions. The two deprivation groups with the largest resulting F represent the cut-off point.

The problem in our case is that the 28 countries are rather heterogeneous and income poverty does not always predict deprivation, especially in rich countries, even when we use Euro PPPs to boost the income levels of the poorer countries. When we then did the ANOVA for each country, the F values were a lot higher in the former Eastern Bloc. Nevertheless across all countries (except for Bulgaria) we found that the largest difference in income distribution by deprivation was between those who missed 0 or 1 items and those who missed 2+ items (in Bulgaria the cut-off point is 3+ items). The mean income of those missing 2+ items in Euro PPPs is 9974.27, and the confidence intervals at 95% are €9933 and €10016. This excludes the top 5% of the income distribution. In Euros, the mean is €9507, and the confidence intervals are €9459 and €9555. This was based on our composite index which gave higher F values than using the Guio index.

The fact that some countries succeed in providing some form of protection for children in poor families and thus that the overlap between children being relatively poor and children being deprived is limited, can be interpreted as an indication of successful policies. It can also be an indication that financial poverty is transient or that the household poverty is recent and has not yet been transformed into deprivations (Gordon, 2006a; 2006b).

Some countries in particular stand out in this respect (combining low deprivation only with low rates of simultaneously deprived and poor): Denmark, Finland, Iceland, Luxemburg, the Netherlands, Norway, Sweden and the UK. It is remarkable that in all these countries the percentage of children living in income poor families without being deprived (poor only column in table 16) is around 10 per cent with a much higher number in the UK<sup>13</sup> (17.7 per cent).

**Table 16: Overlap European Child Deprivation Index and Child Income Poverty**

	Neither	Deprived not poor	Poor not deprived	Poor and deprived
Overall	73.8	6.9	12.9	6.4
AT	82.3	4.2	8.9	4.6
BE	81.2	3.8	9.7	5.3
BG	41.1	35.0	2.3	21.5
CY	84.2	3.7	8.9	3.3
CZ	82.8	4.5	8.4	4.3
DE	80.7	5.1	10.4	3.8
DK	88.3	1.2	9.1	1.5
EE	74.3	5.6	13.4	6.8
ES	73.5	2.9	18.4	5.2
FI	87.0	1.1	10.5	1.4
FR	78.6	4.8	11.3	5.3
GR	69.2	6.6	13.6	10.6
HU	59.3	19.9	8.8	12.0
IE	79.2	1.7	15.9	3.2
IS	89.4	0.8	9.7	0.1
IT	70.2	6.0	16.5	7.3
LT	63.8	10.5	16.4	9.3
LU	77.5	1.4	18.1	3.0
LV	58.5	16.6	9.7	15.2
MT	75.6	4.8	15.5	4.1
NL	83.5	0.9	13.8	1.8
NO	88.0	0.4	10.0	1.5
PL	67.1	10.2	12.1	10.6
PT	62.7	15.4	9.9	12.1
RO	24.5	43.1	2.9	29.6
SE	87.1	0.7	11.4	0.8
SI	83.5	5.3	8.2	3.0
SK	72.1	11.0	8.7	8.2
UK	76.8	2.5	17.7	3.0

Source: authors' calculation based on EU-SILC 2009

<sup>13</sup>The difference between the UK and other countries is to be attributed to differences in the degree of inequality, which is much higher in the UK than the other countries in the list.

## 6. CONCLUDING REMARKS

Together with the Innocenti Working paper on relative income poverty of children in rich countries (Bradshaw et al, 2012), this paper on multidimensional child poverty and child deprivation form the background studies on which the Innocenti Report Card 10 is based (Report Card 10, Measuring Child Poverty: New league tables of child poverty in the world's rich countries). This analysis has focused on child deprivation in Europe and studied the degree of deprivation experienced by children in 29 countries using a child specific deprivation scale. It is argued that studying deprivation alongside children living in monetary poor families is imperative for understanding the scope and nature of poverty among children. It follows a number of academic studies on the multidimensionality of poverty and supports the conclusion that an analysis of child deprivation is necessary and complementary to the more traditional studies of monetary poverty. While deprivation analyses in general are useful and meaningful, this is especially true when studying the situation of children, as their specific situation in the household does not guarantee them equal access to the household income and in addition they are more dependent on the provision of goods and services provided by the society.

The paper discusses the construction of a child deprivation scale and estimates a European Child Deprivation Index for the 29 countries. It argues that a child deprivation scale can and should be based on child specific indicators and applies the methodologies using 14 specific child-related variables made available by the child module of the EU-SILC 2009 survey. The scale performance is very good for the pooled data (all the countries) and also works well for most of the countries separately.

The 29 European countries are ranked according the degree of child deprivation and can be divided into four major groups with the Nordic countries and the Netherlands showing a child deprivation rate of 10 per cent or less; four large economies in “old” Europe (Germany, France, Spain, UK) and a group of eight smaller countries having a deprivation rate between 11 and 20 per cent; a group of new members states (Estonia, Lithuania, Poland, Slovakia) plus Italy and Greece with around 25 per cent of the children deprived; and finally a group of three countries (Portugal, Bulgaria, Romania) showing a very high rate of child deprivation. These results are broken down for various subgroups in the population demonstrating that in all countries, children with lone parents, children living in large families, children in families wherein the adults are not employed and/or having lower levels of education are more likely to experience deprivation. In countries with a high number of children living in households where at least one of the parents is a migrant, deprivation rates are found to be very high for this specific group of children.

When analysing the (non-) overlap between child deprivation and child monetary poverty the actual overlap is considerable but limited, as is found in studies for other countries: overall (for all countries) 6.5 per cent of the children are both deprived and poor, but approximately 7

per cent are only deprived but not poor, while approximately 13 per cent are living in poor families but are not deprived.

In general the results indicate where effective policy interventions can be made. Many of the countries in the sample have comparable levels of living standards but show significant differences in the levels of child deprivation. Two findings illustrate the areas for possible policy intervention. Children living with lone parents are worse off in all countries but the differences between countries are remarkable: in some countries the difference between children living with lone parents and those living with both their parents is considerably smaller than in other countries indicating that the former group of countries is a much more successful in combating the disadvantages of one-parent families. The position of “migrant children” is also serious in all countries, but is particularly bad where their numbers are very high. For this group of countries a successful strategy to reduce deprivation among children living in migrant families would reduce their total deprivation score considerably.

The analysis in this paper is focused on comparing levels of child deprivation internationally. This implies that the methodology used is based on an internationally comparable deprivation scale. While effective in the context of this paper, it also comes with some limitations. The scale performs less well for high-income-low-deprivation countries. This means that the results are less robust for this group of countries. Moreover, it can be argued that a national analysis would be more useful for designing national policies to combat child deprivation. A first overlap analysis examining the details of the combinations of deprivations that children are confronted with indicates that more analyses at this level have to be undertaken. This can be done either by using the international scale or constructing a new country specific one. For low- and middle-income countries, the UNICEF Office of Research, Innocenti is currently undertaking both an international comparative and a set of country specific Multiple Overlapping Deprivation Analyses (MODA).

Finally, the necessity of continuing efforts for monitoring child deprivation should be emphasized. Even in most rich countries levels of child deprivation are still considerable and in addition the current financial and fiscal crises affecting these countries risk aggravating the situation for children. The work in this and similar papers has only been possible following conclusion of a specific child module in one of the EU’s major surveys (EU-SILC). It is important to continue this work, collecting a relatively small amount of critical data on a regular (yearly or biannual) basis in Europe. But it is also vital that non-EU countries should start collecting similar data in order to keep track of what happens to children, even in countries that are rich and developed.



## APPENDIX 1

The Indicators Sub Group of the EU Social protection committee began to explore the possibility of adding a deprivation based measure to the Laeken Indicators of social inclusion in 2008. They commissioned Guio who explored the deprivation indicators in EU SILC 2005. Guio distinguished between a set of five indicators of economic strain.

The household could not afford:

- To face unexpected expenses
- One week annual holiday away from home
- To pay for arrears (mortgage or rent, utility bills or hire purchase instalments)
- A meal with meat, chicken or fish every second day
- To keep the home adequately warm.

A set of four indicators of durables

The household could not afford (if wanted):

- To have a washing machine
- To have a colour TV
- To have a telephone
- To have a car.

A set of five housing indicators (the sixth housing indicator was not adopted until 2008).

The dwelling suffers from:

- Leaking roof/damp walls/floors/foundations or rot in the window frames
- Accommodation too dark
- No bath or shower
- No indoor flushing toilet for sole use of the household
- Lack of space (defined as an insufficient number of rooms compared to the number of persons)
- Spending more than 40 per cent of income net of housing costs on housing.

Having undertaken an exploratory analysis, Guio concluded that the economic strain and durable indicators could be treated as a single deprivation index, but the housing indicators should be excluded because they co-varied less with the other domain variables. Her index has since become the standard used in comparative analysis of SILC and the Social Inclusion indicators include the proportion lacking three or more items while the new EU 2020 social exclusion target includes those lacking four or more items. Her analysis was carried out using population weights, not child weights.

Table A1.1 gives the proportion of children in households lacking each of these items in 2009. It is apparent that there are very small proportions of households in any country lacking washing machines (except Bulgaria and Romania), phones and colour TV, but higher proportions facing unexpected expenses, lacking a holiday away from home, with insufficient space and burdensome housing costs.

**Table A1.1: The percentage of children in households with deprivation items lacking in each country**

	Expenses	Holiday	Meat	Heating	Arrears*	TV	Washing machine	Car	Phone
<b>AT</b>	30.4	30.7	2.2	2.4	11.8	0.1	0.0	5.8	0.0
<b>BE</b>	31.0	29.1	2.7	5.8	12.1	0.5	1.5	6.6	0.2
<b>BG</b>	59.3	60.4	31.0	63.3	39.3	3.0	11.6	25.8	5.5
<b>CY</b>	36.8	35.5	0.6	16.2	23.8	0.0	0.3	1.0	0.0
<b>CZ</b>	43.7	41.3	3.9	4.2	9.4	0.0	0.1	11.2	0.2
<b>DE</b>	40.6	29.8	4.9	7.8	9.1	0.5	0.2	4.8	0.3
<b>DK</b>	26.9	11.8	0.5	1.1	6.4	0.2	0.5	5.8	0.0
<b>EE</b>	32.9	48.0	5.8	1.2	19.0	0.1	1.1	14.7	0.1
<b>ES</b>	35.0	39.3	0.5	6.3	13.3	0.0	0.4	4.7	0.3
<b>FI</b>	33.1	16.5	0	0.8	15.4	0.3	0.2	4.1	0.0
<b>FR</b>	39.3	34.2	2.1	5.3	17.2	0.2	0.2	3.8	1.1
<b>GR</b>	24.2	42.4	4.4	17.3	33.4	0.1	0.2	5.5	0.4
<b>HU</b>	81.4	66.3	12.4	7.9	33.7	0.7	0.5	23.1	6.8
<b>IE</b>	55.7	45.6	1.9	5.0	23.7	0.1	0.7	10.1	0.1
<b>IS</b>	29.9	4.0	0.6	0.7	20.2	0.3	0.2	0.7	0.1
<b>IT</b>	37.1	42.1	4.4	10.5	18.6	0.2	0.3	2.6	0.8
<b>LT</b>	52.6	37.1	8.5	21.4	14.2	0.0	2.3	13.9	0.8
<b>LU</b>	32.5	16.7	0.6	0.1	6.3	0.0	0.0	3.1	0.0
<b>LV</b>	70.3	57.2	10.6	18.8	31.3	0.3	2.9	27.0	1.3
<b>MT</b>	32.7	70.9	4.3	9.7	11.9	0.6	0.1	1.7	0.4
<b>NL</b>	20.3	12.4	0.7	0.9	5.3	0.0	0.0	2.6	0.0
<b>NO</b>	18.0	10.0	1.1	0.9	13.9	0.2	0.1	3.6	0.2
<b>PL</b>	51.1	58.9	5.2	15.6	18.1	0.2	0.5	14.0	0.2
<b>PT</b>	33.5	63.6	4.7	25.4	14.5	0.2	1.3	10.7	0.7
<b>RO</b>	49.0	78.7	29.2	22.9	31.7	3.0	22.4	56.0	12.0
<b>SE</b>	21.1	11.8	0.1	1.4	8.6	0.7	0.2	2.2	0.0
<b>SI</b>	39.8	21.8	2.1	3.6	23.3	0.4	0.1	2.5	0.0
<b>SK</b>	43.1	54.6	13.5	3.5	17.0	0.3	0.9	17.9	1.0
<b>UK</b>	41.0	32.2	0.5	6.1	7.0	0.0	0.5	6.6	0.2
<b>All</b>	39.6	37.7	4.5	8.9	14.6	0.4	1.4	8.5	1.1

Source: EU SILC 2009

\*Arrears: made up of three elements: arrears on mortgage, on utility bills and on hire purchase. 'Yes, once' and 'Yes, twice or more' coded as 1, 'no' coded as 0.

Table A1.2 gives the proportion of children 0-16 living in households by the number of items lacking and Figure 2.1 gives the percentage of children in households lacking 3 or more and 4 or more items.

**Table A1.2: Proportion of children 0-16 living in households by the number of items lacking**

	0	1	2	3	4	5	6	7	8	9
AT	56.9	18.3	13.4	8.0	2.9	0.4	0.1	0.0	0.0	0.0
BE	59.3	13.7	12.8	9.0	3.7	1.0	0.6	0.0	0.0	0.0
BG	18.2	13.2	12.7	16.5	14.4	10.6	6.2	4.7	1.5	2.1
CY	47.2	16.8	17.9	11.7	5.7	0.8	0.0	0.0	0.0	0.0
CZ	44.9	20.5	19.0	9.1	4.6	1.4	0.4	0.0	0.0	0.0
DE	52.6	18.2	16.0	7.7	3.5	1.7	0.2	0.1	0.0	0.0
DK	67.7	18.5	8.3	4.1	1.2	0.1	0.1	0.0	0.0	0.0
EE	41.3	24.0	16.1	11.7	4.3	1.8	0.4	0.3	0.1	0.0
ES	51.0	17.3	18.1	9.3	3.1	1.1	0.1	0.0	0.0	0.0
FI	59.5	20.3	12.8	5.6	1.7	0.1	0.0	0.0	0.0	0.0
FR	50.7	17.4	16.2	11.0	3.5	0.8	0.4	0.0	0.0	0.0
GR	46.2	16.7	14.4	11.7	8.3	2.6	0.2	0.0	0.0	0.0
HU	13.3	17.3	27.1	21.3	12.0	5.8	2.5	0.6	0.0	0.0
IE	38.6	16.8	20.3	15.2	6.8	2.0	0.3	0.0	0.0	0.0
IS	60.5	25.1	12.1	2.1	0.1	0.0	0.0	0.0	0.0	0.0
IT	47.8	18.0	16.1	10.2	5.0	2.1	0.1	0.1	0.0	0.0
LT	36.3	19.8	21.8	10.2	5.4	4.7	0.9	0.9	0.0	0.0
LU	62.7	20.9	11.3	4.7	0.3	0.0	0.0	0.0	0.0	0.0
LV	19.3	19.4	22.6	16.8	10.4	7.2	3.3	0.8	0.0	0.0
MT	26.1	35.2	24.6	10.1	3.2	0.8	0.1	0.0	0.0	0.0
NL	75.2	14.1	5.4	4.0	1.2	0.1	0.0	0.0	0.0	0.0
NO	74.8	11.4	7.4	4.3	1.8	0.2	0.0	0.0	0.0	0.0
PL	30.3	19.6	22.9	15.6	7.5	3.0	1.1	0.0	0.0	0.0
PT	31.8	22.8	21.1	14.0	5.5	3.5	0.8	0.5	0.0	0.0
RO	13.8	11.9	16.5	16.7	16.8	12.3	5.3	4.8	1.6	0.4
SE	73.8	13.9	7.0	3.9	1.4	0.1	0.0	0.0	0.0	0.0
SI	50.7	21.6	15.7	8.3	2.6	0.9	0.1	0.0	0.0	0.0
SK	32.2	23.1	22.3	12.3	6.2	2.3	0.7	0.7	0.1	0.0
UK	52.0	16.7	19.9	8.6	2.5	0.2	0.0	0.0	0.0	0.0
All	48.3	17.3	16.8	10.0	4.6	1.9	0.7	0.3	0.1	0.0

Source: authors' calculation based on EU-SILC 2009

## APPENDIX 2

**Table A2.1: Characteristics of households by the number of items lacking: all countries**

<b>HH education level - percentages</b>			
	None, primary/lower sec.	Upper sec, post sec non-tertiary.	Tertiary and above
Lacking 0	8.7	46.1	45.2
Lacking 1+	29.5	56.6	13.9
Lacking 2+	33.9	56.9	9.2
Lacking 3+	37.8	55.3	6.8
Lacking 4+	40.1	54.1	5.8
Lacking 5+	42.6	51.6	5.80
<b>Migrant status - percentages</b>			
	Non-migrant.	Migrant.	
Lacking 0	85.9	14.10	
Lacking 1+	81.9	18.1	
Lacking 2+	81.6	18.4	
Lacking 3+	81.9	18.1	
Lacking 4+	82.3	17.7	
Lacking 5+	82.7	17.3	
<b>Work intensity - percentages</b>			
	WI=0<0.2.	0.2<WI<0.79	0.8<=WI<=1
Lacking 0	6.5	37.1	56.2
Lacking 1+	19.0	48.4	32.5
Lacking 2+	21.3	50.5	28.2
Lacking 3+	22.8	50.9	26.2
Lacking 4+	22.9	51.2	25.9
Lacking 5+	23.3	50.5	26.2
<b>Number of children - percentages</b>			
	1	2	3+
Lacking 0	30.4	49.1	20.5
Lacking 1+	25.8	42.3	31.8
Lacking 2+	24.2	41.1	34.7
Lacking 3+	22.9	41.2	35.8
Lacking 4+	22.1	39.3	38.8
Lacking 5+	21.2	37.8	41.0
<b>Family type - percentages</b>			
	LP	Couple	Other
Lacking 0	9.2	81.3	9.4
Lacking 1+	17.6	63.5	19.0
Lacking 2+	16.6	61.8	21.6
Lacking 3+	15.7	60.8	23.5
Lacking 4+	14.6	59.5	26.0
Lacking 5+	14.2	58.3	27.4

<b>Urbanisation - percentages</b>			
	Densely	Intermediate	Thinly
Lacking 0	49.1	28.3	22.6
Lacking 1+	45.1	20.2	34.7
Lacking 2+	42.5	17.5	39.9
Lacking 3+	39.5	16.7	43.8
Lacking 4+	37.3	15.4	47.2
Lacking 5+	36.9	14.1	49.0
<b>Below 60% national median income</b>			
	Not poor (60%)	Poor (60%)	
Lacking 0	87.1	12.9	
Lacking 1+	58.0	42.0	
Lacking 2+	51.7	48.3	
Lacking 3+	47.9	52.1	
Lacking 4+	44.7	55.3	
Lacking 5+	43.4	56.6	
<b>Below 50% national median income</b>			
	Not poor (50%)	Poor (50%)	
Lacking 0	92.5	7.5	
Lacking 1+	72.1	27.9	
Lacking 2+	66.6	33.4	
Lacking 3+	63.4	36.6	
Lacking 4+	60.0	40.0	
Lacking 5+	57.8	42.2	

Source: authors' calculation based on EU-SILC 2009

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