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# *WHAT CAN BE LEARNED FROM MATERIAL DEPRIVATION INDICATORS IN BELGIUM AND IN ITS REGIONS?*

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# 1. Introduction

This paper aims to compare the poverty picture that can be drawn on the basis on the relative monetary approach, usually used in Europe, in Belgium and also in its Regions, with the alternative view based on the new material deprivation indicator, recently agreed at the EU level.

Material deprivation is defined as the *enforced lack* of a combination of items depicting material living conditions, such as housing conditions, possession of durables and capacity to afford basic requirements.

The need to extend the portfolio of commonly agreed social indicators to material deprivation measures was widely recognised at the national and EU levels, especially since the recent enlargements of the Union. If purely income-based indicators of poverty and inequality are essential, they are nevertheless not sufficient to satisfactorily reflect the level of living conditions in the 27 EU countries[1].

Indeed, it is recognized that monetary poverty focuses on the current level of income available for the household and that it is not easy to measure income accurately, especially for some groups of the population for example, the self-employed or for people working in the grey economy. Income and resources, whilst clearly linked, are not the same thing: other individual resources matter in addition to income (e.g. assets/debts,

1 The development and use of material deprivation indicators was discussed by the Indicators Sub-Group of the Social Protection Committee (ISG), during the last years, with a view to further refining and consolidating the original list of common indicators. Guio (2009) was presented at the January 2009 meeting of the Task Force on material deprivation and at the February 2009 meeting of the ISG, where the indicators proposed in this document were adopted.

previous labour positions, non-cash transfers…)[2]. Material deprivation measures, rather than a snapshot measure of income, can therefore be used as a proxy for permanent income and offer additional information on the long term financial situation (Willits, 2006).

Furthermore, measures based on income are "input" based methods (also called 'indirect approach')[3], these inputs being used to achieve a certain level of well-being. Measures focusing on "outcomes" (also called 'direct approach') concentrate on the actual standard of living of people and not on the means available to achieve a certain level of well being[4] (Halleröd (1995); Sen (2000)). The final conditions of individuals can indeed differ between people with identical resources, depending on needs, health conditions, social networks or other personal constraints and abilities[5].

While recognising the limits of the monetary approach, we do not argue that deprivation measures provide a better approach but we emphasise the interest in comparing different complementary measures to deepen our understanding of poverty.

It is worth highlighting that the proposed indicators are not indices of social exclusion that take account of all the dimensions of the phenomenon (i.e., access to the labour market, health, education, social participation, etc). They are more intended to offer multidimensional information on *material* living conditions that make it more comparable with other poverty measures. By doing so, we use deprivation measures to apprehend two core elements of the poverty definition in western

2 See for example Nolan B, Whelan C.T. (1996), Whelan et al. (2001), Nolan and Whelan (2007).

3 Ringen (1988).

4 Boarini, R. and M. Mira d'Ercole (2006).

5 See for example Halleröd et al. (2006), Nolan and Whelan (2007).

countries: (a) the inability to participate in the reference society, (b) due to a lack of resources (Nolan and Whelan, 2007).

## 2. The selection of items

Much of the literature on deprivation stems from the early work of Townsend (1979), who focused on people who were incapable of "living a decent life", because they lacked necessities and activities at least widely encouraged or approved in the society to which they belong. These are therefore excluded from ordinary living patterns. Townsend identified a list of items (covering diet, clothing, shelter, environment, family activities…) and built a scale of deprivation. The deprivation scale was used to derive an income poverty threshold. Subsequent contributions preferred to directly use deprivation measures to identify the "poor", eventually in complement to monetary measures, but not to identify a threshold in the monetary space.

Mack and Lansley (1985) also proposed an alternative methodology for the selection of items, by collecting views of people about which items are considered as "socially perceived necessities", i.e. a consensual definition of deprivation. Furthermore, contrarily to Townsend who simply regarded the lack of a necessity as implying deprivation, they also developed the concept of "enforced lack" and proposed a more adequate format of survey questions to discriminate between preferences and constraints of people.

In EU-SILC, questions on durable goods rely on this Mack and Lansley's format and enable distinguishing between lack of items (due to choice) and enforced lack of items (people would like to possess the items but cannot afford them). Only this latter group was considered as reflecting "deprivation", in order to exclude lifestyle preferences from the concept of deprivation. In doing so, we focus on items whose absence is attributed to limited resources rather than differences in taste and constraints such as ill health, location etc (see among others Nolan and

Whelan (2007)). It must however be kept in mind that individuals' expectations as to their material well-being tend to increase with income and to decrease with long term poverty (the so-called "adaptive preferences") and as a consequence poor people may report that they do not want things which are impossible for them to obtain. Furthermore, some people may feel ashamed to admit not being able to afford buying certain items. Therefore, it cannot be excluded that psychological phenomena or measurement issues introduce 'noise' in the measure of enforced lack of items. However, when possible, the analysis is restricted to the enforced lack of items, as it appeared crucial in focusing on material deprivation. These questions are also related to the more general question of choices and preferences. How can we assert that we measure differences in deprivation rather than differences in tastes and preferences?[6] It cannot be excluded that people might choose as priority a pattern of consumption not considered essential by the analysis and can not afford the list of items retained. An unavoidable limitation of deprivation score is that the closer an individual's preferences correspond to the list of items collected and chosen in the index, the less likely that person will appear to be deprived (Halleröd, 1995).

The list of proposed items included in the deprivation indicator is the following:

- 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 home adequately warm

6 See also the fundamental critic of Townsend approach by Piachaud (Fusco (2007)).

- The household could not afford (if wanted to):
  - to have a washing machine
  - to have a colour TV
  - to have a telephone
  - to have a personal car

- The dwelling suffers from:
  - leaking roof / damp walls/floors/foundations or rot in 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)

At the EU level, the following requirements[7] were applied in the choice of items. The item should:

(1) reflect the lack of an ordinary living pattern common to a majority or large part of the population in the European Union and most of its Member States;

(2) have the same information value in the various countries, and not relate specifically to a 'national' context (to allow international comparisons);

(3) allow comparisons over time ;

(4) be responsive to changes in the standard of living of people.

Obviously, the availability of the data was another important constraint that needed to be taken into account.

Some additional items available in EU-SILC are based on subjective information of the respondent. At the EU level, a lot of discussions arose on the use (or not) of such information in

7 These criteria are a revised version of those proposed in Eurostat (2002).

a deprivation indicator. On one hand, subjective questions can be culturally influenced and require caution in international comparison; and the aforementioned “adaptive preferences” also need to be kept in mind. On the other hand, social exclusion influences and is influenced by the perceptions of people, not only by external judgement on a person’s situation. The potential criticisms of including subjective items holds true, to a certain extent, for the majority of deprivation items presented in this paper, but the subjective element is probably predominant in some variable like the subjective assessment of the people's own economic situation (as the item related to the ability “to make ends meet”). It was therefore decided not to include this item, but to use it in a subjective poverty measure that can be compared with the deprivation figures.

The first criterion above relates to the importance of selecting items socially recognised as necessities.

Mack and Lansley (1985) proposed a methodology for the selection of items, by collecting views of people about which items are considered necessary to have a decent standard of living. Their approach, by taking into account the consensual judgement of individuals to define what the “social needs” are, aims at excluding as much as possible value judgements as to what constitutes an acceptable standard of living and implicitly defines poverty with respect to a minimum standard of living defined by the citizens themselves rather than to a norm. The highly supported items (at least 50%) were considered “socially perceived necessities” so that their approach was considered a consensual definition of deprivation.

The current choice of items available in EU-SILC is however based on experts' knowledge, not on social perceptions about which items are considered essential by the majority of the population. As a first step, in the absence of such information, frequency controls on existing data that offered information about the degree of penetration of the items in a country were

taken as an indication of social values[8]. Secondly, in order to be able to assess the current list of items available in EU-SILC and to test whether other items better fit to reflect living patterns which are customary or at least widely encouraged in EU Member States, additional information was collected in 2007 through an EU wide Eurobarometer survey on the perception of poverty and exclusion (see annex 1 for a description of the survey). This survey permitted to confirm that the list of items currently available in the EU-SILC questionnaire and used in the deprivation measures was mainly socially validated. Almost all the items were considered absolutely necessary or necessary to have a decent standard of living, by at least 50% of the sample in the EU27 (see table 1)[9].

8 See Guio (2005, 2006).

9 The introduction of the enforced lack of a computer in the list of selected items was also discussed but not retained, as the cumulated percentage of people considering this items as absolutely necessary or necessary was close to 30%, at the EU level (26% at the Belgian level). Furthermore, there appear to be large variations between age groups in the valuation of the computer.

*Table 1: proportion of people considering absolutely necessary and necessary the items, EU27 and Belgium*

| Abs. nec and nec | Arrears[10] | Holidays | Home warm | Meat, | Unexp. Exp. | TV | TEL (mob)[11] | Car | Washing machine | Not too dark | No leaking roof etc. | Bath | Toilets |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EU27 | 95% | 49% | 97% | 81% | 78% | 65% | 51% | 56% | 90% | 87% | 97% | 94% | 96% |
| BE | 95% | 37% | 98% | 86% | 77% | 41% | 30% | 47% | 81% | 78% | 98% | 93% | 96% |

*Source: Eurobarometer special n° 279, Wave 67.1, EU averages were computed by Dickes et al. (2008)[12]. Regional information is not available.*

At the Belgian level, this holds true, but the durables and holidays are however valuated by a lower proportion of the population than at the EU level. Regional information are unfortunately not available in the Eurobarometer data and would have been very useful to check whether there exists an homogeneous valuation of the items across Regions in Belgium.

Another condition put forward by Mack and Lansley for having a social consensus is that the consensus should be achieved in the various social groups, i.e. that there should be an homogeneity of preferences within countries[13]. If there is limited

10 Average of three questions: avoid arrears in rent/mortgage, utility bills and loans.

11 The percentage of people considering as absolutely necessary (or necessary) the fixed phone are respectively 20% (abs. necessary) and 53% (abs. necessary or necessary).

12 In the computation of Dickes et alii (2008), each country, whether small or large, receives the same importance in the EU-27 averages; these averages are thus not computed on the basis of population weighted national results contrary to standard practice. For calculating the EU-27 averages, national samples have been reweighted so as to achieve a sample size of 1000 for each country.

13 See also Dickes (1989), Jensen et al. (2002), McKay (2004).

agreement over the list of items considered as social necessities and there are classes and ages differences existing in the rating of necessities, this will introduce noise into the measurement of the deprivation, as judgements of importance may impact upon item attainment.

To check this, we can use:

- the Eurobarometer data to test whether the probability of participants endorsing how necessary/absolutely necessary they perceive a given item is the same across different sub-groups. At the EU27 level, the evidence suggests that evaluations are broadly comparable between sub-groups (especially if we regroup the “absolutely necessary and necessary” modalities). Some differences appear in the evaluation of the necessity of the car or one week holidays, for example for the elderly (especially women). Some analysis showed that the impact of the main socio-demographics characteristics available in the survey[14] is moderate, once the specific country effect is accounted for. This relative homogeneity is confirmed at the Belgian level.

- the EU-SILC data (for durables) to check whether the probability of participants *wanting* the item is the same across different sub-groups. People were considered as wanting the item if they *have* the item or if they would like to possess the item but cannot afford it. The evidence suggests that there is a large homogeneity in the proportion of people wanting durables, whatever their sex, age, household type, citizenship, tenure status, work intensity of their household, for three durables (TV, Tel, Washing machine). However, there are

14 See the work presented by the French team for the 1st meeting of the Task Force on material deprivation in 2007. The variables are: gender - age - "standard of living" - occupation - town size - household size - number of children in the hh - education level (proxied by the age at end of full-time education). They studied the impact both on each items and on a global deprivation score.

large variations in the proportion of people wanting a car, with the oldest, the jobless, the women, the renters, the Non-EU, the low educated, the poorest having the lowest propensity to declare desiring a car. This can be due to underassessment of needs or to adaptive preferences, i.e. people who declare they do not want things that it is impossible for them to obtain (see above).

At the Belgian level, the figures lead to similar conclusions (see Annex 5). The proportion of people “wanting” a washing machine tends to be lower for singles, non-EU citizens and renter. There are larger variations in the proportion of people wanting a car, especially for elderly, singles, single parents and the poorest. This should be studied in a multivariate model, in order to assess each specific effect of these variables.

# 3. Multi-dimensionality of material deprivation measures

Once the list of items was chosen, a detailed presentation of deprivation shares for each single item was considered as too detailed, making it hard to draw a comprehensive picture of deprivation in each country. To simplify the interpretation of the information available in the list of items and also to highlight any different patterns of deprivation determinants, the items were clustered in a limited number of dimensions of lifestyle deprivation. Even if it is recognised that information on deprivation in each individual item constitutes interesting background information, "the essential interest here is not so much in individual items per se as in the underlying situation of more generalised deprivation that they can help to capture."[15] The information was therefore aggregated by dimension, but the aggregation process was stopped at the dimension level, as the construction of one single composite multidimensional indicator would lack transparency and homogeneity[16].

## 3.1. Confirmatory factor analysis

Factor analysis was used to regroup the items into a smaller number of dimensions. A confirmatory factor analysis[17] was

15 Marlier et al. (2007).

16 Callan et al. (1996) argued that the aggregation processes into a single measure lead to substantial loss of information, as different aspects of deprivation are occulted (see also Nolan and Whelan (2007)).

17 In an exploratory factor analysis (EFA), the structure of the latent factor model or the underlying theory is not specified a priori; rather data are used to reveal the structure of the factors. In a confirmatory factor analysis (CFA), on the other hand, the precise structure of the factor model is assumed and tested. The method used to examine this assumption is in the family of structural equation modelling. The use of the model requires testing to determine whether or not the data meets conditions necessary for its valid application. The confirmatory approach is therefore far

then performed on available 2006 EU-SILC data for the *whole* EU and showed the consistency of the previous dimension structure highlighted on the ECHP (15 Member States) and on SILC-2004[18] (six countries).[19]

In this dimension structure, items are grouped into three dimensions, relating to:

- economic strain[20]
- enforced lack of durables[21]
- housing[22]

Note also that factor analysis is usually based on Pearson correlations. However, there may be problems with using the Pearson correlations. If the variables are discreet and dichotomous, important categorisation errors can result (see Dekkers (2008)). Tetrachoric correlations could be better adapted to the binary nature of data used. To evaluate the sensitivity of our results to the correlations used, we followed

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more powerful than the exploratory one as it allows for hypothesis testing of the factor structure adequacy.

18 See Guio et al. (2006a, 2006b).

19 For a use of confirmatory factor analysis in deprivation literature, see also Whelan et al. (2001), Eurostat (2002), Dekkers (2008), Jensen et al. (2002).

20 Regrouping the following items: 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 home adequately warm.

21 Regrouping the enforced lack of a washing machine, a colour TV, a telephone, a personal car.

22 Regrouping the dwelling problems: leaking roof/damp walls/floors/foundations or rot in window frames; accommodation too dark, no bath or shower, no indoor flushing toilet for sole use of the household, lack of space.

Dekkers (2008) and used the matrix of tetrachoric correlations as the input for the CFA[23] [24].

At the EU level, the fit statistics of the CFA are reasonably high and confirm that a structure in 3 dimensions can be accepted by the data (see Annex 2). Oblique rotation was applied, as different dimensions of deprivations tend to be positively correlated, as it is reflected by the covariance between dimensions (idem), i.e. being deprived in one dimension is positively correlated with deprivation in other dimensions. It has also to be noted that the fit increases when the list of items focus only on economic strain and durables items as the housing dimension is quite heterogeneous and should normally be split into different aspects (housing amenities tend to be regrouped together, eventually with some durables; overcrowding represent a separated aspect not correlated with other items; housing quality (darkness and quality of the walls, the roof…) can be regrouped together).
The CFA results showed that information on the two dimensions: economic strain and durables could also be combined with little loss of information and gain in simplicity[25]. This solution cannot be rejected by the data analysis and offered the advantage, at the EU political level, of parsimony of presentation.

The analysis was performed on the pooled EU data, but also at country level. The validity of the dimensions structure in Belgium is also presented in Annex 2 and Annex 3. The main conclusions drawn on the EU pooled data are confirmed. The three factors structure (Economic strain, Durables and Housing) has however a low fit (see Table A2 in Annex 2), due to the high

23 It has to be noted that estimators will be consistent, although the standard errors as well as the chi-square tests will be inconsistent.

24 The analysis was conducted using SAS, proc CALIS, (Structural equation modelling, method of unweighted least square).

25 As proposed in Marlier et al. (2007).

heterogeneity of the housing dimension in Belgium. This dimension is also poorly correlated with economic strain and durables dimensions (see Annex 2, Table A4). When the analysis is restrained to economic strain and durables items, the fit is better and these two dimensions can be regrouped together. As illustrated in Annex 3, this is mainly validated by the Belgian data, whatever the Regions.

In the rest of the paper, we will focus on this combined strain/durables dimension.

Before proceeding to make use of this scale, it is still useful to document its statistical reliability, its internal consistency via, for example, Cronbach's alpha coefficient.
At EU level, this coefficient is reasonably high for the economic strain dimension (0,69), even when durables are added (0,68). It is however worth highlighting that inclusion of TV tends to decrease the alpha, as this item is very poorly correlated with the other items[26]. At the EU level, the highest alpha is obtained by using all the economic strain items and the enforced lack of car together (0,70).

By country, the majority of countries have alpha values ranging between 0,60 and 0,70, with the exceptions of Poland, Greece, Latvia, Lithuania, Belgium (more than 0,70) and Cyprus, Portugal, Spain, Denmark, Finland, Austria (between 0,55 and 0,60). Belgium occupies a central position, with an alpha of 0,70. At the Regional level, the Chronbach's alpha

26 It was also discussed whether the addition of TV or telephone adds a lot to the deprivation index, as in most of the countries less than 1% of people don't have and can't afford such items (see annex 4). It was however decided to keep these items in the list, as it was considered as particularly stigmatizing lack (if wanted) in societies where almost all the people who want these items have them.

attains 0,71 (BR), 0,67 (VL), 0,68 (WA). That tends to show a reasonable and comparable reliability, as well as a similar coherence of the scale in Belgian Regions

### 3.2. Presentation of the agreed deprivation indicators on economic strain and lack of durables in EU, Belgium and Regions

Each person in the data set receives a summary score of the number of items his/her household lack because he/she cannot afford them. The threshold is set at three or more enforced lack (out of 9 items) in this combined economic strain and durables dimension[27].

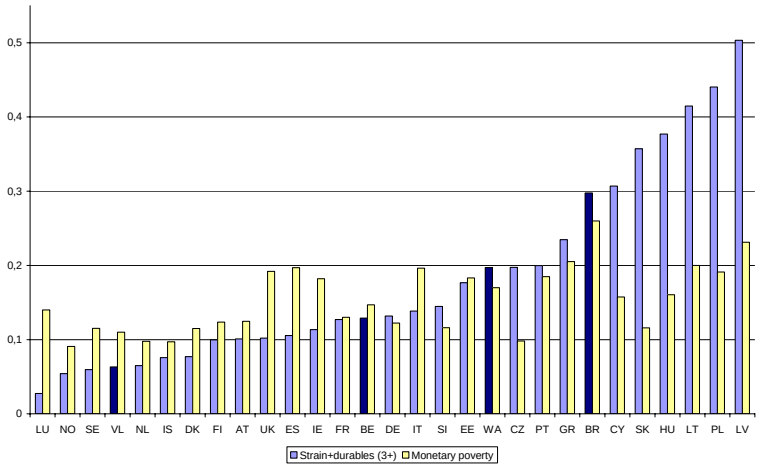
On this basis, the recently agreed deprivation indicators at the EU level are defined as:

1. Primary Indicator: Proportion of people lacking at least 3 items in the list, broken down by sex, age and income poverty status;
2. Secondary Indicator: Mean (unweighted) number of items lacked by people deprived to take into account the *severity* of the deprivation among the " deprived" people in the different countries.

Figure 1 compares the first EU indicator (the proportion of people deprived) with the monetary poverty risk, by country.

27 During the debate at the EU level, the choice of the threshold (2+ or 3+ enforced lacks) was also discussed. The choice of the 3+ threshold was finally preferred, as although arbitrary, it focuses on more severe deprivation, it limits the impact of eventual measurement errors and misclassification and from a communicational point of view, it is closer at the EU level to the value of the EU poverty rate.

*Figure 1 : At-risk-of-poverty rate and measures of deprivation rate in economic strain and durables, WA, VL, BR, EU-25 (except MT) + NO + IS , 2006*



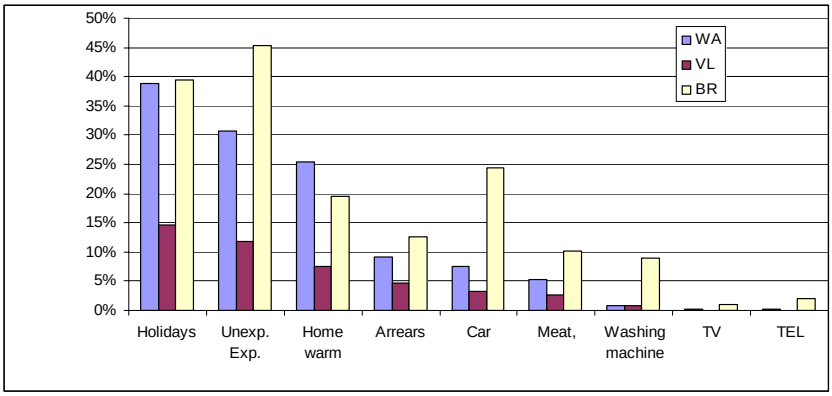

Source: Eurostat, EU-SILC 2006*. Countries are ranked according to the deprivation rate (3+ lacks out of 9).*

These figures provide a simple illustration of how material deprivation measures can reflect differences in living conditions between countries in an international context. Notably, the highest deprivation rates can be found in the new Member States, including those with low at-risk-of-poverty rates, associated with narrower income distribution. In the least deprived countries (LU, NO, SE, NL, IS, DK, FI, AT, UK, ES, IE, IT), the deprivation rate is lower than the poverty risk rate and conversely, the most deprived countries (CZ, PT, GR, CY, SK, HU, LT, PL, LV) face deprivation higher than their poverty risk levels (one fifth to a half of the population in these countries face deprivation). This would mean that measuring poverty and social exclusion through material deprivation indicators based on a common set of items independently of their distribution across the population (contrarily to a relative

measure of monetary poverty) shows a much greater diversity of national situations in the EU than would be inferred on the basis of the poverty risk indicator. The deprivation measure ranges indeed between 3% and 50%, although the poverty rate ranges between 10% and 23%.

The gap between the Belgian regions is also wider according to deprivation than to monetary poverty. Although Flanders has a monetary poverty rate of 11%, the deprivation rate attains only 6 %. If Flanders is compared to the European countries, it has to be ranked among the least deprived countries, with a poverty rate higher than the deprivation rate (like in Nordic countries or Luxembourg for example). On the contrary, Wallonia and Brussels have a deprivation rate higher than their poverty rate (respectively 20% and 30% for the deprivation rates and 17% and 26% for the poverty rates). Brussels is therefore ranked among the most deprived countries (between Greece and Cyprus) and Wallonia occupies a position close to the one of Estonia and Czech Republiek. The gap between Regions in Belgium attains therefore a factor 5 between Brussels and Flanders (2.5 for monetary poverty), and 3.3 between Flanders and Wallonia (1.5 for monetary poverty). This shows a greater diversity in deprivation diversity among Regions in Belgium than on the basis on the monetary poverty rates, although this last one was based on a common Belgian threshold. This means that differences among Regions, measured through living conditions, a proxy of permanent income, are deeper and can be interpreted as capturing the long term consequences of the financial stress measured through monetary poverty on the basis on current income. In figure 2 (see also Annex 4), the data presented item by item show that this higher level of deprivation in Wallonia and Brussels is prevalent for all the items. The lack of individual items is 2 to 3 times more prevalent in Wallonia than in Flanders. In Brussels, the gap with Flanders is even larger.

*Figure 2 : deprivation in economic strain and durables, item by item (WA, VL, BR), 2006*




Source: Eurostat, EU-SILC 2006.

In figure 1, figures were obtained by transforming each deprivation index (which has discrete values between 0 and 9) into a binary variable (deprived/not deprived), by using a threshold of 3+ lacks.

The secondary EU indicator presents the mean number of items lacked out of a total among the deprived. This last figure gives an idea of the severity of deprivation, among those considered as deprived.

*Table 2: deprivation rate and mean deprivation indexes (out of 9) among people lacking at least 3 items in the list, 2006*

| | % of people lacking at least 3 items | Mean number of items among the "deprived" |
|---|---|---|
| **LU** | 3% | 3,49 |
| **NO** | 5% | 3,71 |
| **SE** | **6%** | **3,45** |
| **VL** | **6%** | **3,67** |
| **NL** | 6% | 3,48 |
| **IS** | 8% | 3,36 |
| **DK** | 8% | 3,59 |
| **FI** | 10% | 3,48 |
| **AT** | 10% | 3,48 |
| **UK** | 10% | 3,49 |
| **ES** | 11% | 3,45 |
| **IE** | 11% | 3,66 |
| **FR** | 13% | 3,57 |
| **BE** | **13%** | **3,76** |
| **DE** | 13% | 3,51 |
| **IT** | 14% | 3,70 |
| **SI** | 14% | 3,49 |
| **EE** | 18% | 3,61 |
| **WA** | **20%** | **3,70** |
| **CZ** | 20% | 3,79 |
| **PT** | 20% | 3,74 |
| GR | 23% | 3,81 |
| **BR** | **30%** | **4,01** |
| CY | 31% | 3,50 |
| SK | 36% | 3,77 |
| HU | 38% | 3,96 |
| LT | 41% | 4,09 |
| PL | 44% | 4,06 |
| LV | 50% | 4,12 |

Source: Eurostat, EU-SILC 2006*. Countries are ranked according to the mean deprivation rate.*

In Table 2, this mean number of lacked items among the deprived ranges from 3,4 (IS, SE) to 4,12 in Latvia. These figures show that for a similar proportion of deprived, the severity of deprivation can vary between countries. In Belgium,

for example, the deprivation rate is similar to the level attained in France or Germany (13%), but the severity is higher (3,76 items lacked on average by those who are deprived) and comparable to the severity in countries, who has a deprivation rate of 20%, (CZ, PT). These figures tend also to show that the severity of deprivation in Flanders and Wallonia is comparable, although the proportion of people touched by deprivation is far higher in Wallonia. Brussels is characterised by a higher level of deprivation, which is furthermore more severe.

Another question is related to the combination of lacks among the deprived: Do the persons deprived lack the same combination of items in the different Regions? Table 3 presents these figures for Belgium and its Regions. For example, 95% of the deprived (those who lack at least 3 items in the list) have a problem to face unexpected expenses, whatever the Region. Holidays is another item largely lacked among the deprived persons. Around 90% of those who lack at least three items lack holidays and can not face unexpected expenses (last column). The occurrence of other items can vary between Regions: in Wallonia, 76% of the deprived have problems to keep their home adequately warm, although 58% are in this situation in Flanders and 51% in Brussels. Arrears or the lack of adequate food seem more prevalent among the deprived persons in Flanders than in Wallonia. In Brussels, the lack of durables is more widespread among the deprived persons, than in other Regions.

*Table 3: percentage of people lacking each item, among those who lack at least 3 items in the list, 2006, Belgium and Regions*

| | Unexpected expenses | Holidays | Home warm | Car | Arrears | Meat, chicken | Washing machine | TV | Tel | Unexpected expenses + Holidays |
|---|---|---|---|---|---|---|---|---|---|---|
| BE | 95% | 94% | 65% | 41% | 39% | 27% | 11% | 2% | 1% | 90% |
| WA | 95% | 96% | 76% | 34% | 39% | 24% | 4% | 1% | 1% | 92% |
| VL | 95% | 92% | 58% | 34% | 44% | 30% | 11% | 2% | 1% | 87% |
| BR | 96% | 91% | 51% | 65% | 32% | 31% | 26% | 7% | 3% | 87% |

### 3.3. Risk factors of deprivation, monetary and subjective poverty

Table 4 presents for Belgium and in the usual breakdowns (age, sex, household type, activity status, work intensity, tenure status, income quintiles…), the deprivation rate (3+ lacks), the poverty rate and the subjective poverty rate[28]. As the proportion of the people suffering from the poverty depends on the criterion used and is not comparable among criteria, the relative risk for each subpopulation, in comparison to the total population, is also presented for the three measures. Annex 6 presents the similar information, by Regions. Breakdowns are not available for Brussels due to the small sample size. On the basis on Table 4, it can therefore be assessed whether deprivation, subjective poverty and monetary relative poverty offer a similar diagnosis on the relative position of specific subgroups in Belgium.

The risk factors common to the three approaches are the following:

- The work attachment is one of the main determinant of the risk of poverty or deprivation, either at the individual or the household level :
    - Unemployed persons suffer from a risk at least two times higher than the total population;
    - There is a clear downward gradient across work intensity of the household categories[29]: the highest the work involvement of the household

28 The subjective poverty rate is given by the proportion of people living in households who declared having great difficulty or with difficulty to make ends meet.

29 The "work intensity" of the household is defined as the overall degree of work attachment of working-age members in a household; it is calculated by dividing the sum of all the months actually worked by the working age members of the household by the sum of the workable months in the household – i.e., the number of months spent in any activity status by working age members of the household (See Bardone, Guio (2005)).

in the labour market, the lowest the poverty/deprivation risk.

- The household type is another important determinant of the poverty/deprivation risk:
  - Single parents encounter at least two to three times more risk than the total population;
  - One person households also face a higher risk.
- The level of education has a clear impact on the risk;
- The nationality appears also as a risk factor (increasing the risk by a factor of 3).
- Figures by tenure status and density of population witness the vulnerability of tenants, especially in terms of deprivation and those living in densely or the thinly areas, who face more risk than those living in intermediate areas[30].
- The higher the income quintile, the lower the risk of deprivation or subjective poverty, as expected. However, people in highest quintiles can declare subjective financial difficulties or be classified as deprived (see section 3.4).

Other risk factors depend on the measure used:

- Elderly face higher risks in the monetary approach, but NOT in the subjective or deprivation approaches. This

30 Densely populated area: This is a contiguous set of local areas, each of which has a density superior to 500 inhabitants per square kilometre, where the total population for the set is at least 50,000 inhabitants.
Intermediate area: contiguous set of local areas, not belonging to a densely-populated area, each of which has a density superior to 100 inhabitants per square kilometre, and either with a total population for the set of at least 50,000 inhabitants or adjacent to a densely-populated area.
Thinly-populated area: a contiguous set of local areas belonging neither to a densely-populated nor to an intermediate area.

can be explained by different elements: elderly can have less housing costs than other age groups if there are owner (with mortgage reimbursed); elderly can also have lower needs or can be an example of the “adaptive preferences” and may report that they do not want things which are impossible for them to obtain, if they get used to a certain level of living for a long time.

- At the other end of the age distribution, children live in household that face higher risk than the rest of the population, in the deprivation approach, although in the monetary or subjective approach their risk is similar to the total population.
- Being at work protects to a certain extent against the poverty risk, but the extent of this guarantee varies between approaches, with the probability of being a working poor being greater in the deprivation and subjective approaches. This can be explained by the charges encountered by workers (child care, travel costs,…) not taken into account in the monetary poverty, or by debts or extra needs more prevalent among workers.

*Table 4: Risk and Relative risk, different measures, Belgium, 2006*

| | | % of the population | | | relative risk | | |
|---|---|---|---|---|---|---|---|
| | breakdown | Deprivation (3+) | Monetary poverty | Subjective poverty | Deprivation (3+) | Monetary poverty | Subjective poverty |
| Total | ALL | 13% | 15% | 17% | 1,0 | 1,0 | 1,0 |
| Sex | F | 14% | 16% | 18% | 1,1 | 1,1 | 1,1 |
| | M | 12% | 14% | 15% | 0,9 | 0,9 | 0,9 |
| Density | densely | 16% | 17% | 19% | 1,3 | 1,2 | 1,1 |
| | intermediate | 8% | 12% | 14% | 0,6 | 0,8 | 0,8 |
| | thinly | 15% | 15% | 18% | 1,1 | 1,0 | 1,1 |
| Household type | Hh with children - total | 14% | 13% | 17% | 1,1 | 0,9 | 1,0 |
| | Hh without children - total | 11% | 16% | 16% | 0,9 | 1,1 | 0,9 |
| | 2 adults (65 +) | 6% | 21% | 12% | 0,5 | 1,4 | 0,7 |
| | 2 adults (less than 65 years) | 8% | 10% | 10% | 0,6 | 0,7 | 0,6 |
| | One person household | 21% | 24% | 25% | 1,6 | 1,6 | 1,5 |
| | Single parent household | 40% | 33% | 44% | 3,1 | 2,2 | 2,6 |
| | 2 adults, one child | 8% | 9% | 12% | 0,6 | 0,6 | 0,7 |
| | 2 adults, 2 children | 7% | 8% | 9% | 0,6 | 0,5 | 0,5 |
| | 2 adults, at least 3 children | 17% | 14% | 16% | 1,3 | 1,0 | 1,0 |
| | Other hh without children | 9% | 8% | 13% | 0,7 | 0,6 | 0,8 |
| | Other hh with children | 14% | 15% | 25% | 1,1 | 1,0 | 1,5 |
| Age | 0-15 years | 17% | 15% | 19% | 1,3 | 1,0 | 1,1 |
| | 0-17 years | 17% | 15% | 19% | 1,3 | 1,0 | 1,1 |
| | 0-64 years | 13% | 13% | 17% | 1,0 | 0,9 | 1,0 |
| | 16 - 24 years | 15% | 17% | 20% | 1,2 | 1,1 | 1,2 |
| | 16 - 64 years | 12% | 13% | 16% | 1,0 | 0,9 | 1,0 |
| | 25 - 49 years | 13% | 11% | 15% | 1,0 | 0,7 | 0,9 |
| | 50 - 64 years | 10% | 13% | 16% | 0,8 | 0,9 | 0,9 |
| | more than 16 years | 12% | 15% | 16% | 0,9 | 1,0 | 1,0 |
| | more than 65 years | 10% | 23% | 16% | 0,8 | 1,6 | 1,0 |
| Activity status | unemployed | 32% | 31% | 34% | 2,4 | 2,1 | 2,1 |
| | retired | 9% | 20% | 15% | 0,7 | 1,4 | 0,9 |
| | at work | 6% | 4% | 9% | 0,5 | 0,3 | 0,6 |
| | other inactive | 19% | 25% | 24% | 1,5 | 1,7 | 1,5 |
| | jobless | 17% | 24% | 22% | 1,3 | 1,7 | 1,3 |
| Tenure status | renter | 32% | 29% | 33% | 2,5 | 1,9 | 2,0 |
| | owner | 7% | 10% | 11% | 0,5 | 0,7 | 0,7 |
| Work intensity | WI=0 | 39% | 46% | 38% | 3,0 | 3,1 | 2,3 |
| | 0<WI<0,5 | 23% | 27% | 34% | 1,8 | 1,8 | 2,0 |
| | 0,5<Work intensity<1 | 10% | 7% | 16% | 0,8 | 0,5 | 0,9 |
| | WI=1 | 5% | 3% | 7% | 0,4 | 0,2 | 0,4 |
| Nationality | EU | 11% | 14% | 16% | 0,9 | 0,9 | 0,9 |
| | NON EU | 43% | 48% | 38% | 3,4 | 3,2 | 2,3 |
| Education | High | 5% | 6% | 8% | 0,4 | 0,4 | 0,5 |
| | low | 17% | 22% | 22% | 1,3 | 1,5 | 1,3 |
| | medium | 10% | 12% | 15% | 0,7 | 0,8 | 0,9 |
| Quintiles | Quintile 1 | 37% | 73% | 41% | 2,8 | 5,0 | 2,5 |
| | 2 | 16% | 0% | 22% | 1,3 | 0,0 | 1,3 |
| | 3 | 8% | 0% | 12% | 0,6 | 0,0 | 0,7 |
| | 4 | 3% | 0% | 6% | 0,2 | 0,0 | 0,4 |
| | 5 | 1% | 0% | 2% | 0,1 | 0,0 | 0,1 |

Source: Eurostat, EU-SILC 2006. The relative risk is defined as the ratio between the risk for the group and the risk for the total population.

At the regional level, the same conclusions hold true. In terms of deprivation, the risk factors appear to be the same in Wallonia and in Flanders (see Annex 6), but the level of deprivation is higher in Wallonia, whatever the breakdown. For

example, people living in household where nobody is at work have a risk of 49% to be in deprivation in Wallonia, and of 21% in Flanders. This would mean that additional factors are at work to explain the regional differences, included the type and the length of inactivity, the number of dependants persons in the households and the interaction between these variables.

### 3.4. Overlap with poverty

Table 5 presents the overlap between the three approaches. Deprivation is more prevalent among those who are at risk of poverty, even if the overlap is far from perfect. Indeed, among those below the poverty threshold, the percentage of deprived (3+ lacks) attains 41% in Belgium (44% for subjective poverty). Among those above the poverty threshold, this percentage reaches only 8% (12% for subjective poverty)..

Among those in deprivation (3+ lacks), the poverty rate attains 47% (65% are poor according the subjective criterion). The poverty rate of the non-deprived reaches 9-10% in Belgium, depending on the criterion (monetary or subjective).

Half of those suffering from subjective poverty suffer from deprivation, although they are 39% at risk of poverty.

All these figures confirm that deprivation and poverty are not concentrated on the same subpopulations and that the relationship between poverty and deprivation is weaker than could be expected (Mack and Lansley (1985), Hallerod (1996), Nolan, Whelan (1996), Whelan et al. (2001), Guio (2005, 2006)). The degree of overlap between deprivation and subjective poverty is however higher.

*Table 5: Risk according the different measures, Belgium, 2006*

| Belgium | deprived | subj poor | monetary poor | tot pop |
|---|---|---|---|---|
| **Not subj poor** | 5% | 0% | 10% | 83% |
| **Subj poor** | 51% | 100% | 39% | 17% |
| **Not Monetary poor** | 8% | 12% | 0% | 85% |
| **Monetary poor** | 41% | 44% | 100% | 15% |
| **Not Deprived** | 0% | 9% | 10% | 87% |
| **Deprived** | 100% | 65% | 47% | 13% |
| **Tot pop** | 13% | 17% | 15% | |

*Source: Eurostat, EU-SILC 2006.*

Material deprivation measures may be used to complement or in combination with income. Some countries compute consistent poverty measures, i.e. by focusing on people facing deprivation and relative income poverty (intersection approach). This could help to exclude from the "poor" population those people for whom there are deprivation/income mis-measurements, people receiving low income but avoiding deprivation or people facing deprivation but receiving income above the threshold.

In Belgium, if we combine the three different criteria, only 4% of the population is at risk, due to the lack of overlap highlighted in Table 5. This percentage attains 6%, by combining monetary poverty with deprivation, or monetary poverty with subjective poverty. The combination of deprivation and subjective poverty, for which the degree of overlap is higher, raises this percentage to 8%.

# 4. Simple and weighted indices of deprivation: does each deprivation item have the same importance?

## 4.1. Do we need weighting?

The above figures result from a simple count of the items of deprivation over the population. The main advantage of this approach is to make the interpretation of the results simpler. However, this method relies on the implicit assumption that each item receives the same weight, even if it has also to be kept in mind that 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 list).

The issue of weighting (or not) can receive a different answer depending on whether we only focus on basic needs or on a larger set of items. It can be easily argued that access to some items has the same normative value, whatever the country, if these items are considered essential. For such items, the unweighted approach could be preferable. For the economic strain and durables dimension, this can be questioned, which is why the use of different weights could be considered, even if due to the complexity of the weighting schemes, both in terms of methodology and communication/transparency, only unweighted indicators were adopted at the EU level.

This weighting approach can be formalised as follows: the deprivation score ($u_j$) for each individual (j) equals the sum over the items ($X_{ij}$) weighted with $w_i$, $h_i$ being the initial weight (see below).

**Formula 1:**

$$u_j = \sum_{i=1}^{I} w_i X_{ij}$$

$$where \quad w_i = \frac{h_i}{\sum_{i=1}^{I} h_i}$$

$$and \quad \sum_{i=1}^{I} w_i = 1$$

These weights could be established on the basis of social views on what is more desirable or even necessary, i.e. goods considered as necessary by a larger proportion of the population should receive greater weights, in comparison to the other items in the dimension (see Mack and Lansley (1985), Halleröd (1995)). To do so, we can use the Eurobarometer data.

An alternative method for constructing weights is to weight each item by a function of the proportion of persons who do possess the item[31] (prevalence weighting). The idea is that the higher the proportion of people who have the item, the more likely a person not able to afford the item (but wanting it) will feel deprived.

We will compare the results of these two alternative weighting methods. To summarise: $h_i$ in formula 1 would either be:

- The proportion of people considering the item i as "absolutely necessary or necessary" in the Eurobarometer.

31 See for a similar approach: Desai and Shah (1988), Tsakloglou and Papadapoulos (2001); Whelan et al. (2002); D'Ambrosio, Gradin (2003); Muffels, Fouarge (2004); Förster (2005; Willits (2006).

- Or the proportion of people having the item i over the whole population, in the EU-SILC survey.

Weights are normalized to one (see formula 1). This means that the weight of each item i depends on $h_i$, but also on the sum of $h_i$ , i.e. the proportion of people "having"/"considering absolutely necessary" the other items in the dimension. For example, two countries with very different penetration rates ($h_i$) might have the same set of weights (prevalence weighting), if substitution rates between items are identical (see the example in footnote[32]).

This means that weights have to be considered as a measure of relative importance of the item in the deprivation index, relatively to the other items in the dimension. Each ratio of weights can be seen as a "substitution rate" between these two items[33], i.e. the coefficient by which a deprivation of one item can be compensated by the non-deprivation of another item.

The practical implications of weighting depend on the homogeneity of the different items in the set. The closer the prevalence/appreciation rates of the different items in the dimension, the more equal the weights will be (therefore equivalent to the unweighted approach). In the case of items not necessarily relating to the same form of deprivation and possessed/assessed very differently in the population or not very correlated, the weights will differ significantly and weighting the items will have an impact, compared to the unweighted index[34]. The higher the Chronbach's alpha of the

32 Country A: 90% of car possession, 10% of TV possession. Wcar= 90/100=0,9; Wtv=10/100=0,1; Country B: 45% of car possession, 5% of TV possession. Wcar= 45/50=0,9; Wtv=5/50=0,1;

33 In the standard weighted arithmetic mean (formula 1), see Munda and Nardo (2005) and Decancq K and Lugo M-A (2008).

34 See also Boarini and Mira d'Ercole (2006) and Brandolini A. (2008) for a similar argument.

indicator (0,69 in our case, see section 3.1), the less useful are also the weights. The introduction of new items in EU-SILC should normally increase the reliability of the indicator and decrease the need of weighting[35].

In the prevalence weighting, the weights could be (or not[36]) adjusted each year to take into account changing levels of ownership, as the database used provides annual data. The use of the consensus weighting implies however to choose an anchored set of weights to a baseline (the Eurobarometer data is only available for 2007). This is defendable from a practical point of view: weights can remain stable, making it easier to interpret the temporal evolution of the weighted indexes. However, it is important to keep in mind that regular assessment will be useful in order to evaluate the evolution of the social value of items in all Member States.

Like for the indicator of relative monetary poverty, one important question is related to the choice of the reference population. We can make the hypothesis that, in evaluating their material situation, respondents are influenced mostly by their perceptions of how they are doing compared to others in their own country, even if it might be argued that, in the European Union, comparisons would extend beyond national border lines[37]. That is the reason why nationally-defined weights and EU-defined weights will be tested.

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35 As the square root of the Chronbach's Alpha can be interpreted as the correlation between the current deprivation index and the theoretically perfect deprivation index made up of the infinite numbers of possible deprivation items. We owe this point to Professor David Gordon (Bristol, UK), as a member of the Eurostat task force.

36 See the UK deprivation indicator used to monitor child poverty (Willits (2006)).

37 Whelan C, Layte R, Maitre B, Nolan B (2001).

We could also defend the use of regional weighting schemes to compute the Belgian figures. However, the consensus weightings can not be computed at the regional level, as the Eurobarometer data are not available at the desagregated level. We will only discuss regional prevalence weighting schemes.

The following table summarises the alternatives to construct the weights.

| | Nationally defined | EU defined | Regionally defined |
|---|---|---|---|
| Prevalence weighting (EU-SILC) | Set 1 | Set 2 | Set 5 |
| Consensus weighting (Eurobarometer) | Set 3 | Set 4 | n.a. |

In terms of comparability, the use of national/regional weighting schemes can be interpreted like a way to take into account national/regional or cultural differences in preferences, i.e. the difference in valuation of the constitutive items used to capture a common latent material deprivation measure.

Table 5a presents the value of the different sets of weights, by country and for the EU. Table 5b presents the prevalence weighting schemes, computed at the regional level.

*Table 5a: Weight of each item, prevalence and consensus weighting, national and EU*

| | Arrears | Holidays | Home warm | Meat, .. | Unexp. Exp. | TV | TEL | Car | Washing machine |
|---|---|---|---|---|---|---|---|---|---|
| **UNWEIGHTED** | 0,111 | 0,111 | 0,111 | 0,111 | 0,111 | 0,111 | 0,111 | 0,111 | 0,111 |
| **Weights based on prevalence rate (people who have the item)** | | | | | | | | | |
| AT | 0,119 | 0,092 | 0,119 | 0,112 | 0,091 | 0,121 | 0,123 | 0,104 | 0,120 |
| BE | 0,115 | 0,093 | 0,106 | 0,119 | 0,098 | 0,122 | 0,124 | 0,106 | 0,117 |
| CY | 0,107 | 0,063 | 0,091 | 0,128 | 0,078 | 0,137 | 0,136 | 0,126 | 0,134 |
| CZ | 0,122 | 0,085 | 0,121 | 0,112 | 0,079 | 0,131 | 0,127 | 0,093 | 0,130 |
| DE | 0,118 | 0,093 | 0,120 | 0,113 | 0,075 | 0,122 | 0,126 | 0,109 | 0,123 |
| DK | 0,117 | 0,112 | 0,112 | 0,121 | 0,094 | 0,120 | 0,123 | 0,097 | 0,104 |
| EE | 0,125 | 0,052 | 0,132 | 0,124 | 0,099 | 0,133 | 0,131 | 0,080 | 0,124 |
| ES | 0,118 | 0,078 | 0,115 | 0,121 | 0,088 | 0,125 | 0,124 | 0,107 | 0,124 |
| FI | 0,112 | 0,101 | 0,121 | 0,120 | 0,086 | 0,118 | 0,123 | 0,103 | 0,117 |
| FR | 0,114 | 0,086 | 0,118 | 0,119 | 0,084 | 0,123 | 0,123 | 0,110 | 0,122 |
| GR | 0,094 | 0,067 | 0,118 | 0,123 | 0,093 | 0,133 | 0,133 | 0,109 | 0,130 |
| HU | 0,125 | 0,051 | 0,128 | 0,109 | 0,071 | 0,148 | 0,143 | 0,085 | 0,140 |
| IE | 0,114 | 0,096 | 0,120 | 0,121 | 0,077 | 0,123 | 0,123 | 0,104 | 0,121 |
| IS | 0,106 | 0,105 | 0,108 | 0,118 | 0,084 | 0,120 | 0,122 | 0,116 | 0,121 |
| IT | 0,111 | 0,078 | 0,115 | 0,120 | 0,092 | 0,124 | 0,122 | 0,112 | 0,125 |
| LT | 0,132 | 0,051 | 0,112 | 0,118 | 0,066 | 0,150 | 0,144 | 0,092 | 0,135 |
| LU | 0,114 | 0,105 | 0,116 | 0,115 | 0,095 | 0,116 | 0,116 | 0,108 | 0,114 |
| LV | 0,137 | 0,049 | 0,121 | 0,110 | 0,050 | 0,158 | 0,153 | 0,082 | 0,139 |
| NL | 0,114 | 0,102 | 0,117 | 0,117 | 0,092 | 0,117 | 0,120 | 0,102 | 0,118 |
| NO | 0,108 | 0,111 | 0,118 | 0,116 | 0,089 | 0,117 | 0,119 | 0,105 | 0,117 |
| PL | 0,119 | 0,050 | 0,110 | 0,110 | 0,066 | 0,151 | 0,147 | 0,095 | 0,151 |
| PT | 0,127 | 0,054 | 0,081 | 0,130 | 0,113 | 0,134 | 0,125 | 0,107 | 0,128 |
| SE | 0,110 | 0,102 | 0,116 | 0,115 | 0,103 | 0,115 | 0,119 | 0,102 | 0,119 |
| SI | 0,110 | 0,088 | 0,124 | 0,114 | 0,072 | 0,125 | 0,127 | 0,115 | 0,126 |
| SK | 0,130 | 0,061 | 0,131 | 0,091 | 0,074 | 0,143 | 0,140 | 0,087 | 0,142 |
| UK | 0,115 | 0,095 | 0,117 | 0,118 | 0,088 | 0,122 | 0,123 | 0,103 | 0,120 |
| EU | 0,116 | 0,084 | 0,116 | 0,117 | 0,085 | 0,126 | 0,126 | 0,105 | 0,125 |
| **Weights based on consensus rate (people considering the item as absolutely necessary or necessary)** | | | | | | | | | |
| AT | 0,165 | 0,056 | 0,167 | 0,121 | 0,132 | 0,084 | 0,056 | 0,062 | 0,157 |
| BE | 0,160 | 0,063 | 0,166 | 0,145 | 0,130 | 0,069 | 0,051 | 0,079 | 0,137 |
| CY | 0,124 | 0,090 | 0,123 | 0,087 | 0,118 | 0,116 | 0,093 | 0,124 | 0,124 |
| CZ | 0,158 | 0,060 | 0,158 | 0,098 | 0,111 | 0,100 | 0,085 | 0,073 | 0,158 |
| DE | 0,169 | 0,048 | 0,181 | 0,116 | 0,126 | 0,092 | 0,037 | 0,066 | 0,164 |
| DK | 0,176 | 0,057 | 0,184 | 0,148 | 0,121 | 0,080 | 0,072 | 0,051 | 0,112 |
| EE | 0,131 | 0,086 | 0,132 | 0,118 | 0,115 | 0,107 | 0,106 | 0,082 | 0,124 |
| ES | 0,146 | 0,066 | 0,145 | 0,142 | 0,127 | 0,078 | 0,064 | 0,087 | 0,145 |
| FI | 0,157 | 0,061 | 0,159 | 0,140 | 0,111 | 0,076 | 0,095 | 0,063 | 0,138 |
| FR | 0,149 | 0,083 | 0,154 | 0,131 | 0,113 | 0,075 | 0,041 | 0,116 | 0,137 |
| GR | 0,125 | 0,103 | 0,128 | 0,106 | 0,119 | 0,110 | 0,078 | 0,109 | 0,123 |
| HU | 0,140 | 0,092 | 0,142 | 0,105 | 0,116 | 0,121 | 0,083 | 0,060 | 0,139 |
| IE | 0,144 | 0,074 | 0,146 | 0,138 | 0,124 | 0,079 | 0,074 | 0,089 | 0,131 |
| IT | 0,149 | 0,055 | 0,150 | 0,128 | 0,131 | 0,083 | 0,067 | 0,103 | 0,136 |
| LT | 0,137 | 0,066 | 0,138 | 0,117 | 0,119 | 0,121 | 0,093 | 0,081 | 0,127 |
| LU | 0,147 | 0,067 | 0,153 | 0,113 | 0,105 | 0,091 | 0,072 | 0,103 | 0,149 |
| LV | 0,134 | 0,082 | 0,136 | 0,119 | 0,118 | 0,111 | 0,106 | 0,071 | 0,122 |
| NL | 0,175 | 0,067 | 0,194 | 0,153 | 0,125 | 0,049 | 0,029 | 0,039 | 0,170 |
| PL | 0,139 | 0,081 | 0,143 | 0,129 | 0,121 | 0,107 | 0,071 | 0,069 | 0,140 |
| PT | 0,129 | 0,081 | 0,127 | 0,130 | 0,112 | 0,115 | 0,089 | 0,089 | 0,127 |
| SE | 0,171 | 0,083 | 0,170 | 0,128 | 0,097 | 0,081 | 0,060 | 0,073 | 0,136 |
| SI | 0,142 | 0,080 | 0,147 | 0,104 | 0,102 | 0,097 | 0,073 | 0,110 | 0,146 |
| SK | 0,127 | 0,079 | 0,133 | 0,106 | 0,119 | 0,113 | 0,098 | 0,090 | 0,133 |
| UK | 0,169 | 0,072 | 0,175 | 0,136 | 0,134 | 0,067 | 0,042 | 0,056 | 0,150 |
| EU | 0,144 | 0,074 | 0,146 | 0,122 | 0,118 | 0,098 | 0,077 | 0,085 | 0,136 |

Sources: Eurostat, EU-SILC 2006. Eurobarometer special n° 279, Wave 67.1, EU average (computed by Dickes et al. (2008), see Table 1).

Compared to the unweighted approach, Table 5a shows that:

- In the prevalence weighting, the weights are higher for the most possessed items (TV, Phone, Car and Washing machine) and lower for items for which the lack is more prevalent (holidays and unexpected expenses). In some new Member States (HU, LT, PL, SK), the weights of the most possessed durables (TV, phone, washing machine) attains the highest level, compared to other countries, mainly due to higher deprivation level in other items (like holidays) that therefore receive lower weights (even, compared to other EU countries), suggesting a contrasted hierarchy of items in these new Member States.

- In the consensual approach, at the EU level, weights are higher for the deprivation in arrears, home warm, meat, washing machine, as these items were considered as important to have a decent life by more people. The weights are lower for the other durables (TV, phone, car) and for holidays. At country level, this general picture still holds true, but the value of the weights can vary a lot between countries, in function of particular national valuation of items. The relative value of the car, for example, shows large variations between countries: the highest in Cyprus, France, Slovenia and Greece and far lower in Holland, Denmark, Austria, UK, Hungary, or Poland.

- The hypothesis underlying the prevalence approach implies that the most possessed items receive a higher weight, although the judgement on social importance of items determines the weights in the consensual

approach. This also means that items for which the deprivation rate is higher (the capacity to face unexpected expenses for example), comparatively to other items (like TV or phone), have lower weights in the prevalence weighting. This can be seen as a drawback of the prevalence method, as this type of deprivation is minimised (whatever the "social" importance of avoiding it). An additional argument against prevalence weighting is linked to its sensibility to eventual measurement errors. Furthermore, consensual weighting is more understandable and easier to communicate.

*Table 5b: Weight of each item, prevalence weighting, Belgian and regional level*

| W prevalence | Arrears | Holidays | Home warm | Meat, chicken | Unexpected expenses | Tel | TV | Car | Washing machine |
|---|---|---|---|---|---|---|---|---|---|
| WA | 0,118 | 0,080 | 0,097 | 0,123 | 0,090 | 0,129 | 0,128 | 0,110 | 0,124 |
| VL | 0,113 | 0,101 | 0,110 | 0,115 | 0,105 | 0,118 | 0,118 | 0,106 | 0,114 |
| BR | 0,123 | 0,085 | 0,113 | 0,127 | 0,077 | 0,139 | 0,133 | 0,090 | 0,113 |
| BE | 0,115 | 0,093 | 0,106 | 0,119 | 0,098 | 0,124 | 0,122 | 0,106 | 0,117 |

Sources: Eurostat, EU-SILC 2006.

- In Table 5b, in the different Belgian Regions, as at the country level in the EU (in Table 5a), the weights are higher for items which are owned by a large majority of the population (TV, phone, car and washing machine) and lower for items for which the lack is more prevalent (holidays and unexpected expenses). In Wallonia, the weights of the most possessed durables (TV, phone, washing machine) attains higher levels, compared to Flanders, mainly due to relatively higher deprivation levels in other items (holidays, unexpected expenses, keeping the home warm) that therefore receive lower weights. Applying at the regional level the

prevalence weighting scheme is also difficult to justify. This decreases the relative importance of items, which are more often lacked in the Regions suffering from more deprivation, without having information on an eventual different valuation of the items at the regional level. We will therefore keep a common national weighting scheme at the regional level.

So far, we postulated that there was enough consensus in the definition of necessities and enough homogeneity in people's opinion or behaviour to allow the computation of a set of weights, unique at national (or European level), irrespective of differences in demographic or social position. Halleröd (1995) chose to use different sets of weights, to take into account differences in preferences for different subgroups[38]. The Eurobarometer results however show that the impact of the main socio-demographics characteristics available in the survey is moderate and that the variable 'country' has the largest impact. We will therefore keep a unique set of weights for the whole population.

Weights can be taken into account in different ways, different functional forms could be considered. We chose the simplest and transparent linear function of the proportion of 'have' (see formula 1), but sensitivity analysis were performed by using alternatives functions (see Guio (2009)).

### 4.2. Presentation of weighted results – mean indexes

Due to the difficulty to define a threshold in the weighted case (see Guio (2009) for details), Figure 4 compares weighted (the

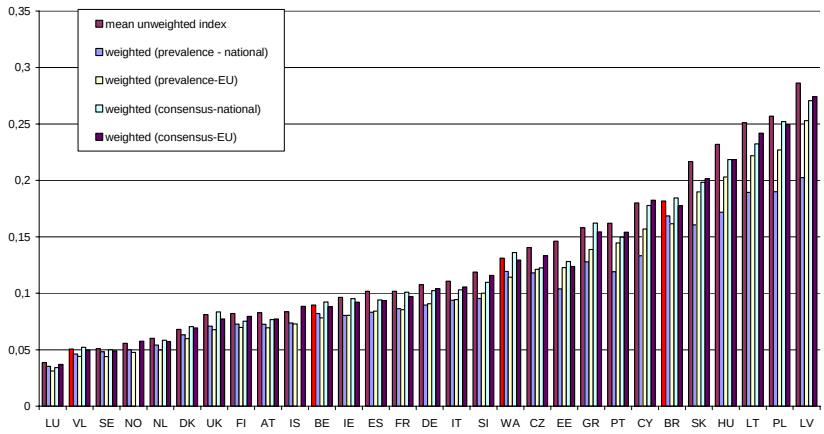
38 See also Halleröd et al. (2006). Cappellari and Jenkins (2004) used a multivariate probit model to take into account of the heterogeneity of the deprivation measures between different populations.

four different sets are considered) and unweighted mean deprivation index, for the EU countries and Belgian Regions. Table 6 also details the regional Belgian figures.

*Table 6: mean deprivation index (economic strain and durables), weighted and unweighted, Belgian and regional level*

| | Unweighted | Prevalence national | Prevalence EU | Consensus National | Consensus EU |
|---|---|---|---|---|---|
| **WA** | 0,131 | 0,119 | 0,114 | 0,136 | 0,129 |
| **VL** | 0,051 | 0,046 | 0,044 | 0,052 | 0,050 |
| **BR** | 0,182 | 0,169 | 0,162 | 0,184 | 0,178 |
| **BE** | 0,090 | 0,082 | 0,078 | 0,092 | 0,088 |

*Figure 4: mean deprivation index (economic strain and durables), weighted and unweighted, EU-25 (except MT) + NO + IS + Belgian regions, 2006*




Source: Eurostat, EU-SILC 2006. Countries are ranked according to the unweighted index.

As can be observed in Figure 4, in the less deprived countries, the use of weights has little incidence on the mean indexes, (whatever the methodology), as the weights of items are close to equal weighting.

Compared to simple counts, the use of prevalence weights (nationally defined) decreases the national values of the aggregated index, especially for the most deprived countries/regions. This is due to the fact that weights give less importance to the most frequently non owned items. The highest difference concerns the majority of new Member States plus Greece and Portugal, where the importance of the less possessed items (not having a week holiday, not keeping the home adequately warm, the enforced lack of a car) receives a lower weight in the weighted approach. The choice between national or EU reference appears determinant in the prevalence weighting, for the most deprived countries.

The use of consensus weighting increases the deprivation indexes, compared to the national prevalence weighting approach, as weights do not give less importance to the most frequently deprived items in the country, but on the contrary to items less valued in the Eurobarometer, like durables or holidays.

At the Belgian level, the use of weights do not change the hierarchy between Regions. In the EU ranking, Flanders occupies a very favourable position, between Luxembourg and Sweden. The two other Regions occupy a position that can slightly vary in the EU ranking, depending on the weights. Brussels is classified among the most deprived countries (like Cyprus, Slovakia) and Wallonia is close to the Czech Repubick.

It has also to be highlighted that the correlations between unweighted and the different weighted indexes, computed at

the individual level and by country, is close to 0,99 whatever the four type of weights and the country.

At the Belgian level, a comparison of the risk factors between unweighted and weighted alternatives also confirmed that the use of weights is not very sensitive.

## 5. CONCLUSIONS

This paper aimed at illustrating the interest to complement monetary poverty figures with information on the material level of deprivation of people, with a special focus on the risk factors of poverty/deprivation and on the regional diversity in Belgium.

The risk factors identified through the material deprivation approach confirm the importance of the work involvement of people and the impact of household type, highlighted in the monetary poverty approach. It offers however a different diagnosis on the relative position of elderly and children, or on the situation of working poor.

The figures also show that the gap between the Belgian Regions is wider according to deprivation than to monetary poverty. Detailed data show that this higher level of privation in Wallonia and Brussels is prevalent for all the items constitutive of the deprivation measure and for all the subcategories of the population.

This paper also discussed the methodological implications and the potential interest of different weighting schemes, and showed their limited impact on the main conclusions drawn on the basis on unweighted indicators.

## References:


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

Bardone L., Guio A-C. (2005), In-Work Poverty. *New commonly agreed indicators at the EU level*, Statistics in Focus, Population and Social Conditions, Living Conditions and Welfare, 5/2005, Eurostat, Luxembourg.

Boarini, R. and Mira d'Ercole, M. (2006), "Measures of Material Deprivation in OECD Countries", OECD Social Employment and Migration Working Papers, No. 37, OECD Publishing.

Brandolini A. (2008), "On applying synthetic indices of multidimensional well-being: Health and Income inequalities in selected EU countries", Banca d'Italia, Temi di discussione 668.

Cappellari, L. and Jenkins, S.P. (2007) "Summarizing Multiple Deprivation Indicators" in Jenkins S.P and Micklewright, J. (eds), *Inequality and Poverty: Re-examined*, Oxford, Oxford University Press.

Decancq K and Lugo M-A (2008) "Setting weights in multidimensional indices of well-being and deprivation", Preliminary version, October 30, 2008

Dekkers, G. (2008), "Are you unhappy? Then you are poor! Multi dimensional poverty in Belgium, International Journal of Sociology and Social Policy, 28, 11/12, 502 - 515

Dickes, P. (1989), "Pauvreté et Conditions d'Existence. Théories, modèles et mesures"*, Document PSELL* No. 8, Walferdange, CEPS/INSTEAD.

Dickes, P., Fusco, A. and Marlier, E. (2008), "Socially perceived necessities of life across EU countries: Structures and consensus", *Paper presented at the 30th IARIW General Conference*, Slovenia, 24-30 August.

Eurostat (2002), *Income, Poverty and Social Exclusion: Second Report*, Luxembourg.

Filippone, A., Cheli, B. and D'Agostino, A. (2001), "Addressing the interpretation and the aggregation problems in total fuzzy and relative poverty measures", *ISER Working Papers*, No. 2001-22.

Fusco, A. (2007), *La pauvreté, un concept multidimensionnel,* Paris, L'Harmattan.

Freguja, C. and Siciliani, I. (2006), "Poverty and deprivation of Italian children: evidence from EU-SILC survey", *Paper prepared for the 29th General Conference of the International Association for Research in Income and Wealth*. Joensuu, Finland, August 20-26.

Guio, A.-C. (2005), *Material Deprivation in the EU*, Statistics in Focus, Population and Social Conditions, Living Conditions and Welfare, 21/2005, Eurostat, Luxembourg.

Guio, A-C. (2009), "What can be learned from deprivation indicators What can be learned from deprivation indicators in Europe?", Paper presented at the Indicator Subgroup of the Social Protection Committee, 10th February 2009.

Guio, A.-C. and Museux, J.-M. (2006), "The situation of children in the EU: Comparison between poverty and material deprivation. What can be learned from the new EU-SILC 2004 data?", *Paper prepared for the 29th General Conference of the International Association for Research in Income and Wealth*, Joensuu, Finland, August 20-26.

Guio, A.-C. and Maquet, I. (2006), "Material deprivation and poor housing: What can be learned from the EU-SILC 2004 data? How can EU-SILC be improved in this matter?", *Paper for the conference "Comparative EU Statistics on Income and Living conditions: issues and Challenges"*, Helsinki, November 6-8.

Insee (2005), « Les approches de la pauvreté à l'épreuve des comparaisons internationales » Economie et Statistique N°383-384-385

Jensen, J., Spittal, M., Crichton, S., Sathiyandra, S. and Krishnan, V. (2002), “Direct measurement of living standards: the New Zealand ELSI scale”, Ministry of Social Development, Wellington.

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

Halleröd, B. (1995), "The truly poor: direct and indirect measurement of consensual poverty in Sweden", *Journal of European Social Policy*, Vol.5, No. 2, pp. 111-129.

Halleröd, B., Gordon, D., Larsson, D. and Ritakallio V-M, (2006), “Relative deprivation: a comparative analysis of Britain, Finland and Sweden”, *Journal of European Social Policy*, Vol. 16, No. 4, 328-345.

McKay, S. (2004), “Poverty of preference: what do consensual deprivation indicators really measure?”, *Fiscal studies*, 25 (2), pp. 201-224.

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

Nolan, B. and Whelan, C.T. (2007), “Multidimensionality of poverty and social exclusion”, in Jenkins, S.P. and Micklewright, J. “*Resources, Deprivation and Poverty*, Oxford, Clarendon Press.

Pantazis, C., Townsend, P. and Gordon, D. (2006), "The necessities of life", in Pantazis C., D. Gordon and R. Levitas (eds), *Poverty and Social Exclusion in Britain. The Millennium Survey*, Bristol, The Policy Press, chapter 4, pp. 89-122.

Ringen, S. (1988), “Direct and indirect measures of poverty”, *Journal of social policy*, 17, pp. 351-365.

Sen A.K. (2000), .Social Exclusion: Concept, Application, and Scrutiny., *Social Development Papers, Asian Development Bank,* No. 1.

Social Protection Committee (2008), *Child poverty and well-being in the EU. Current status and way forward.* Luxembourg: Office for Official Publications of the European Communities.

Townsend, P. (1979), *Poverty in the United Kingdom*, Hardmonsworth, Penguin Books.

---- (1987), “Deprivation”, *Journal of Social Policy*, Vol. 16, pp. 125-46.

TNS (2007). Poverty and Social Exclusion. *Report on the Special Eurobarometer 279/ Wave 67.1*.

Tsakloglou, P. and Papadopoulos, F. (2002a), "Aggregate level and determining factors of social exclusion in twelve European countries"*, Journal of European Social Policy*, Vol. 12, No. 3, pp.211-225.

---- (2002b), "Identifying population groups at high risk of social exclusion: evidence from the ECHP", in Muffels, R.J.A., Tsakloglou, P. and Mayes D.G. (eds.), *Social Exclusion in European Welfare States*, Cheltenham UK, Northampton, MA, USA, Edward Elgar.

Whelan, C.T., Layte, R., Maître, B. and Nolan, B. (2001), “Income, deprivation and economic strain. An analysis of the ECHP”, European sociological review, Vol. 17 No. 4, pp. 357-372.

Whelan, C.T., Nolan, B. and Maître, B. (2008), “Measuring material deprivation in an enlarged EU”, *ESRI Working Paper* No. 249.

Willits, M. (2006), “Measuring child poverty using material deprivation: possible approaches”, Working paper No. 28, Department of work and pensions.

## ANNEX 1: The Eurobarometer

The Eurobarometer (Eurobarometer special n° 279 - wave 67.1), carried out between February and March 2007, contains data on the 27 countries of the EU plus Croatia. National samples of adults aged 15+ living in private households were interviewed. The questionnaire on "Poverty and Material Deprivation" is divided into two parts. The first part contains 9 questions on the perception of poverty. The second part includes 10 questions designed to assess which items are considered to be necessary for people to live in an acceptable/decent standard of living in the country where they live. Questions asked in part 2 relate to adult deprivation, child deprivation and homelessness.
At the adult level, 53 items of material and social deprivation are spread among the following 5 domains:

- Financial stress: 6 items
- Poor housing and environment: 14 items
- Enforced lack of durables: 12 items
- Poor quality food and clothing, access to basic services: 13 items
- Exclusion from essential social and leisure activities: 8 items

At the child level, 21 items are included.

Questions were asked in the following way:

> *"In the following questions, we would like to understand better what, in your view, is necessary for people to have what can be considered as an acceptable or decent standard of living in [your country]. For a person to have a decent standard of living in [your country], please tell me how necessary do you think it is to …"*

The potential answers are the following:

1. absolutely necessary, no one should have to do without;
2. necessary;
3. desirable but not necessary;
4. not at all necessary;
5. don’t know.

## ANNEX 2: Confirmatory factor analysis, 3 factor solutions

*Table A1: fit statistics of the CFA, pooled data – 3 factors solution*

| | |
|---|---|
| Goodness of Fit Index (GFI) | 0.97 |
| GFI Adjusted for Degrees of Freedom (AGFI) | 0.96 |
| Root Mean Square Residual (RMRS) | 0.07 |
| Parsimonious GFI (Mulaik) | 0.78 |

*Table A2: fit statistics of the CFA, BE – 3 factors solution*

| | |
|---|---|
| Goodness of Fit Index (GFI) | 0.92 |
| GFI Adjusted for Degrees of Freedom (AGFI) | 0.88 |
| Root Mean Square Residual (RMRS) | 0.14 |
| Parsimonious GFI (Mulaik) | 0.73 |

**GFI, goodness of fit index,** represents the amount of variances and covariances in the sample covariance matrix that are predicted by the model. Theoretically, its maximal value is 1. However, as GFI is affected by the sample size and the number of indicators, its upper bound can be lower than one, even in the case of perfect fit. One rule of thumb is that the GFI for good fitting model should be greater than 0.9.

**AGFI, adjusted goodness of fit index,** is the GFI adjusted for degrees of freedom. A value superior of 0.8 is more often used as a cut-off value to consider the model as good fitting.

**RMSR, root mean square residual**, is the square root of the average of the square of the residuals between the sample and modelised covariance matrix. The less is the fit between the model and the data, the larger the RMSR.

**PGFI, Parsimonious goodness of fit index,** is a modification of the GFI that takes the parsimony of the model into account.

*Table A3: Covariance between factors, pooled data*

| | Economic strain | Durables | Housing |
|---|---|---|---|
| Economic strain | 1 | 0,82 | 0,55 |
| Durables | 0,82 | 1 | 0,74 |
| Housing | 0,55 | 0,74 | 1 |

*Table A4: Covariance between factors, BE*

| | Economic strain | Durables | Housing |
|---|---|---|---|
| Economic strain | 1 | 0,74 | 0,50 |
| Durables | 0,74 | 1 | 0,42 |
| Housing | 0,50 | 0,42 | 1 |

## ANNEX 3: Confirmatory factor analysis, without housing items

*Table A4: fit statistics of the CFA, EU pooled data – Economic strain and durables*

| | **Economic strain and durables, separated** | **Economic strain and durables, regrouped** |
|---|---|---|
| Goodness of Fit Index (GFI) | 0,9959 | 0,9911 |
| GFI Adjusted for Degrees of Freedom (AGFI) | 0,9912 | 0,9822 |
| Root Mean Square Residual (RMRS) | 0,0358 | 0,0529 |
| Parsimonious GFI | 0,6165 | 0,6607 |

*Table A5: fit statistics of the CFA, BE – Economic strain and durables*

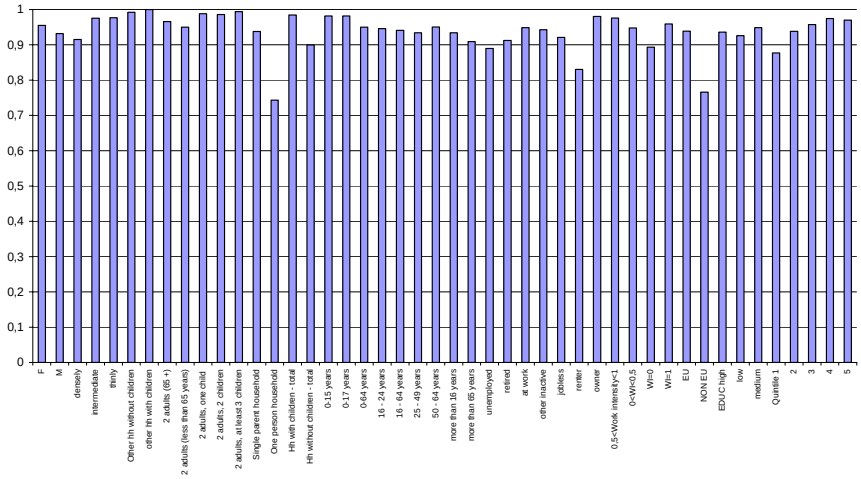
| | **Economic strain and durables, separated** | **Economic strain and durables, regrouped** |
|---|---|---|
| Goodness of Fit Index (GFI) | 0,993 | 0,98 |
| GFI Adjusted for Degrees of Freedom (AGFI) | 0,984 | 0,96 |
| Root Mean Square Residual (RMRS) | 0,057 | 0,09 |
| Parsimonious GFI | 0,7138 | 0,79 |

**ANNEX 4: deprivation proportion, by items and by country**

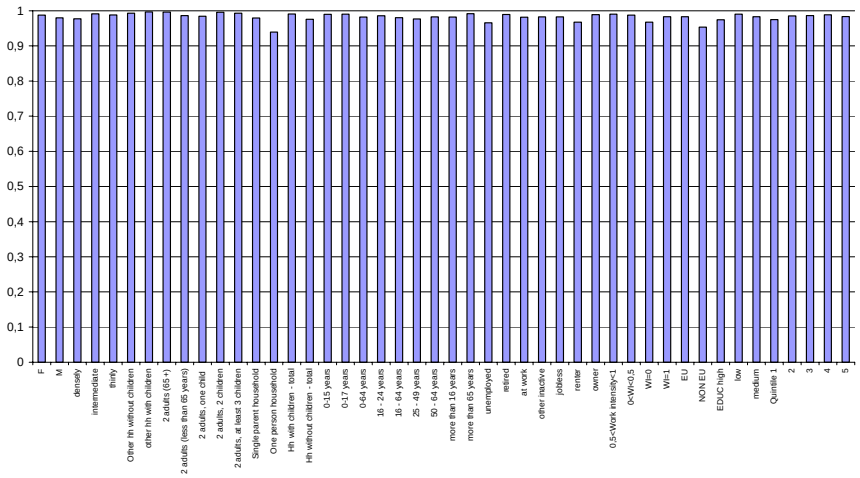
| | Arrears | Holidays | Home warm | Meat, | Unexp. Exp. | TV | TEL | Car | Wash. Mach. |
|---|---|---|---|---|---|---|---|---|---|
| AT | 3,4% | 25,7% | 3,8% | 9,3% | 26,5% | 0,3% | 0,1% | 4,8% | 0,5% |
| **BE** | **6,9%** | **24,9%** | **14,5%** | **4,2%** | **21,1%** | **0,3%** | **0,2%** | **6,8%** | **1,7%** |
| **WA** | **9,1%** | **38,8%** | **25,4%** | **5,2%** | **30,6%** | **0,2%** | **0,2%** | **7,6%** | **0,9%** |
| **VL** | **4,7%** | **14,6%** | **7,5%** | **2,7%** | **11,8%** | **0,0%** | **0,1%** | **3,3%** | **0,8%** |
| **BR** | **12,7%** | **39,5%** | **19,6%** | **10,1%** | **45,4%** | **1,0%** | **2,1%** | **24,3%** | **8,9%** |
| CY | 22,0% | 54,0% | 33,8% | 6,3% | 43,1% | 0,0% | 0,1% | 2,0% | 0,7% |
| CZ | 8,4% | 36,3% | 8,9% | 16,2% | 40,3% | 0,3% | 1,8% | 13,4% | 0,6% |
| DE | 6,8% | 26,3% | 5,3% | 10,8% | 40,5% | 0,6% | 0,3% | 5,8% | 0,5% |
| DK | 5,2% | 9,5% | 9,3% | 1,7% | 23,8% | 0,5% | 0,0% | 9,3% | 2,0% |
| EE | 7,0% | 61,1% | 2,3% | 8,2% | 26,7% | 0,5% | 1,6% | 20,8% | 3,3% |
| ES | 6,1% | 38,2% | 8,1% | 3,9% | 29,7% | 0,1% | 0,4% | 4,5% | 0,5% |
| FI | 9,6% | 18,5% | 2,4% | 2,6% | 30,1% | 0,8% | 0,1% | 8,4% | 1,4% |
| FR | 9,6% | 31,4% | 5,9% | 5,6% | 33,3% | 0,3% | 0,7% | 3,7% | 0,9% |
| GR | 29,9% | 49,7% | 12,0% | 7,9% | 30,7% | 0,4% | 0,6% | 9,1% | 2,1% |
| HU | 16,7% | 66,0% | 14,9% | 27,8% | 52,5% | 0,7% | 3,0% | 23,4% | 3,7% |
| IE | 8,4% | 22,7% | 3,8% | 2,5% | 37,9% | 0,3% | 0,4% | 10,3% | 0,6% |
| IS | 12,7% | 14,2% | 11,0% | 3,3% | 31,0% | 0,3% | 0,0% | 1,8% | 0,9% |
| IT | 12,9% | 38,8% | 10,1% | 5,6% | 27,5% | 0,3% | 1,3% | 2,7% | 0,4% |
| LT | 14,4% | 67,0% | 27,6% | 23,2% | 57,4% | 1,7% | 4,3% | 21,8% | 8,6% |
| LU | 2,3% | 10,0% | 0,6% | 1,9% | 18,4% | 0,0% | 0,1% | 1,3% | 0,2% |
| LV | 15,0% | 69,4% | 25,2% | 31,9% | 68,7% | 1,6% | 3,6% | 33,7% | 8,6% |
| NL | 4,8% | 15,4% | 2,2% | 2,6% | 23,2% | 0,1% | 0,0% | 5,6% | 0,1% |
| NO | 9,5% | 7,1% | 1,4% | 2,5% | 25,1% | 0,3% | 0,1% | 3,8% | 0,3% |
| PL | 22,4% | 67,3% | 28,4% | 28,4% | 57,0% | 1,0% | 2,9% | 22,6% | 1,2% |
| PT | 6,5% | 59,8% | 40,0% | 3,8% | 16,4% | 0,6% | 4,3% | 10,9% | 3,5% |
| SE | 7,6% | 14,6% | 2,5% | 3,2% | 13,6% | 0,4% | 0,0% | 4,0% | 0,0% |
| SI | 13,8% | 31,2% | 3,0% | 10,7% | 43,3% | 0,7% | 0,4% | 3,4% | 0,4% |
| SK | 10,1% | 57,6% | 9,7% | 36,9% | 49,2% | 0,8% | 2,1% | 27,5% | 1,0% |
| UK | 6,2% | 23,0% | 4,7% | 4,5% | 28,8% | 0,1% | 0,2% | 4,9% | 0,5% |

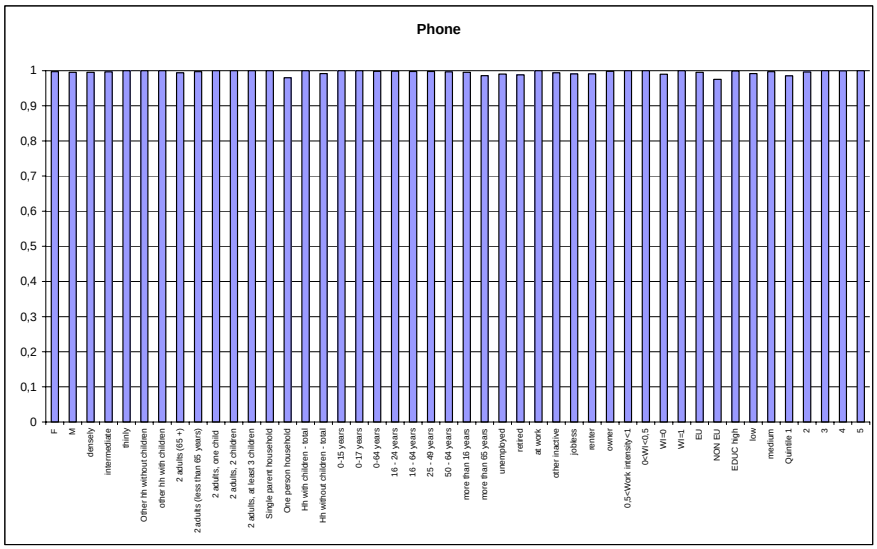
# ANNEX 5: Variations in proportion of people « wanting » the durables in Belgium

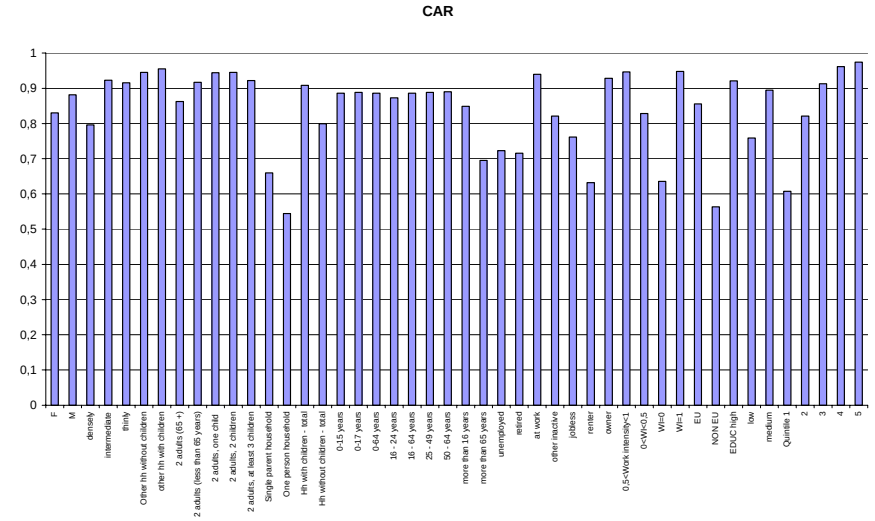
**Washing machine**




**TV**




Phone
1
0,9
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0
F
M
densely
intermediate
thinly
Other hh without children
other hh with children
2 adults (65 +)
2 adults (less than 65 years)
2 adults, one child
2 adults, 2 children
2 adults, at least 3 children
Single parent household
One person household
Hh with children - total
Hh without children - total
0-15 years
0-17 years
0-64 years
16 - 24 years
16 - 64 years
25 - 49 years
50 - 64 years
more than 16 years
more than 65 years
unemployed
retired
at work
other inactive
jobless
renter
owner
0,5<=Work intensity<1
0<WI<0,5
WI=0
WI=1
EU
NON EU
EDUC high
low
medium
Quintile 1
2
3
4
5


CAR
1
0,9
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0
F
M
densely
intermediate
thinly
Other hh without children
other hh with children
2 adults (65 +)
2 adults (less than 65 years)
2 adults, one child
2 adults, 2 children
2 adults, at least 3 children
Single parent household
One person household
Hh with children - total
Hh without children - total
0-15 years
0-17 years
0-64 years
16 - 24 years
16 - 64 years
25 - 49 years
50 - 64 years
more than 16 years
more than 65 years
unemployed
retired
at work
other inactive
jobless
renter
owner
0,5<Work intensity<1
0<WI<0,5
WI=0
WI=1
EU
NON EU
EDUC high
low
medium
Quintile 1
2
3
4
5

## Annex 6: Relative risk, by category and regions

| **Relative risk** | WA | | | FL | | |
|---|---|---|---|---|---|---|
| | **Strain+durables (3+)** | **Monetary pov.** | **Subjective pov.** | **Strain+durables (3+)** | **Monetary pov.** | **Subjective pov.** |
| ALL | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 | 1,0 |
| F | 1,1 | 1,1 | 1,1 | 1,1 | 1,1 | 1,1 |
| M | 0,9 | 0,9 | 0,9 | 0,9 | 0,9 | 0,9 |
| densely | 1,3 | 1,3 | 1,2 | 1,2 | 1,0 | 1,1 |
| intermediate | 0,8 | 0,8 | 0,9 | 0,8 | 1,0 | 0,9 |
| thinly | 0,7 | 0,9 | 0,8 | 0,0 | 0,0 | 8,5 |
| Hh with children - total | 1,1 | 1,0 | 1,0 | 1,2 | 0,8 | 1,1 |
| Hh without children - total | 0,9 | 1,0 | 1,0 | 0,8 | 1,2 | 0,9 |
| 2 adults (65 +) | 0,5 | 1,1 | 0,7 | 0,5 | 1,9 | 0,9 |
| 2 adults (less than 65) | 0,7 | 0,6 | 0,7 | 0,6 | 0,7 | 0,5 |
| 2 adults, one child | 0,7 | 0,7 | 0,9 | 0,2 | 0,4 | 0,6 |
| 2 adults, 2 children | 0,6 | 0,6 | 0,6 | 0,4 | 0,4 | 0,5 |
| 2 adults, at least 3 children | 1,1 | 0,9 | 0,8 | 1,6 | 0,9 | 1,1 |
| Single parent household | 2,4 | 2,4 | 2,0 | 5,4 | 2,1 | 3,7 |
| One person household | 1,4 | 1,5 | 1,4 | 1,8 | 1,8 | 1,6 |
| Other hh without children | 0,8 | 0,7 | 1,1 | 0,6 | 0,6 | 0,7 |
| Other hh with children | 1,1 | 0,9 | 1,2 | 1,3 | 1,0 | 1,8 |
| 0-15 years | 1,3 | 1,1 | 1,0 | 1,5 | 0,9 | 1,2 |
| 0-17 years | 1,3 | 1,1 | 1,0 | 1,6 | 0,9 | 1,2 |
| 0-64 years | 1,0 | 0,9 | 1,0 | 1,1 | 0,8 | 1,0 |
| 16 - 24 years | 1,2 | 1,2 | 1,1 | 1,2 | 1,0 | 1,3 |
| 16 - 64 years | 1,0 | 0,9 | 1,0 | 0,9 | 0,8 | 0,9 |
| 25 - 49 years | 1,0 | 0,8 | 1,0 | 0,9 | 0,6 | 0,9 |
| 50 - 64 years | 0,8 | 0,8 | 1,0 | 0,8 | 1,0 | 0,9 |
| more than 16 years | 0,9 | 1,0 | 1,0 | 0,9 | 1,0 | 1,0 |
| more than 65 years | 0,8 | 1,3 | 0,9 | 0,7 | 2,0 | 1,0 |
| unemployed | 2,2 | 2,1 | 1,8 | 2,6 | 2,0 | 2,2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| retired | 0,8 | 1,1 | 0,9 | 0,7 | 1,8 | 1,0 |
| at work | 0,5 | 0,2 | 0,6 | 0,5 | 0,3 | 0,5 |
| **Relative risk** | WA | | | FL | | |
| other inactive | 1,3 | 1,7 | 1,3 | 1,5 | 1,7 | 1,5 |
| renter | 2,3 | 2,0 | 1,8 | 3,1 | 1,8 | 2,2 |
| owner | 0,6 | 0,7 | 0,7 | 0,5 | 0,8 | 0,7 |
| W=0 | 2,5 | 2,8 | 2,0 | 3,4 | 3,1 | 2,4 |
| 0,5<W<1 | 0,8 | 0,4 | 1,0 | 0,7 | 0,5 | 1,0 |
| 0<W<0,5 | 1,5 | 1,6 | 1,7 | 2,3 | 2,0 | 2,4 |
| W=1 | 0,4 | 0,2 | 0,4 | 0,5 | 0,3 | 0,4 |
| EU | 0,9 | 0,9 | 1,0 | 0,8 | 1,0 | 0,9 |
| NON EU | 2,2 | 3,6 | 1,7 | 4,5 | 3,6 | 2,5 |
| EDUC high | 0,4 | 0,4 | 0,5 | 0,3 | 0,4 | 0,5 |
| low | 1,3 | 1,4 | 1,3 | 1,4 | 1,7 | 1,3 |
| medium | 0,8 | 0,8 | 0,9 | 0,8 | 0,9 | 0,9 |
| Quintile 1 | 2,4 | 4,3 | 2,2 | 3,5 | 6,4 | 2,7 |
| 2 | 1,2 | 0,0 | 1,2 | 1,5 | 0,0 | 1,5 |
| 3 | 0,7 | 0,0 | 0,7 | 0,5 | 0,0 | 0,8 |
| 4 | 0,2 | 0,0 | 0,4 | 0,3 | 0,0 | 0,4 |
| 5 | 0,1 | 0,0 | 0,1 | 0,1 | 0,0 | 0,2 |

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