

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

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## Abstract

In recent years research on the measurement of deprivation focuses increasingly on indices of multi-dimensional disadvantage rather than on more traditional uni-dimensional approaches of earlier studies that were focusing on income poverty. Further, the advent of panel survey data led to a large number of empirical studies that have been devoted to the investigation of dynamic aspects of poverty. Despite the availability of several longitudinal survey datasets that make it possible nowadays to use “smoothed” income distributions and identify persons who are poor in a longitudinal perspective, most empirical studies tend to use distributions of current income, thus ignoring aspects of inter-temporal transfers and income smoothing.

The present paper examines the degree of overlap between people who experience chronic material deprivation and those who face long term income poverty (longitudinal poverty) in 22 European Union member states for the period 2005-2008, using the longitudinal data set of the European Union Statistics on Income and Living Conditions (EU-SILC) UDB 2008 version 4. In order to approximate chronic relative material deprivation we use a three-step index of chronic cumulative relative disadvantage. In the first step, population members deprived in three domains of static relative material deprivation are identified. In the second step, the extent of cumulative relative disadvantage of these individuals is examined and, in the final step, persons suffering from chronic cumulative relative disadvantage over the period 2005-2008 are identified, by aggregating the information on static cumulative relative disadvantage in each year covered.

Further, we examine the overlap between chronic relative material deprivation and (smoothed) longitudinal poverty. The results reveal considerable differences across EU members regarding both the level and the structure of the population at high risk of chronic relative material deprivation and longitudinal poverty. Then, each country’s population is subdivided into mutually exhaustive and exclusive groups according to the characteristics of the population member, when the population is grouped according to seven alternative criteria: sex, age employment status and education level of the household’s reference person, age and education of the individual and household type. The results of the analysis reveal a number of qualitative similarities regarding the population groups that tend to be classified as “high risk” groups and quantitative differences regarding the “magnitude” of risk faced by these population groups, across EU member states. In almost all countries, though, under examination, lack of full employment by the individual or, especially, by the household’s reference person, low educational qualifications, being a member of a lone parent household or living in a household headed by a woman or by a very young or, to a lesser extent, an elderly person, lead to high risks of chronic relative material deprivation and longitudinal poverty.

**Keywords:** chronic relative material deprivation, EU-SILC, Europe, income smoothing, consistent poverty, longitudinal poverty

**JEL codes:** I32, I31, J64

# 1 Introduction

In recent years research on the measurement of deprivation focuses increasingly on indices of multi-dimensional disadvantage rather than on more traditional uni-dimensional approaches of earlier studies that were focusing on income poverty, while the connection of poverty to social exclusion is being investigated more systematically according to both theoretical and empirical aspects. This development can be attributed to three factors: a) the availability of adequate statistical data, b) the prevalence of relative poverty definitions over absolute ones and c) the realisation from both social scientists and policy makers that relative deprivation is not interpreted only in terms of income, but covers several aspects of social life of individuals and households.

Although a considerable number of empirical studies on poverty equate the phenomenon with lack of income, at least since the pioneering work of Townsend (1979), many social scientists have argued that poverty is a multi-dimensional phenomenon and several of them have incorporated aspects of multi-dimensional deprivation in their analysis. Further, in recent years with the advent of panel data and the extensive use of administrative records, a large number of empirical studies have been devoted to the investigation of dynamic aspects of poverty. It should be noted, that most empirical studies tend to use distributions of current income, thus ignoring aspects of intertemporal transfers and income smoothing. This is the reason why a number of authors seem to suggest that it might be preferable to use consumption rather than income as a proxy for the unobserved welfare level of individuals in distributional studies [Sen (1976), Deaton (1981)]. If longitudinal data are available on the other hand, it is possible to use 'smoothed' income distributions and identify persons who are poor in a longitudinal perspective.

The present paper builds on earlier work of the authors<sup>1</sup> and examines the degree of overlap between people who experience material deprivation and those who face long term income poverty in EU countries for the period 2005-2008. More precisely, using the longitudinal data set of the European Union Statistics on Income and Living Conditions (EU-SILC) UDB 2008 version 4, we analyse whether population groups among those suffering from chronic material deprivation and the long term poor overlap, and the determinants of relative material deprivation and long term income poverty. The analysis is dynamic in nature since, apart from using a long term poverty indicator, it is also based on a chronic cumulative (multi-dimensional) disadvantage index. The latter is constructed in three steps in order to measure the magnitude of relative material deprivation, taking into account a person's relative deprivation in various categories besides income (satisfaction of basic needs, possession of consumer durables, being able to meet housing needs) for a period of three years. Our general approach is the following: in the first step, we construct static indicators of deprivation in the three aforementioned categories. In the second stage, we 'aggregate' this information in order to derive a static indicator of relative cumulative disadvantage. In the third stage, we focus on chronic cumulative relative disadvantage by aggregating the information on each year's relative cumulative disadvantage index. We believe that this index, given the constraints posed by the available data, may be considered as a reasonable approximation to the concepts of 'chronic relative material deprivation' or, if more relevant variables are available, even 'social exclusion', since long-term relative deprivation can potentially lead to social exclusion. Any person who is deprived of access to

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<sup>1</sup> See Tsakloglou and Papadopoulos (2002a, 2002b), Papadopoulos and Tsakloglou (2008)

basic features and benefits of the society for a considerable amount of time runs a higher risk of being in a state of social exclusion in comparison to the rest of society.

## **2 Poverty, multi-dimensional material deprivation and social exclusion**

### **2.1 A theoretical background**

The importance of a clear definition of poverty in policy terms, derives from our need to solve the problem of identification of the poor, i.e. to separate the poor from the non-poor. In this sense, the income criterion has been traditionally a clear and easily applicable approach for calculating poverty lines. Callan and Nolan (1991) present a comprehensive literature review of poverty and poverty line definitions. They found out that up to that point, academic research had focused more on the summation of the poor, given the poverty line and, therefore, the performance of the poverty level in a centralised index for society (aggregation problem), rather than the problem of identifying the poor. The value of the poverty index provides us with important information about the extent of poverty in a country, or the level of magnitude that people suffer in terms of inequality and poverty depth. Depending on the complexity of the index used, this is very useful in comparisons between countries. In practice, however, what is important for the effectiveness of policies to combat poverty is to identify people at risk of poverty and the characteristics of those at risk of poverty or material deprivation in general. In this sense, the answer to questions like "Who are the poor?" and "Based on which parameters will it be decided whether some people are at risk of poverty in a society?" are much more important issues for social policy planning than simply to calculate the aggregate poverty index.

The concept of poverty according to which poverty is defined as income below a predetermined threshold is characterized as one-dimensional (Watts, 1968). The one-dimensional measurements of poverty have a number of advantages over the multi-dimensional measurements: a) they are easily measurable, since they are based on a single variable (income or consumption) contained in most households surveys, b) they separate the poor from the non-poor according to a single criterion (poverty line), therefore those identified as poor have similar characteristics against this criterion, c) the total summation of poverty (i.e. the calculation of the poverty indicator) easily meets specific axioms and d) they facilitate dynamic definitions of poverty, as the researcher has to observe the temporal change in the state of individuals in terms of poverty based on a single criterion.

However, as has been already mentioned, it is widely accepted that relative deprivation is not interpreted only in terms of income, but covers several other aspects of social life of individuals and households. It is now agreed that individuals with the same income may or may not suffer the same levels of deprivation. Numerous papers support at both the theoretical and the empirical level the need for a multivariate measurement of poverty that takes into account the position of an individual vis-a-vis the poverty threshold based on various parameters besides income,<sup>2</sup> such as the educational level, the health status, the possession of consumer goods, the satisfaction of specific needs, the participation in social life, the social capital, etc. [see Alkire and Foster (2011), Anand and Sen (1997),

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<sup>2</sup> See also Belhadj (2012) regarding the issue of weighting between different dimensions of multi-dimensional poverty indices.

Bossert et al. (2012), Bourguignon and Chakravarty (2003), Deutsch and Silber (2005), Duclos et al. (2006), Kakwani and Silber (2008), Perez-Mayo et al. (2007) and Tsui (2002)].

The need for a comprehensive assessment of the individual's access to functions of society such as work, health, education and welfare services, the financial system, etc. becomes even more relevant during a period of economic crisis. For example, the inability to have a bank account or obtain a loan may well be factors increasing the risk of social exclusion and they ought to be considered together with other parameters. Measuring deprivation by means of a relative index has the disadvantage that during a recession (or, even worse, during a full blown economic crisis) more people in a particular society no longer have access to these services / goods which can ultimately lead to deprivation measurements that produce results that underestimate the actual level of social exclusion. This is a similar problem to the reduction of a relative poverty index when all incomes face a marginal reduction but the overall income inequality gets slightly improved.

Moreover, the inability of income alone to depict the actual level of economic welfare of a person or a household (especially during times of economic crisis) has led some researchers to explore more the idea of 'vulnerability'. According to this framework of analysis, the level of 'vulnerability' is a function of not only income but also of total wealth and the overall creditworthiness of individuals, ensuring their access to borrowing. For example, two people with the same income located marginally above the poverty line but having different levels of wealth, have very different capabilities to normalize their consumption in times of economic crisis. This aspect of welfare could have never been captured by a traditional poverty measure based solely on income. Azpitarte (2012) takes into account the level of a person's wealth together with income earned in a particular period in order to group the poor in the following categories: The 'twice-poor', those who are below the poverty line and have no stock of wealth; the 'protected-poor' located below the poverty line but have some stock of wealth; and the 'vulnerable non-poor' those that are currently above the poverty line, but do not hold any stock of wealth.

As a result, the literature on multi-dimensional poverty measurement focuses on the following key issues: a) the aspects of economic and social life that will be considered, b) how will these aspects be grouped and assigned to one variable, c) what are the thresholds (compared to the poverty line) for each of these parameters, d) how will deprivation levels in one or several of these parameters can be synthesized in a single multi-dimensional deprivation/poverty indicator. An example of such an attempt to measure poverty using a multi-dimensional approach is the concept of "consistent" poverty proposed by Callan et al. (1993) and Nolan and Whelan (1996)<sup>3</sup>. According to this approach poverty status is attributed by using both income poverty measures (lack of resources) and measures of material deprivation (low standard of living). Households are classified as poor only if they fall short in both domains which, according to the authors, should be given an equal weight.

Together with the expansion of the academic literature towards a multivariate definition of poverty or material deprivation in general, the policy debate on the European Union social agenda has also shifted in recent years towards a multi-dimensional measurement of human welfare, which defines social inclusion beyond the narrow definition of cash income and/or possession of wealth and generally beyond the person's ability to consume [Brandolini (2002)]. However, as emphasized by Atkinson et al. (2002), this broader definition and measure of social participation requires a common

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<sup>3</sup> For a more recent study and applications on the subject see also Whelan et al. (2006), Nolan and Whelan (2011)

agreement, firstly, on the dimensions of an individual's social life which define social inclusion and, secondly, on the method of incorporating these dimensions into specific welfare indicators. This agreement constitutes the essence of operationally linking multivariate poverty to social exclusion.

Another framework of analysis for welfare deprivation (whether this is multivariate poverty or social exclusion) that has been used extensively over the past two decades lies within the space of Amartya Sen's theory of 'capabilities'. According to this approach, a person's failure to fulfil a particular minimum set of 'capabilities' reduces the opportunities for material prosperity. The criteria for the definition of that particular set of minimum 'capabilities' may vary depending on time and society (relative component), but the actual lack of these minimum "capabilities" defines a state of welfare deprivation in absolute terms and not in comparison to other individuals in a particular society [Sen (1981,1983, 1985a, 1985b, 1987, 1993)]<sup>4</sup>. The combination of multi-dimensional poverty measurement under Sen's 'capabilities' framework together with the theory of relative deprivation developed by Runciman and Townsend [Runciman (1966), Runciman and Bagley (1969), Townsend (1985)] - which gave rise to the perception of poverty as a relative phenomenon dependent on a particular society's income distribution, rather than a lack of resources to meet basic survival needs<sup>5</sup> - provided the basis for the development of theories of social exclusion after the 1990s.

In more general terms, a relativist approach to social welfare had already been prevalent in social sciences since 1949, when Duesenberry argued that people imitate the consumption patterns of those with higher social status than themselves, thus attributing, implicitly, the concept of relative deprivation to economic behaviour. The personal disposable income, which is the essential component of models of utility maximisation, is not by itself enough to capture, in relative terms, the individual well-being. A person's welfare level should instead be described in a comparative manner on the basis of a reference group and other non-income parameters ought to be taken into account. According to the economics of happiness and well-being, which have been highly developed during the past two decades, individual happiness and prosperity are in essence synonymous with the important question being the empirical identification of their determining factors [Blanchflower and Oswald (2004), Easterlin (2001, 2002) Ferrer-i-Carbonell (2005) Ferrer-i-Carbonell and Frijters (2004) Rayo and Becker (2007) and Hopkins (2008) for a direct connection between behavioural theories and the relationship between individual happiness and social inequality].

The actual term 'social exclusion' was first used in France in 1974 by René Lenoir, in order to describe the fact that about one tenth of the French population had no access to basic services provided by the state to citizens [Lenoir (1974)]. Since then, the term is widely used in the literature of economic and social inequality in a manner complementary to, or as a substitute to that of income poverty. The inability of people to participate in key political, economic and social functions or, in other words, to deprive the individual of fundamental political, economic and social rights is the core of the concept of social exclusion [Byrne (1999), de Haan (1998), Silver (1994), Walker and Walker (1997), Burchardt et al., (1999, 2002)]. In other words, social exclusion refers to the potential inability of individuals to access basic social institutions, such as the labour market, the health system, the education system, the state or the community.

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<sup>4</sup> See also Betti et al. (2000), Deutsch and Silber (2005), Duclos et al. (2006), Kakwani and Silber (2008), Perez-Mayo et al. (2007) and Tomaszewski (2006).

<sup>5</sup> See Calan and Nolan (1991), Hagenaars and De Vos (1988), Jantti and Danzinger (2000), Kakwani (1984a), Orchansky (1965) for analysis based on absolute poverty definition and measurement.



Over the past decade there has been a general consensus among social scientists belonging to various disciplines regarding a number of attributes of social exclusion [Room (1995), Atkinson (1998), Sen (2000), Atkinson et al (2002)]:

- *It is multidimensional* and implies deprivation in a wide range of indicators of living standards. Usually, this deprivation has a neighbourhood dimension, since it can be caused not only by lack of personal resources but also by insufficient or unsatisfactory community resources.
- *It is dynamic* and implies that people are excluded not just because of their current situation, but also because they have little prospect for the future.
- *It is purely relative* since it implies exclusion from a particular society at a particular point in time.
- *It has an agency dimension*, in the sense that social exclusion lies beyond the narrow responsibility of the individual concerned.
- *It is relational*, in the sense that it implies a major discontinuity in the relationship of the individual with the rest of society, inadequate social participation, lack of social integration and lack of power.

Comparing the concept of social exclusion to the one-dimensional approach to poverty, it is first understood that social exclusion is closer to the relative approach of poverty, according to which poverty is associated mainly with the inequality of income distribution in a society rather than a minimum income below of which it becomes more difficult for individuals to survive (survival benchmark). On the other hand social exclusion lies in the space of 'capabilities' and as such, it is a multi-dimensional phenomenon. In practice though, the notion of "social exclusion" is very broad and there is no full consensus on its empirical operationalisation, let alone the fact that data requirements are daunting and there is no 'perfect' data set for a full implementation of the popular definitions. Therefore, in practice, the measurement of social exclusion is usually approximated by the measurement of multidimensional poverty. Variations in the relevant literature are usually related to the criteria used to classify an individual as socially excluded or poor (heavily dependent on data availability ) and the aggregation methods developed by numerous researchers [Atkinson (1998), Bossert et al. (2007), Bradshaw et al. (2000), Burchardt et al. (2002), Burchardt et al. (1999), Byrne (1999), Chakravarty and D' Ambrosio (2006), Papadopoulos and Tsakloglou (2008), Tsakloglou and Papadopoulos (2002a, 2002b), Walker and Walker (1997), Heady et al. (2001)].

## **2.2 Empirical studies**

On the subject of the quantification of social exclusion, or more generally speaking, of multi-dimensional deprivation, different researchers make use of different approaches to tackle both the identification and aggregation problems, in an effort to suggest a common ground in the empirical implementation of these complex social phenomena. Sen (2000) for instance, suggests that this calls for discrete treatment in areas such as:

- lack of access to health care,
- lack of educational opportunities,
- absence of social safety nets,
- credit market exclusion,

- lack of facilities for disabled persons,
- marketing limitations,
- political and cultural exclusion,
- employment exclusion, etc.

Especially for the latter, Sen (1997) points out that labour market exclusion and social exclusion are not one and the same thing and should not be treated as such; although he admits that that long term unemployment can be both a constitutive and instrumental factor in an exclusionary process.

Burchardt et al. (1999) developed a multidimensional method of measuring social exclusion based on a definition of participation in various activities and functions of the society: consumption, savings, and production, social and political participation. Using the British Household Panel, they conclude that during the period between 1991 and 1995, while there is a strong correlation between deprivation in any one of the above five factors and deprivation in the rest of factors, few people present deprivation in all five dimensions for any given year and a lot less across time. Therefore, they conclude that there is no single homogenous group of socially excluded people, but several subgroups that share some common characteristics.

On a similar note, Bradshaw et al. (2000) explore four dimensions of social exclusion: income poverty, exclusion from the labour market, exclusion from certain services and deprivation in social relations, while Eurostat (2000) proposes 15 non-income parameters for the assessment of social exclusion, which – although not totally independent from monetary income – have the following added characteristics: a) they reflect negative aspects of everyday life, common to many EU Member States and b) they allow for comparative and inter-temporal analysis under a common framework.

Tsakoglou and Papadopoulos in a series of papers [Tsakoglou and Papadopoulos (2002a, 2002b), Papadopoulos and Tsakoglou (2008)] using data from the European Community Household Panel (ECHP), investigate aspects of social exclusion related to multi-dimensional relative deprivation in the following areas: a) income poverty, b) living conditions (which involve parameters of satisfaction of basic housing and living conditions and the possession of consumer durables), c) necessities of life (which involve the ability of households to perform a number of activities which are considered quite basic) and, finally, d) deprivation in the domain of social relations. The results of their research show that citizens in the EU member states with a 'South European' or a 'Liberal' welfare state regime have higher chances of being socially excluded than citizens in member states with 'Social Democratic' or 'Corporatist' regimes<sup>6</sup>. Fusco (2005, 2006) also uses the European Community Household Panel to examine the overlap between income and multidimensional measurements of poverty and reports relatively limited overlapping.

Following a different route, Chakravarty and D'Ambrosio (2006) develop an axiomatic approach to measuring social exclusion by using subgroup decomposable and subgroup non-decomposable indices, and present a case study of their indicators using data from the European Community Household Panel. They construct their indicators using variables measuring financial difficulties, basic needs, housing conditions, possession of durable goods, health, social capital and personal satisfaction. In the same spirit, Bossert et al. (2007), also by means of an axiomatic approach, address social exclusion as a multi-dimensional functioning's failure. The overall level of social exclusion in a society is defined as the sum of individual social exclusion experiences. Their case study is also based

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<sup>6</sup> For their classification of welfare state regimes see Esping-Andersen (1990) and Ferrera (1996).

on the European Community Household Panel and, according to their analysis, EU countries can be grouped in three categories according to their severity of social exclusion. The first group, with high levels of exclusion, consists of Portugal and Greece, the second with intermediate levels of exclusion consists of Ireland, Spain and Italy and the third that contains France, Belgium, Denmark and the Netherlands consists of countries with relatively low levels of social exclusion. The rankings remain almost unchanged for the eight years (1994-2001) of the study.

A key question on the subject of quantification of social exclusion and/or relative multi-dimensional deprivation, involves the reference group to which a person in a particular society compares her/his individual prosperity with. Clark and Senik (2009), attempt to empirically identify the magnitude and direction of income comparisons between individuals. They find that most people compare their income to that of their colleagues, their friends and members of their family. One practical problem with this approach is that often in the empirical analysis of poverty and social exclusion, it is not possible to identify groups with such features for each person. Therefore, it is more common in practise to measure relative deprivation by using the whole sample of a particular country (or a reference population in general). It is very rarely attempted to define reference groups by using other criteria such as income range, social class, geographic clustering etc. Van Praag (2010) tries to define a person's reference group as the distribution of people who have the characteristics that a particular person defines as determinants of her/his welfare. Research is not particularly rich when it comes to the identification of an individual's reference group at both the theoretical and the empirical level - most probably due the lack of adequate data available. It should be noted, though, that these approaches have an inherent drawback since the very concept of social exclusion implies that the reference group should be the entire society rather than a subset of individuals.

Finally, Whelan et al. (2003) were the first to put an emphasis on the aspect of time in relative welfare deprivation and they compared it empirically to long-term poverty, while Tsakloglou and Papadopoulos (2002a, 2002b) used the dimension of time in the way they defined empirically social exclusion by applying the concept of chronic cumulative disadvantage; that is, an index based on multi-dimensional static indices of deprivation over a period of time. However, only a few studies explore social exclusion or multi-dimensional deprivation in a more dynamic context. For example Poggi (2007) examines the dynamics of state dependence, i.e. whether being in a state of social exclusion (or, more generally, at high risk of multi-dimensional deprivation) at any given time depends on the experience of social exclusion (or at high risk of multi-dimensional deprivation) in the past. The results suggest that this holds to a significant extent in Spain (the reference country of the study).

### **3 Empirical implementation**

#### **3.1 Data and methodology**

Taking the above into account, it is clear that there is no general consensus on a commonly accepted methodology for the empirical identification and measurement of the various forms of multi-dimensional (material) deprivation, whether this takes the form of multi-dimensional poverty or social exclusion. The brief literature review that preceded shows that different researchers specify their methodology in different ways in order to address issues of identification and aggregation in an

effort to identify: a) population groups at high risk of multi-dimensional deprivation and b) factors associated with the probability of being in a state of deprivation. Moreover, quite often the methodology used is driven by data availability.

Any attempt for an empirical application is likely to encounter serious obstacles that have to do with the availability of the necessary data for such analysis. Because of the multi-dimensional and dynamic nature of this phenomenon, it is required to have information on living conditions and individual characteristics of population members, for a number of variables covering all key constituent aspects of social deprivation. Moreover, it is not enough for the data to be cross-sectional, it is also necessary to have a time dimension, given the dynamic nature of the phenomenon under study. It is very difficult, if not impossible, to have a 'perfect' dataset in any country or international organization, which fully covers all the facets of multi-dimensional deprivation without the researcher having to make compromises dictated by the availability of the existing information.

For the purposes of our analysis we will be using the longitudinal data set of the European Union Statistics on Income and Living Conditions (EU-SILC) UDB 2008 version 4. This is a harmonized survey, conducted annually throughout the European Union's Member States since 2003, under the responsibility of Eurostat and it is the follow-up survey of the European Community Household Panel (ECHP), which covered the period 1994-2001 (for the EU-15 countries). The main difference between the two surveys is that while ECHP was a full panel, i.e. the whole sample of individuals and their households that participated in the initial wave was followed in all subsequent waves, EU-SILC is a rotating panel and every year one quarter of the initial sample is renewed. Therefore, in a total of four years, the initial sample will be completely replaced; in other words, the maximum amount of time that any given individual remains in the sample is four years. This method has, on one hand, the advantage of dealing with the problem of attrition which is prevalent in full panels as years go by, but on the other hand, it suffers from the fact that four years is a rather short period of time for the purposes of a dynamic analysis of income or multi-dimensional deprivation.

Nonetheless, the sample at any given time is representative for the total population living in private households and the collected data contain information on the living standards of households and their members using common definitions, information collection methods and editing procedures. It contains detailed information on incomes, socio-economic characteristics, housing amenities, possession of consumer durables, employment status, subjective evaluations of well-being etc. Finally, the fact that the survey is repeated every year in the form of a panel data set (even as a rotating panel), allows for the study of not only static but also dynamic (or chronic) phenomena, such as social exclusion or long term poverty. Unfortunately, no one can claim that this ambitious effort is not without problems, especially with regards to a multi-dimensional deprivation analysis. Firstly, only a relatively small number of the many variables that are proposed in the literature as constituent to the various aspects of multi-dimensional deprivation is collected and an even smaller number actually appears in the longitudinal data set. Secondly, it should be noted that with regards to a potential analysis of deprivation under Sen's framework of 'capabilities', the information collected more often refers to simple 'functionings'<sup>7</sup> of the individuals rather than their 'capabilities'. In any case, despite all these restrictions the EU-SILC provides us with data that allow us to develop an empirical method of quantifying multi-dimensional material deprivation, examining its overlap

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<sup>7</sup> See Sen (1985a).

with income poverty, performing cross country comparisons while identifying risk groups within the population of EU member states.

The sample used for the purposes of our analysis consists of the balanced panel of all individuals<sup>8</sup> who appear in the longitudinal dataset for three or four years. The reason behind this restriction is that we aim for the construction of an index of chronic deprivation and, as it has already been mentioned, the maximum amount of years an individual appears in the sample is four. Given this, we needed to find a compromise between having a sample for the maximum amount of time (four years) and not dropping too many cases that could bias our results. Every version of the longitudinal dataset of the EU-SILC contains four years of information. The one we use here (UDB 2008 version 4) contains information for years 2005 – 2008. Due to the rotating nature of the panel, only a small fraction of the sample is present for the whole four year period. Hence, our choice is to include all individuals who appear also in the first or the last three waves of the 2005 – 2008 period and restrict the construction of our chronic deprivation indicator to a window of any three years between 2005 – 2008. This choice is not uncontroversial but it is probably the best approximation given the nature of the initial data set. We still cannot really tell whether this biases our estimations since for any given wave we drop a considerable number of records (those that appear in the panel for only one or two waves).

In terms of cross-country comparisons we managed to use information for 22 EU member states. Unfortunately, Germany, Croatia and Malta are missing from the longitudinal EU-SILC UDB 2008 (version 4) . Further, we were unable to use the available information on Bulgaria and Romania due to the fact that only three waves within this period were available for the former and two for the latter. Finally, we had to drop Netherlands from our analysis since we did not have information for the full set of variables needed for the construction of our indices.

Our three step approach is the following: first, we construct static indicators of relative deprivation in particular domains. In the second step, we aggregate this information in order to derive a static indicator of cumulative relative disadvantage. In the final step, we focus on chronic material deprivation which will be approximated by our index of chronic cumulative relative disadvantage.

Of the various blocks of information available in the EU-SILC, we selected three in order to proceed to the construction of the static deprivation indicators for each wave (satisfaction of basic needs, possession of consumer durables, being able to meet housing needs). EU-SILC contains information on a number of other domains that, under different circumstances, could be exploited for the purposes of the identification of population members at high risk of chronic material deprivation (such as highest education level attained, indebtedness, social security coverage, etc.). This information is not used for various reasons (quality of information, cross-country comparability, information related to outcomes rather than the causes of deprivation). Moreover, we are not using income as one of the dimensions of deprivation because we tend to compare our estimates of chronic cumulative disadvantage to long term income poverty by comparing the overlap between the two phenomena. Finally, no indicators of labour market exclusion are included among the deprivation indicators for two reasons. First, if we were to include labour market status among the indicators of deprivation, a considerable proportion of the population that cannot participate in the labour market is left out of the analysis (including some potentially vulnerable groups such as the

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<sup>8</sup> It should be noted that all our results are based on distributions of individuals (household members), although almost all the variables used were collected at the household level.

elderly, the inactive, etc.). Second, using the information available we run the risk of confusing the cause (adverse employment history) with the outcome (material deprivation or social exclusion).

### **3.2 Chronic material deprivation and long term poverty – empirical results**

Regarding the construction of static indicators, the pieces of information used, in more detail, are the following<sup>9</sup>:

1. Deprivation in the possession of consumer durables. A person's household cannot afford to own the following goods:
  - a. Telephone (land line or cellular)
  - b. Colour TV
  - c. Computer
  - d. Washing machine
  - e. Car
2. Deprivation in satisfaction of basic household needs. A person's household:
  - a. Faces arrears in paying utility bills
  - b. Cannot afford paying for one week annual holiday away from home
  - c. Cannot afford a meal with meat, chicken, fish (or vegetarian equivalent) every second day
  - d. Does not have the capacity to face unexpected financial expenses
3. Deprivation in meeting housing needs. A person's household:
  - a. Does not dwell in a home with enough rooms to cover all its members' needs<sup>10</sup>
  - b. Faces problems with leaking roof, damp walls / floors / foundation, or rot in window frames or floor

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<sup>9</sup> We are following a slightly different route than the one adopted by EUROSTAT in order to calculate their headline indicator to monitor the EU 2020 strategy poverty target, namely the AROPE indicator. This refers to the situation of people either at risk of poverty (1), or severely materially deprived (2) or living in a household with a very low work intensity (3) [see [http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:At\\_risk\\_of\\_poverty\\_or\\_social\\_exclusion\\_%28ARPE%29](http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:At_risk_of_poverty_or_social_exclusion_%28ARPE%29)]. Starting from the last component, persons living in households with low work intensity are defined as those that live in a household with a work intensity score (total actual number of months all household members have worked over the maximum amount of months the same members could have worked during a year) below 0.20. The first component is a standard head count ratio where the poverty line is set at the 60% of the median equivalised household disposable income. Finally, as severely materially deprived are people that are not able to afford at least four of the following nine items (pay rent, mortgage or utility bills, keep their home adequately warm, face unexpected expenses, eat meat or proteins regularly, go on holiday, a tv, a washing machine, a car and a telephone). For further information on the matter and more particularly on the EU material deprivation indicators currently used and possible expansions see Guio (2009), Guio, Fusco and Marlier (2009), Guio, Gordon and Marlier (2012), and Guio and Marlier (2013) as well as the work of Ayllón and Gábos (2015) regarding the interrelationships between the three components of the AROPE indicator and the possible prevalence of dynamic state dependence and feedback effects.

<sup>10</sup> In order to construct this particular variable, we follow Neufert (1974) and compare the rooms that every home actually have with the household's potential minimum needs in rooms. To identify these needs we estimate that a separate room (except from the bathroom and the kitchen) is required for each pair, for every two children up to 12 years old and for each additional person over 12 years of age. Then, we compare the sum of the minimum necessary rooms for every household in comparison to the actual number. If the actual number of rooms is greater than or equal to the number resulting from the potential household needs, we consider that it is the specific housing need is met.

- c. Does not have the ability to keep home adequately warm
- d. Does not have a bath or shower in the dwelling
- e. Does not have an indoor flushing toilet for the sole use of the household

It is understandable that each one of the used variables within these three static indicators is not equally important in all countries. Hence, in order to aggregate the available information into a single 'welfare' indicator in each of the three domains, for every item under consideration, we assigned to each population member living in a particular country and having access to a particular item (housing amenity or lack of a problem or possession of a particular durable good), a weight equal to the proportion of the country's population living in dwellings not lacking the corresponding amenity, or not reporting the relevant problem or not reporting enforced lack of the particular durable good. As a consequence if a particular item is very rare (common) in a particular country, an individual living in a household with such an item is assigned a low (high) welfare weight. Then, the weights of each person are added and the resulting sum is divided by the sum of the average welfare scores for each item for the entire population of the country under consideration. In algebraic terms, the formula used for the calculation of each person's welfare indicator ( $u_j$ ) is:

$$u_j = \frac{\sum_{i=1}^I w_i X_{ij}}{\sum_{i=1}^I w_i} \quad (1)$$

Where  $I$  is the total number of items for which information is available (i.e. 5 items for the index of deprivation in the possession of consumer durables, 4 items for the index of deprivation in satisfaction of basic household needs and 5 items for the index of deprivation in meeting household needs),  $w_i$  is the proportion of the country's population living in accommodation with housing amenity or lack of a problem or possession of a particular durable good  $i$ , and  $X_{ij}$  is a binary variable that takes the value of one (1) if individual  $j$  lives in a household that possesses the particular durable or meets the specific need or does not have the particular problem  $i$  and the value of zero (0) otherwise. As a result, for each population member we estimate three welfare indicators,  $u_i$ , -one for each category of static material deprivation, as presented above – that take values between 0 (complete deprivation) and 1 (no deprivation).

Finally, a cut-off point in the distribution of each of these three welfare indicators is selected and the population members falling below this threshold are defined as persons at high risk of deprivation in the respective domain. For the purposes of our analysis, we selected a cut-off point equal to 85% of the median of each distribution of the above three indicators. One note needs to be made on the subject before we proceed with the presentation of the results of our exercise. We experimented with various cut-off points before selecting the 85% cut-off point. While doing so, we faced two problems. First, the idea behind the construction of the three static indicators of material deprivation is to create three quasi-continuous distributions and then treat those distributions in the same way as one would do for the case of relative income poverty and end up with a particular deprivation ratio for the total population (one for each category). The more variables (items) enter in the construction of these welfare indicators, the smoother the distribution gets and, as a result, the deprivation outcomes behave smoothly as one moves the deprivation cut-off point to different percentages of the median of the distribution. Unfortunately, we did not have a large number of

variables for each deprivation indicator with the result being that the final distributions are more discrete than linear. This means that moving the cut-off point leads to discrete jumps in the final outcomes of the deprivation ratios for the total population. While having this in mind, the second issue we had to tackle is that since this is a comparative study, we needed to choose a cut-off point that would allow us to perform our analysis for all countries of our sample. Some countries perform badly and some extremely well and we had to compromise between having enough cases to perform our analysis for the countries that perform well but at the same time having somewhat 'larger than usual' deprivation ratios in the case of countries that do not perform very well. Naturally, the particular threshold that was finally selected is quite arbitrary. However, evidence available from the authors on request shows that the results are fairly robust in terms of the ranking of the various countries when the cut-off point changes but, of course, not so much regarding the share of the population classified as deprived.

The resulting estimates of the methodology we presented so far by using the third wave of the longitudinal dataset of the EU-SILC UDB 2008 version 4 (i.e. year 2007) are reported in Table 1. The three columns report the proportion of the population of each country that is found to be deprived by using the estimated indices of deprivation in the possession of consumer durables, in the satisfaction of basic household needs and in meeting housing needs. In order to better present our estimates and capture effects that can be attributed to differences in welfare state regimes, traditions, economic history, etc., we are grouping countries by using mainly geographical criteria. We follow a rather standard type of clustering where the 22 available countries are grouped into six clusters: Southern Europe (Cyprus, Greece, Italy, Portugal and Spain), Continental Europe (Austria, Belgium, France and Luxembourg), the Nordic Countries (Denmark, Finland and Sweden), the Baltic Countries (Estonia, Latvia and Lithuania), the Central-Eastern European cluster consisting of the ex-socialist countries (Czech Republic, Hungary, Poland, Slovakia and Slovenia) and finally the more liberal Anglo-Saxon group of UK and Ireland. All results on the clusters presented are produced ex-post by taking the means of the individual countries of a cluster for the relevant deprivation index. We follow this presentation template for all results presented in the paper.

With regards to the deprivation index in the possession of consumer durables, there appear to be some substantial cross country/cluster differences. In general, higher deprivation rates are reported in the poorest EU member states. Nonetheless, it should be kept in mind that these scores are purely relative, in the sense that they have been derived by using cut-off points based on national distributions. This particular index produced the lower deprivation rates of the three and this comes as no surprise since the constituent variables that were used in the calculation of the index refer to the possession of very basic durable goods. Nevertheless, there are cases of countries and clusters that present a considerable level of deprivation. The three Baltic countries score over 20% on the index; with the Central-Eastern European cluster following with 12.9% (only Slovenia has a deprivation rate lower than 10%). On the other side the relevant number is only 4.6% for the Nordic countries. Other cases that score relatively high percentages of deprivation especially in comparison to their cluster are Portugal and Greece with deprivation rates of 15.2% and 10.1% respectively, in comparison to the Southern European average of 7.1% and Belgium with 10% in comparison to the average 7.5% of its cluster.

The general picture is quite similar in the case of the basic household needs indicator. The main difference is that the deprivation scores are substantially higher. This time, the variables used for the calculation of this indicator refer to subjective evaluations of well-being and, as a result, there are



considerable cross-country differences in the estimates. Although with regards to the country clusters estimates are over 30% in all clusters but the Nordic Countries, where the respective percentage is 18.8%, there appears to be quite large dispersion regarding the deprivation ratios within each cluster. In Southern Europe for example estimates vary from 21.3% in Portugal to 44% in Spain. Even in the Nordic Countries the highest ranking Finland is scoring almost twice as much in the relevant ratio as Denmark (the lowest ranking country of the cluster). Cross-cluster differences are much more prevalent when it comes to the final static indicator of deprivation in meeting basic housing needs. In this case the variables used are a mixture of subjective evaluation of well-being and objective deprivation of basic amenities related to the dwellings of households. Nordic Countries again are found to have the lowest ratios of people deprived in this area with a respective average percentage of 14%, while at the other end of the distribution the corresponding figure for the Baltic countries is on average 38.9%. It is interesting to note that in comparison to the other two indices of static deprivation where the Central-Eastern European cluster's estimated average deprivation rate was considerably higher than that of Southern Europe, the picture in the housing index is reversed and the actual deprivation rates in Central-Eastern Europe are, on average, on par with those for the Continental Europe (in fact Slovakia has the lowest percentage across all countries with 7%). Again, there are also considerable within cluster differences with the most striking ones being in Southern Europe (17.6% in Cyprus compared to 41.1% in Italy) and in Central-Eastern Europe (7% in Slovakia compared to 43.8% in the Czech Republic<sup>11</sup>).

In the next stage, we proceed to the examination of the 'cumulative relative disadvantage' experienced by the members of each country's population; that is, the number of indicators according to which each population member is classified as deprived. It should be noted that this approach is not uncontroversial, since it gives equal weight to all three deprivation indicators used. The corresponding estimates, using the third wave of the longitudinal dataset of the EU-SILC UDB 2008 version 4 (i.e. year 2007) are reported in Table 2. In three out of six clusters (namely, Central Europe, the Nordic Countries and UK & Ireland), consisted mainly of "richer" countries, the majority of the population is not classified as deprived according to any of the four deprivation indicators. The population is more or less split in half between not being deprived in any indicator and being deprived in any one of the three indicators in Central-Eastern and Southern Europe and only about 42% on average is not deprived in any of the three categories in the Baltic Countries. The proportion of the population classified as deprived according to at least one indicator varies extensively even within clusters and across the board from 23.5% in Denmark to over 60% in Greece, Italy, Latvia and the Czech Republic. In all countries, substantially fewer population members are classified as deprived according to at least two indicators than according to one indicator. Finally, the proportion of the population classified as deprived according to all three indicators varies between 1.1% in Denmark (the 0.9% in Cyprus should be treated with caution since it is based on a small number of observations) and 11.5% in Latvia. Undoubtedly, being classified as deprived according to one

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<sup>11</sup> Further analysis on this outcome revealed that it is attributed to the aforementioned issue with the discrete nature of the initial welfare index distributions (discontinuous distribution of welfare scores). Moving the cut-off point from 85% to 80% of the median of the distribution of the respective deprivation indicator produces 7% deprivation for Slovakia and 12.9% for Czech Republic. This is actually a good illustration of the issue presented before regarding the arbitrary cut-off points used. Again, the ranking between countries remains robust (although less so for the case of the housing indicator) but the share of the population classified as deprived may change dramatically especially if there is considerable concentration of cases near the threshold. Of course this is a problem inherent to all relative deprivation indicators, like the poverty head count ratio.

criterion only may be due to a chance factor. On the contrary, limiting the group of people at high risk of cumulative disadvantage to those classified as deprived according to all three criteria would, in many cases, restrict our focus to an extremely small group of seriously disadvantaged persons and would not allow any further analysis of the group's characteristics. Therefore, we decided to consider as persons at high risk of (static) cumulative relative disadvantage, those that are classified as deprived according to at least two of the above deprivation indicators. Using this criterion the population share of the group varies between 5.6% in Denmark and about 30% in Lithuania, Latvia and the Czech Republic<sup>12</sup>. High shares are recorded in the Baltic Countries, Southern and Central-Eastern Europe, although, again, cross country differences within the clusters are considerable.

As noted earlier, one of the characteristics of welfare deprivation that has been emphasised in the literature, especially that of social exclusion, is its dynamic nature. Being excluded today may lead an individual into a trap with little prospect of escaping exclusion in the future. Table 3 provides estimates about the number of times each country's population members are classified as being at high risk of cumulative relative disadvantage during a period of three years using the longitudinal sample of EU-SILC UDB 2008 version 4. Taking into account the evidence of Tables 1 and, particularly Table 2, it is not surprising to find that in all countries the majority of the population is not classified as being at high risk of cumulative relative disadvantage in any of the three years. The share of those classified as being at high risk of cumulative relative disadvantage in at least one year varies significantly across countries; from 13% in Denmark to 45% in Latvia and Lithuania. In terms of country clusters the respective average figures vary from 15.5%, on average, in the Nordic countries to over 40%, on average, in the Baltic countries. Substantial variation is also observed with respect to the population share of those classified as being at high risk of cumulative relative disadvantage during all three years; from just 1.9% in Denmark to 15.5% in Latvia (with the same pattern appearing on average for the country clusters as well).

Choosing a particular threshold to classify somebody as suffering from chronic cumulative relative disadvantage is not an easy task. Being at high risk of cumulative relative disadvantage only once may be attributed to a chance factor and it certainly does not provide a strong indication of a high risk of chronic relative material deprivation [Atkinson et al (2002)]. Therefore, we decided to focus on those classified as being at high risk of cumulative relative disadvantage at least twice during a period of three years and classify them as being at high risk of chronic cumulative disadvantage. The corresponding estimates are shown in the third column of Table 3. They demonstrate that the substantial cross-country variation observed before remains here as well. Only 4.7% of the Danish population are classified as being at high risk of chronic material deprivation, whereas the corresponding proportion for Latvia and Lithuania is well over 25%. High proportions are also recorded in Greece (22.5%), Italy (25.9%), the Czech Republic (24.8%) and Poland (25.7%). In terms of country clusters the lower percentages of chronic material deprivation are recorded on average in the Nordic countries (7%) and the highest in the Baltic countries (25%), with the rest of the observed EU countries ranking in between.

As mentioned before, it is our intention to examine chronic multi-dimensional relative material deprivation (approximated here by our index of chronic cumulative relative disadvantage) in comparison to a more traditional index of deprivation like income poverty. The panel nature of the

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<sup>12</sup> Again, the magnitude of static cumulative disadvantage in Czech Republic should be treated with caution as it is heavily dependent on the choice of the initial cut-off point for the calculation of the three static deprivation indicators.

EU-SILC data used provides the opportunity to take into account aspects of intertemporal transfers and income smoothing and actually examine aspects of longitudinal poverty in EU countries. Then, we are able to compare the level and the structure of the risks of chronic multi-dimensional relative deprivation and longitudinal poverty in these countries. The distributions used for the derivation of the longitudinal poverty measures were derived as follows. Equivalent<sup>13</sup> household incomes adjusted for inflation for all members of the balanced panel were estimated for each year (wave). Then they were averaged (per person) and the poverty line was set equal to the 60% of the median of the resulting distribution (for each country). Estimates of the (relative) poverty rates derived in this manner are reported in the second column of Table 4. The first column reproduces the estimates of the third column of Table 3 (share of the population at high risk of chronic relative material deprivation). In most countries the average risk of material deprivation appears to be higher than the average risk of longitudinal poverty. The opposite holds only for the cases of Portugal, Luxembourg, the Nordic countries and the UK. In broad terms, the rankings of countries in the two distributions are somewhat similar. A striking exception is the case of the Czech Republic where, as mentioned before, the share of people at high risk of relative material deprivation is probably over-estimated. In both cases differences across countries and clusters are considerable. In general, it seems that citizens appear to be better protected against the risk of chronic relative material deprivation in countries where they are better protected against longitudinal poverty as well. This is something that is better captured by looking at the rankings of the total set of countries and not the ranking of the clusters used here. Averaging across countries within a cluster distorts the picture in this case, since there is considerable within-cluster variation in the reported percentages of both deprivation indicators.

The last two columns of Table 4 examine the overlap of the groups of persons at high risk of chronic relative material deprivation and longitudinal poverty. In general terms (on average across countries), a little over by one third of the people at high risk of relative material deprivation are also poor and on the other hand about half of the longitudinally poor are in high risk of relative material deprivation at the same time. There is, naturally, sizeable cross country variation with the proportion of the materially deprived who are poor ranging from 17.7% in the Czech Republic to 60.1% in Luxembourg and the proportion of the longitudinally poor who face high risk of material deprivation lying between 17.9% in Denmark and 74.6% in the Czech Republic. It is clear from these estimates that although there is considerable overlap between the two groups, there are also important elements of deprivation captured by the chronic relative material deprivation index that would have never been captured by studying solely longitudinal (income) poverty and vice versa. These results provide evidence that these are two distinct social phenomena and ought to be treated as such.

Further, taking into account that policy makers interested in designing policies aimed to alleviate longitudinal poverty and material deprivation, or social exclusion in general, have only imperfect knowledge of both, the precise level of income and the quality of life of individual citizens, policies are mainly designed according to the characteristics of the groups perceived to be at high risk of deprivation, in our case longitudinal poverty and chronic relative material deprivation. Therefore, it is important to examine whether the composition of the population at high risk of relative material deprivation differs substantially from the composition of the population at high risk of longitudinal

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<sup>13</sup> Following Eurostat, we derived the household equivalent income per capita using the "modified OECD equivalence scales". The latter assign a weight of 1.00 to the household head, a weight of 0.50 to each of the remaining adults in the household and a weight of 0.30 to each child (person below 14).

poverty. Otherwise, it may be easier to “kill two birds with one stone”; i.e. design policies aiming to fight simultaneously the two social phenomena. For the purposes of our analysis, each country’s population (balanced sample only) is subdivided into mutually exhaustive and exclusive groups according to the wave 3<sup>14</sup> (2007) status of the population member, when the population is grouped according to seven criteria: sex of the household’s reference person<sup>15</sup>, age group of the household’s reference person and the individual, employment status of the household’s reference person and the individual, education level of the household’s reference person and household type. Tables 5a-g present results on the structure of relative risk of chronic relative material deprivation and longitudinal poverty according to the aforementioned criteria. More specifically, there are two columns for each country. Column A reports the relative risk of chronic relative material deprivation (i.e. the chronic relative material deprivation rate of the group divided by the chronic relative material deprivation rate of the entire population), while column B reports the relative risk of longitudinal poverty. The relevant figures for the country clusters are calculated by dividing the mean ratio of a particular group in a cluster by the ratio of the mean population rates of the countries belonging to the same cluster. In order to better present our results, the tables produced aggregate the relevant information regarding population groups into three categories: ‘high risk groups’ with a relative risk factor of larger than 1.5 times the population rate are given a red background, ‘medium risk groups’ with a relative risk factor of larger than 1 and lower or equal to 1.5 times the population rate are given a yellow background, and ‘low risk groups’ with relative risk factors lower to 1 are given a white background.

With respect to the sex of the household’s reference person, it is clear that persons living in households headed by a woman run a higher risk of both material deprivation and longitudinal poverty across most countries examined. In most cases the relative risk factors do not differ substantially between material deprivation and longitudinal poverty. Even when the colours differ the two relative risk groups lie close to the borderline (with the exception of Czech Republic). The relative risk factors for persons living in households headed by women are particularly high in Cyprus, Belgium and the Czech Republic in both factors, while in terms of only relative risk of chronic material deprivation, high risks of this particular group are also reported in Portugal and Slovakia.

Moving to the classification of the population based on the household’s reference person’s age group, we record higher prevalence of increased risk of deprivation in households headed by persons in both ends of the age distribution, particularly the younger end. Persons living in households whose reference persons are aged between 18 to 24 years run a higher risk in both relative risk factors in the majority of countries with the exception of Estonia and Latvia regarding both factors and Spain,

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<sup>14</sup> Due to the revolving nature of the panel, we used the wave 3 status in order to obtain population statuses from a common wave between the two sample groups we used for each country of the sample. As a reminder, the first group appears in the sample for the first three waves and the second group for the last three waves of the four year period under consideration. We experimented with the same analysis using “dominant” or “first wave” status and the results were not substantially different.

<sup>15</sup> The closest definition of a household’s reference person (or household head) we are able to use in the EU-SILC dataset is the “Person 1 responsible for the accommodation”. According to the EU-SILC guidelines, in the target variables description document, the first person responsible for the accommodation is defined as follows: “The person responsible for the accommodation is the person owning or renting the accommodation. If the accommodation is provided free, the person to whom the accommodation is provided is the responsible person...”. Also, “...If the person owning the accommodation is a child or if the person owning or renting the accommodation does not belong to the household, then take in these cases the person ‘financially responsible’ for the accommodation”.

Luxembourg and Greece with respect to longitudinal poverty only. Some prevalence of medium risk can be found in the following risk group of those headed by persons aged between 25-40 but the only other age group with recorded high risk prevalence is the one of the people headed by elderly persons aged over 65 years old. Here the evidence is not uniform across countries. Only in Cyprus this particular group is marked as high risk in both factors. For the rest of the countries is either medium or no risk for most of the cases and the only high risk recorded is with respect to longitudinal poverty in Austria, Denmark and Finland (it is striking to compare the 0.7 relative risk of chronic material deprivation of this particular group to the 3.1 relative risk of longitudinal poverty in Denmark). A somewhat similar picture is painted when we group populations by the individual's age group. Again most medium and high risk groups are found in the ends of the age distribution. The difference is that the magnitude of the increased risk is as not as high compared to the decomposition based on the age group of the household's reference person, which is hardly a surprise since all variables used to calculate our deprivation indicators as well as income are collected at the household level.

The analysis based on the decomposition of the populations according to the household's reference person's employment status, produced three very clear risk groups. People living in households headed by a person who is either unemployed, unpaid family worker or inactive, run a high risk in both relative factors, in almost all EU countries. The few cases that are not classified as high risk groups are classified as medium risk. On the other hand, the only group with a guaranteed low welfare risk is that of people living in households headed by a full time employee. Finally, there is cross-country variability regarding the three remaining groups of individuals whose reference person is part time worker, self-employed or retired. In broad terms there is some evidence of a pattern suggesting that part-time work is connected with higher risks in chronic material deprivation, while self-employment and retirement with higher risks in longitudinal poverty. The decomposition of welfare risks according to the employment status of the individuals produced similar patterns across EU countries.

In several instances in the public discourse, low educational qualifications are cited as one of the main sources of welfare deprivation. The evidence produced in Table 5f suggests that, indeed high educational qualifications are effective barrier against both the risks of chronic material deprivation and longitudinal poverty. In all countries, both welfare risks of members of households where the reference person has completed tertiary education are significantly lower than the national average. On the other hand, members of households where the reference person has completed only primary education face, in the vast majority of the countries, a high risk of both material deprivation and longitudinal poverty (in only a few cases medium risks are recorded). This risk is decreasing steadily as educational qualifications rise<sup>16</sup>.

Finally, in terms of household types, the group of lone parent households is the clearest high risk group across EU countries (with the partial exception of Greece), in comparison to the population average. Other than that, there is quite extensive cross country variability regarding the first two groups of households consisting only of adult members (single persons or couples both aged less than 65 years old and single persons or couples with at least one person aged over 65 years old). A mild pattern observed across EU countries for these two household types, suggests that any

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<sup>16</sup> The relevant evidence for Portugal is not reported. The variable on educational level appeared to be problematic with a large amount of missing cases.

prevalence of high risk of deprivation is mainly connected to longitudinal poverty than chronic relative material deprivation.

## 4 Conclusion

The aim of this paper was twofold; first, to outline a methodology for identifying individuals at high risk of chronic relative material deprivation (or, in fact, any form of chronic multi-dimensional deprivation depending on the available data) and, second, to examine how those who suffer from chronic material deprivation and long term poor overlap, what are the common determinants and which are the differences between material deprivation and income poverty. The dataset used in this exercise was the longitudinal data of the EU-SILC UDB 2008 version 4; thus enabling us to identify patterns of chronic relative material deprivation and long-term poverty in the pre-crisis period.

Regarding our first aim, we constructed an index of chronic relative material deprivation using a three-step method. In the first step, population members deprived in three domains of static relative material deprivation (satisfaction of basic needs, possession of consumer durables, being able to meet housing needs) were identified. In the second step, the extent of cumulative relative disadvantage of these individuals was examined and, in the final step, we identified as persons at high risk of chronic relative material deprivation those who were found suffering from chronic relative cumulative disadvantage. Application of this method to the data of 22 EU countries revealed very substantial cross-country differences in the population shares of those classified as being at high risk of chronic cumulative disadvantage. The highest levels of aggregate risk of chronic relative material deprivation were recorded in some countries of Southern and Central - Eastern Europe and the Baltic countries and the lowest in a number of Northern and Continental European countries.

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

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

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## Appendix - Tables

TABLE 1 - Relative Deprivation Indicators (Wave 3 - balanced panel - Deprivation line 85% median)

Country	Proportion of the population classified as deprived according to:		
	Consumer durables	Basic household need	Housing needs
Cyprus	2.6	39.8	17.6
Greece	10.1	31.5	49.5
Italy	3.1	45.4	41.1
Portugal	15.2	21.3	21.5
Spain	4.5	44.0	26.8
<b><i>Southern Europe</i></b>	<b>7.1</b>	<b>36.4</b>	<b>31.6</b>
Austria	6.3	32.4	21.2
Belgium	10.0	27.9	27.4
France	8.4	39.3	22.9
Luxembourg	5.4	27.5	26.9
<b><i>Continental Europe</i></b>	<b>7.5</b>	<b>31.8</b>	<b>24.6</b>
Denmark	4.1	13.1	13.0
Finland	6.4	24.5	12.4
Sweden	3.4	18.7	16.7
<b><i>Nordic Countries</i></b>	<b>4.6</b>	<b>18.8</b>	<b>14.0</b>
Estonia	22.4	25.1	33.5
Latvia	23.0	36.1	45.2
Lithuania	17.8	43.5	38.0
<b><i>Baltic Countries</i></b>	<b>21.1</b>	<b>34.9</b>	<b>38.9</b>
Czech Republic	12.2	49.6	43.8
Hungary	11.4	34.3	20.9
Poland	22.6	32.6	38.9
Slovakia	11.1	43.5	7.0
Slovenia	7.4	28.1	11.1
<b><i>Central and Eastern Europe</i></b>	<b>12.9</b>	<b>37.6</b>	<b>24.3</b>
Ireland	8.5	38.2	19.1
UK	6.4	27.2	20.5
<b><i>UK &amp; Ireland</i></b>	<b>7.5</b>	<b>32.7</b>	<b>19.8</b>

Source: own calculations based on EU-SILC Longitudinal UDB 2005-2008 (version 4).

**TABLE 2 - Cumulative Relative Disadvantage (Wave 3 - balanced panel)**

Country	Proportion of the population classified as deprived according to:			
	No indicator	At least one indicator	At least two indicators	All three indicators
Cyprus	54.6	45.4	13.7	[0.9]
Greece	40.0	60.0	26.0	5.0
Italy	39.6	60.4	26.9	2.4
Portugal	61.5	38.5	15.1	4.4
Spain	47.0	53.0	19.6	2.7
<b><i>Southern Europe</i></b>	<b>48.4</b>	<b>51.6</b>	<b>20.3</b>	<b>3.2</b>
Austria	57.3	42.7	14.6	2.6
Belgium	57.8	42.2	17.9	5.2
France	52.2	47.9	18.5	4.2
Luxembourg	57.9	42.1	15.1	2.5
<b><i>Continental Europe</i></b>	<b>56.3</b>	<b>43.7</b>	<b>16.5</b>	<b>3.6</b>
Denmark	76.5	23.5	5.6	1.1
Finland	68.7	31.3	10.1	1.9
Sweden	70.9	29.1	8.3	1.4
<b><i>Nordic Countries</i></b>	<b>72.0</b>	<b>28.0</b>	<b>8.0</b>	<b>1.4</b>
Estonia	47.2	52.8	22.0	6.1
Latvia	38.4	61.6	31.3	11.5
Lithuania	40.2	59.8	30.3	9.2
<b><i>Baltic Countries</i></b>	<b>41.9</b>	<b>58.1</b>	<b>27.9</b>	<b>8.9</b>
Czech Republic	33.1	66.9	31.0	7.8
Hungary	54.9	45.1	17.1	4.4
Poland	44.5	55.5	29.1	9.5
Slovakia	52.8	47.2	12.4	2.0
Slovenia	66.4	33.6	10.9	2.2
<b><i>Central &amp; Eastern Europe</i></b>	<b>50.3</b>	<b>49.7</b>	<b>20.1</b>	<b>5.2</b>
Ireland	53.5	46.5	16.4	2.8
UK	61.7	38.3	13.3	2.5
<b><i>UK &amp; Ireland</i></b>	<b>57.6</b>	<b>42.4</b>	<b>14.8</b>	<b>2.6</b>

Figures in brackets denote that the estimate is derived from a small number of observations (between 10 and 50)

Source: own calculations based on EU-SILC Longitudinal UDB 2005-2008 (version 4).

**TABLE 3 - Chronic cumulative relative disadvantage (high risk of chronic relative material deprivation)**

Country	Proportion of the population classified as suffering from cumulative disadvantage during a period of three years:			
	Never	At least once	At least twice	Three times
Cyprus	69.4	30.7	13.7	4.8
Greece	64.7	35.3	22.5	10.8
Italy	58.4	41.7	25.9	14.5
Portugal	77.6	24.4	13.8	8.4
Spain	66.6	33.4	17.3	7.4
<b><i>Southern Europe</i></b>	<b>67.2</b>	<b>32.8</b>	<b>18.7</b>	<b>9.1</b>
Austria	72.5	27.6	13.6	6.9
Belgium	72.2	27.8	17.4	10.1
France	70.1	29.9	17.4	9.9
Luxembourg	76.2	23.8	14.1	7.2
<b><i>Continental Europe</i></b>	<b>72.7</b>	<b>27.3</b>	<b>15.6</b>	<b>8.5</b>
Denmark	87.0	13.0	4.7	1.9
Finland	83.2	16.8	9.0	4.3
Sweden	83.5	16.5	7.4	2.8
<b><i>Nordic Countries</i></b>	<b>84.6</b>	<b>15.5</b>	<b>7.0</b>	<b>3.0</b>
Estonia	65.4	34.7	19.6	10.1
Latvia	54.9	45.1	28.4	15.5
Lithuania	55.0	45.0	26.9	14.8
<b><i>Baltic Countries</i></b>	<b>58.4</b>	<b>41.6</b>	<b>25.0</b>	<b>13.4</b>
Czech Republic	62.1	37.9	24.8	15.6
Hungary	70.0	30.0	16.3	7.9
Poland	61.2	38.8	25.7	15.3
Slovakia	72.7	27.3	12.5	5.7
Slovenia	78.8	21.2	10.3	3.8
<b><i>Central &amp; Eastern Europe</i></b>	<b>68.9</b>	<b>31.1</b>	<b>17.9</b>	<b>9.7</b>
Ireland	73.5	26.5	16.2	8.5
UK	77.1	22.9	11.8	5.7
<b><i>UK &amp; Ireland</i></b>	<b>75.3</b>	<b>24.7</b>	<b>14.0</b>	<b>7.1</b>

Source: own calculations based on EU-SILC Longitudinal UDB 2005-2008 (version 4).

**TABLE 4 - Chronic relative Material Deprivation and Longitudinal Poverty (3 waves)**

Country	Population share of (CM) deprived	Population share of poor (LP)	Proportion of CM deprived who are poor	Proportion of poor who are CM deprived
Cyprus	13.7	12.7	37.4	40.4
Greece	22.5	18.0	40.7	50.9
Italy	25.9	17.4	36.8	54.8
Portugal	13.8	16.3	40.8	34.5
Spain	17.3	17.4	36.6	36.5
<b><i>Southern Europe</i></b>	<b>18.7</b>	<b>16.4</b>	<b>38.3</b>	<b>43.5</b>
Austria	13.6	9.1	29.9	44.5
Belgium	17.4	12.9	39.9	54.1
France	17.4	10.7	34.7	56.3
Luxembourg	14.1	16.7	60.1	50.7
<b><i>Continental Europe</i></b>	<b>15.6</b>	<b>12.3</b>	<b>41.1</b>	<b>51.4</b>
Denmark	4.7	8.0	30.8	17.9
Finland	9.0	11.8	46.6	35.3
Sweden	7.4	8.8	35.5	29.9
<b><i>Nordic Countries</i></b>	<b>7.0</b>	<b>9.6</b>	<b>37.6</b>	<b>27.7</b>
Estonia	19.6	12.6	35.2	54.6
Latvia	28.4	19.7	43.1	62.2
Lithuania	26.9	14.7	37.0	67.7
<b><i>Baltic Countries</i></b>	<b>25.0</b>	<b>15.7</b>	<b>38.4</b>	<b>61.5</b>
Czech Republic	24.8	5.9	17.7	74.6
Hungary	16.3	11.7	39.7	55.6
Poland	25.7	15.4	36.6	61.1
Slovakia	12.5	8.6	32.4	46.8
Slovenia	10.3	9.0	29.3	33.5
<b><i>Central &amp; Eastern Europe</i></b>	<b>17.9</b>	<b>10.1</b>	<b>31.1</b>	<b>54.3</b>
Ireland	16.2	11.7	27.7	39.9
UK	11.8	14.9	43.8	34.6
<b><i>UK &amp; Ireland</i></b>	<b>14.0</b>	<b>13.3</b>	<b>35.7</b>	<b>37.3</b>

Source: own calculations based on EU-SILC Longitudinal UDB 2005-2008 (version 4).

**TABLE 5A - Structure of Chronic Relative Material Deprivation and Longitudinal Poverty  
– Sex of the reference person**

Country	Male		Female	
	A	B	A	B
Cyprus	0.9	0.8	2.0	2.6
Greece	0.9	1.0	1.5	1.2
Italy	0.9	0.9	1.2	1.3
Portugal	0.8	0.9	1.7	1.3
Spain	0.9	1.0	1.2	1.0
<b>Southern Europe</b>	<b>0.9</b>	<b>0.9</b>	<b>1.5</b>	<b>1.4</b>
Austria	0.8	0.8	1.4	1.3
Belgium	0.7	0.8	2.0	1.7
France	0.8	0.9	1.5	1.3
Luxembourg	0.8	0.9	1.3	1.2
<b>Continental Europe</b>	<b>0.8</b>	<b>0.9</b>	<b>1.6</b>	<b>1.4</b>
Denmark	0.6	1.0	1.4	1.0
Finland	0.7	0.9	1.4	1.2
Sweden	0.7	0.9	1.3	1.1
<b>Nordic Countries</b>	<b>0.7</b>	<b>0.9</b>	<b>1.4</b>	<b>1.1</b>
Estonia	0.7	0.7	1.3	1.3
Latvia	0.8	0.8	1.1	1.1
Lithuania	0.8	0.8	1.1	1.2
<b>Baltic Countries</b>	<b>0.8</b>	<b>0.8</b>	<b>1.2</b>	<b>1.2</b>
Czech Republic	0.8	0.6	1.6	2.4
Hungary	0.8	0.9	1.4	1.1
Poland	0.9	1.0	1.3	1.0
Slovakia	0.8	0.8	1.6	1.5
Slovenia	0.9	0.9	1.2	1.2
<b>Central &amp; Eastern Europe</b>	<b>0.8</b>	<b>0.9</b>	<b>1.4</b>	<b>1.3</b>
Ireland	0.7	0.7	1.4	1.4
UK	0.7	0.8	1.5	1.3
<b>UK &amp; Ireland</b>	<b>0.7</b>	<b>0.8</b>	<b>1.5</b>	<b>1.3</b>

Source: own calculations based on EU-SILC Longitudinal UDB 2005-2008 (version 4).



**TABLE 5B. Structure of Chronic Relative Material Deprivation and Longitudinal Poverty  
–Age group of the reference person**

	17-24		25-40		41-64		65+	
Country	A	B	A	B	A	B	A	B
Cyprus	---	---	0.7	0.7	0.9	0.4	1.7	3.3
Greece	1.9	0.7	0.8	1.1	0.9	0.9	1.2	1.2
Italy	2.0	2.2	1.0	1.1	1.0	0.9	1.0	1.1
Portugal	2.0	1.1	0.9	0.7	0.9	0.9	1.2	1.3
Spain	1.8	1.0	1.1	0.9	0.9	0.9	1.2	1.3
<b>Southern Europe</b>	<b>2.0</b>	<b>1.3</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.8</b>	<b>1.2</b>	<b>1.5</b>
Austria	2.6	4.4	1.3	0.8	0.9	0.8	0.8	1.7
Belgium	2.7	3.2	1.1	0.8	1.0	0.9	0.8	1.4
France	1.9	2.4	1.2	1.0	1.0	0.9	0.8	1.2
Luxembourg	2.3	0.8	1.5	1.5	0.9	0.9	0.2	0.3
<b>Continental Europe</b>	<b>2.4</b>	<b>2.4</b>	<b>1.2</b>	<b>1.1</b>	<b>0.9</b>	<b>0.9</b>	<b>0.7</b>	<b>1.0</b>
Denmark	4.0	4.3	1.2	0.7	0.8	0.6	0.7	3.1
Finland	3.3	2.6	1.0	0.9	0.8	0.8	0.9	1.7
Sweden	2.2	2.2	1.2	0.8	0.9	0.9	0.5	1.5
<b>Nordic Countries</b>	<b>3.1</b>	<b>2.9</b>	<b>1.1</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.7</b>	<b>2.0</b>
Estonia	0.8	0.4	0.9	1.0	1.0	1.0	1.1	1.1
Latvia	0.7	0.6	0.9	0.6	1.0	1.0	1.3	1.5
Lithuania	1.4	2.8	1.0	1.1	0.9	0.9	1.3	1.1
<b>Baltic Countries</b>	<b>1.0</b>	<b>1.3</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>1.2</b>	<b>1.3</b>
Czech Republic	2.1	4.0	1.1	1.4	1.0	0.8	0.9	0.8
Hungary	1.7	2.7	1.0	1.5	1.0	0.9	0.9	0.4
Poland	1.2	1.6	0.8	1.2	1.1	1.1	1.0	0.5
Slovakia	1.7	4.8	1.0	1.4	1.0	0.9	1.1	0.8
Slovenia	1.7	1.4	0.8	1.0	1.0	0.9	1.3	1.5
<b>Central &amp; Eastern Europe</b>	<b>1.6</b>	<b>2.7</b>	<b>0.9</b>	<b>1.3</b>	<b>1.0</b>	<b>0.9</b>	<b>1.0</b>	<b>0.8</b>
Ireland	--	--	1.2	0.8	1.1	1.0	0.7	1.0
UK	4.2	3.2	1.7	1.1	0.9	0.8	0.5	1.4
<b>UK &amp; Ireland</b>	<b>3.5</b>	<b>3.6</b>	<b>1.4</b>	<b>1.0</b>	<b>1.0</b>	<b>0.9</b>	<b>0.6</b>	<b>1.2</b>

Source: own calculations based on EU-SILC Longitudinal UDB 2005-2008 (version 4).

**TABLE 5C. Structure of Chronic Relative Material Deprivation and Longitudinal Poverty  
–Age group of the individual**

	0-16		17-24		25-40		41-64		65+	
Country	A	B	A	B	A	B	A	B	A	B
Cyprus	0.7	0.6	1.0	0.4	0.7	0.5	1.0	0.6	1.8	3.6
Greece	0.9	1.1	1.4	1.1	0.7	0.8	0.9	0.9	1.3	1.3
Italy	1.1	1.3	1.5	1.3	1.0	0.8	0.9	0.8	0.9	1.2
Portugal	1.1	1.1	1.0	1.1	1.0	0.6	0.9	1.0	1.1	1.3
Spain	1.1	1.3	1.2	1.0	1.0	0.7	0.8	0.9	1.1	1.4
<b>Southern Europe</b>	<b>1.0</b>	<b>1.1</b>	<b>1.3</b>	<b>1.0</b>	<b>0.9</b>	<b>0.7</b>	<b>0.9</b>	<b>0.8</b>	<b>1.2</b>	<b>1.6</b>
Austria	1.3	1.1	1.3	1.0	1.1	0.8	0.8	0.8	0.8	1.6
Belgium	1.2	1.1	1.3	1.1	1.0	0.7	0.9	0.9	0.8	1.5
France	1.2	1.3	1.4	1.5	1.1	0.8	0.8	0.8	0.7	1.1
Luxembourg	1.5	1.6	1.1	1.1	1.2	1.0	0.7	0.7	0.2	0.3
<b>Continental Europe</b>	<b>1.3</b>	<b>1.3</b>	<b>1.3</b>	<b>1.2</b>	<b>1.1</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.6</b>	<b>1.0</b>
Denmark	1.1	0.8	1.5	1.5	1.3	0.6	0.7	0.5	0.7	3.0
Finland	1.0	0.9	1.9	1.6	1.0	0.8	0.7	0.8	0.9	1.7
Sweden	1.3	1.2	1.7	1.4	1.1	0.8	0.6	0.6	0.5	1.5
<b>Nordic Countries</b>	<b>1.1</b>	<b>1.0</b>	<b>1.7</b>	<b>1.5</b>	<b>1.1</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>2.0</b>
Estonia	1.1	1.2	1.0	0.8	0.8	0.8	1.0	1.0	1.1	1.1
Latvia	1.0	1.0	1.0	0.9	0.8	0.6	0.9	1.0	1.2	1.4
Lithuania	1.1	1.3	0.9	1.1	1.0	0.9	0.8	0.9	1.2	1.1
<b>Baltic Countries</b>	<b>1.1</b>	<b>1.1</b>	<b>1.0</b>	<b>0.9</b>	<b>0.9</b>	<b>0.7</b>	<b>0.9</b>	<b>1.0</b>	<b>1.2</b>	<b>1.2</b>
Czech Republic	1.3	1.8	1.3	1.2	1.0	0.9	0.9	0.7	0.9	0.8
Hungary	1.5	1.8	1.2	1.4	0.9	1.0	0.9	0.8	0.8	0.4
Poland	1.1	1.5	1.2	1.3	0.8	0.9	1.0	0.9	0.9	0.4
Slovakia	1.2	1.5	1.1	1.3	0.8	0.8	0.9	0.8	1.2	0.9
Slovenia	0.9	1.1	1.0	0.9	1.0	0.8	1.0	0.9	1.1	1.7
<b>Central &amp; Eastern Europe</b>	<b>1.2</b>	<b>1.5</b>	<b>1.2</b>	<b>1.2</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>0.8</b>
Ireland	1.2	1.0	1.3	0.9	0.9	0.4	1.0	1.1	0.7	1.0
UK	1.6	1.3	1.5	1.0	1.2	0.7	0.7	0.8	0.4	1.5
<b>UK &amp; Ireland</b>	<b>1.4</b>	<b>1.2</b>	<b>1.4</b>	<b>0.9</b>	<b>1.1</b>	<b>0.6</b>	<b>0.9</b>	<b>0.9</b>	<b>0.6</b>	<b>1.3</b>

Source: own calculations based on EU-SILC Longitudinal UDB 2005-2008 (version 4).

**TABLE 5D - Structure of Chronic Relative Material Deprivation and Longitudinal Poverty – Employment Status of the reference person**

Country	Employee (FT)		Employee (PT)		Self employed		Unemployed		Retired		Unpaid family worker		Other Inactive	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Cyprus	0.7	0.3	2.1	1.4	0.7	0.3	2.5	1.7	1.9	3.2	2.0	2.6	2.0	1.7
Greece	0.8	0.5	1.5	1.0	0.7	1.3	2.6	2.3	1.0	1.1	1.6	1.2	1.8	1.3
Italy	1.0	0.6	1.2	1.1	0.7	1.1	2.3	3.3	0.8	0.9	1.5	2.0	1.5	1.8
Portugal	0.7	0.4	2.2	1.5	0.8	1.3	1.6	2.4	1.2	1.1	2.1	2.7	1.9	1.7
Spain	0.8	0.4	1.4	0.9	0.5	1.7	2.3	2.4	1.0	1.0	1.2	1.6	1.4	1.6
<b>Southern Europe</b>	<b>0.8</b>	<b>0.5</b>	<b>1.6</b>	<b>1.1</b>	<b>0.7</b>	<b>1.2</b>	<b>2.3</b>	<b>2.5</b>	<b>1.1</b>	<b>1.3</b>	<b>1.6</b>	<b>2.0</b>	<b>1.7</b>	<b>1.6</b>
Austria	0.8	0.4	1.4	1.1	0.4	0.8	4.1	4.1	0.8	1.2	1.7	2.5	3.0	4.7
Belgium	0.6	0.3	1.4	1.0	0.4	1.0	3.5	4.1	0.8	1.2	2.3	3.3	2.8	2.8
France	0.9	0.5	1.7	2.0	0.4	0.8	3.2	4.8	0.7	1.0	3.1	6.0	2.6	3.6
Luxembourg	1.0	0.9	1.2	1.2	0.4	1.0	3.7	3.4	0.2	0.3	1.4	1.5	1.5	1.9
<b>Continental Europe</b>	<b>0.8</b>	<b>0.5</b>	<b>1.4</b>	<b>1.3</b>	<b>0.4</b>	<b>0.9</b>	<b>3.6</b>	<b>4.1</b>	<b>0.6</b>	<b>0.8</b>	<b>2.2</b>	<b>3.2</b>	<b>2.5</b>	<b>3.0</b>
Denmark	0.7	0.3	0.9	0.9	0.0	2.1	4.4	2.1	0.6	2.5	2.7	1.6	4.4	2.5
Finland	0.7	0.3	2.5	1.3	0.4	0.9	3.3	3.0	0.9	1.6	1.6	1.9	2.2	2.3
Sweden	0.7	0.3	1.2	1.0	0.4	2.1	3.0	3.3	0.5	1.3	3.5	5.3	3.1	2.4
<b>Nordic Countries</b>	<b>0.7</b>	<b>0.3</b>	<b>1.7</b>	<b>1.1</b>	<b>0.3</b>	<b>1.6</b>	<b>3.4</b>	<b>2.8</b>	<b>0.7</b>	<b>1.8</b>	<b>2.5</b>	<b>2.8</b>	<b>3.0</b>	<b>2.4</b>
Estonia	0.7	0.3	0.8	0.9	0.2	1.7	1.4	3.4	1.3	1.3	2.5	3.6	2.4	3.2
Latvia	0.7	0.4	1.0	1.1	0.8	1.2	1.7	2.4	1.3	1.6	1.3	1.7	1.3	1.4
Lithuania	0.7	0.5	1.2	0.9	0.8	1.4	1.8	2.2	1.3	1.2	1.6	3.3	1.4	2.1
<b>Baltic Countries</b>	<b>0.7</b>	<b>0.4</b>	<b>1.0</b>	<b>1.0</b>	<b>0.7</b>	<b>1.4</b>	<b>1.7</b>	<b>2.6</b>	<b>1.3</b>	<b>1.4</b>	<b>1.7</b>	<b>2.7</b>	<b>1.6</b>	<b>2.1</b>
Czech Republic	0.9	0.5	1.1	1.3	0.4	0.7	2.9	8.1	0.9	0.9	1.9	5.7	1.9	1.6
Hungary	0.7	0.6	1.9	2.3	0.1	0.4	3.0	4.1	0.9	0.5	2.6	3.4	1.3	1.6
Poland	0.8	0.6	1.4	1.1	0.7	1.7	2.1	2.9	0.9	0.4	1.4	2.0	1.4	1.4
Slovakia	0.7	0.7	2.2	1.8	0.3	0.9	3.8	5.7	1.2	0.8	--	--	1.4	2.2
Slovenia	0.6	0.3	1.3	0.9	0.8	2.0	2.6	3.5	1.3	1.3	2.3	3.0	1.4	2.0
<b>Central &amp; Eastern Europe</b>	<b>0.8</b>	<b>0.6</b>	<b>1.5</b>	<b>1.5</b>	<b>0.5</b>	<b>1.2</b>	<b>2.8</b>	<b>4.4</b>	<b>1.0</b>	<b>0.7</b>	<b>2.1</b>	<b>3.2</b>	<b>1.5</b>	<b>1.7</b>
Ireland	0.6	0.1	1.7	0.9	0.3	0.7	2.7	2.1	0.8	0.8	1.3	2.0	2.2	2.6
UK	0.6	0.2	1.2	0.6	0.3	0.9	3.9	3.9	0.6	1.4	4.0	3.8	1.8	1.7
<b>UK &amp; Ireland</b>	<b>0.6</b>	<b>0.2</b>	<b>1.5</b>	<b>0.7</b>	<b>0.3</b>	<b>0.8</b>	<b>3.2</b>	<b>3.1</b>	<b>0.7</b>	<b>1.1</b>	<b>2.4</b>	<b>3.0</b>	<b>2.0</b>	<b>2.1</b>

Source: own calculations based on EU-SILC Longitudinal UDB 2005-2008 (version 4).

TABLE 5E - Structure of Chronic Relative Material Deprivation and Longitudinal Poverty – Employment Status of the individual

Country	Employee (FT)		Employee (PT)		Self employed		Unemployed		Retired		Unpaid family worker		Other Inactive	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Cyprus	0.7	0.3	1.1	0.4	0.8	0.3	1.7	1.2	1.8	3.5	1.2	1.2	0.9	0.6
Greece	0.7	0.3	1.7	1.0	0.7	1.1	1.7	1.4	1.2	1.2	1.1	1.3	1.0	1.1
Italy	0.8	0.4	1.0	0.7	0.7	0.8	2.0	2.2	0.7	0.9	1.2	1.6	1.2	1.3
Portugal	0.7	0.3	1.3	0.8	0.8	1.4	1.4	1.5	1.1	1.1	1.3	2.1	1.2	1.2
Spain	0.8	0.3	1.0	0.6	0.5	1.3	2.1	1.8	1.0	1.0	1.1	1.6	1.1	1.3
<b>Southern Europe</b>	<b>0.8</b>	<b>0.3</b>	<b>1.2</b>	<b>0.7</b>	<b>0.7</b>	<b>1.0</b>	<b>1.8</b>	<b>1.6</b>	<b>1.1</b>	<b>1.4</b>	<b>1.2</b>	<b>1.6</b>	<b>1.1</b>	<b>1.1</b>
Austria	0.8	0.3	0.9	0.8	0.5	0.8	3.7	3.2	0.8	1.3	1.1	2.0	1.3	1.2
Belgium	0.6	0.2	0.8	0.5	0.3	0.7	2.6	3.0	0.8	1.2	1.2	2.1	1.3	1.2
France	0.8	0.3	1.1	0.8	0.4	0.8	2.3	2.9	0.7	0.8	1.3	2.5	1.3	1.4
Luxembourg	0.9	0.6	0.9	0.9	0.4	0.7	3.0	2.9	0.2	0.2	0.9	1.1	1.3	1.5
<b>Continental Europe</b>	<b>0.8</b>	<b>0.4</b>	<b>0.9</b>	<b>0.8</b>	<b>0.4</b>	<b>0.8</b>	<b>2.9</b>	<b>3.0</b>	<b>0.6</b>	<b>0.8</b>	<b>1.2</b>	<b>1.9</b>	<b>1.3</b>	<b>1.3</b>
Denmark	0.7	0.2	0.7	0.7	0.2	1.7	4.3	1.6	0.6	2.5	1.6	2.8	1.6	1.1
Finland	0.6	0.3	2.0	1.1	0.4	0.9	2.7	2.7	0.8	1.6	1.1	1.5	1.3	1.2
Sweden	0.6	0.3	0.9	0.6	0.4	1.5	2.3	2.8	0.6	1.4	1.3	3.2	1.6	1.4
<b>Nordic Countries</b>	<b>0.6</b>	<b>0.3</b>	<b>1.4</b>	<b>0.8</b>	<b>0.3</b>	<b>1.3</b>	<b>2.9</b>	<b>2.4</b>	<b>0.7</b>	<b>1.8</b>	<b>1.2</b>	<b>2.3</b>	<b>1.5</b>	<b>1.2</b>
Estonia	0.7	0.3	0.7	0.6	0.5	1.7	1.9	3.4	1.2	1.3	1.5	2.2	1.2	1.3
Latvia	0.7	0.4	0.8	0.8	0.8	1.0	1.8	2.3	1.3	1.5	1.3	1.8	1.1	1.1
Lithuania	0.7	0.4	1.2	0.7	0.7	1.3	1.8	2.5	1.2	1.2	1.5	2.4	1.1	1.3
<b>Baltic Countries</b>	<b>0.7</b>	<b>0.3</b>	<b>0.9</b>	<b>0.7</b>	<b>0.7</b>	<b>1.3</b>	<b>1.8</b>	<b>2.7</b>	<b>1.2</b>	<b>1.4</b>	<b>1.4</b>	<b>2.1</b>	<b>1.1</b>	<b>1.2</b>
Czech Republic	0.8	0.3	1.2	0.8	0.5	0.5	2.3	5.5	0.9	0.8	1.2	2.1	1.3	1.6
Hungary	0.7	0.4	1.5	1.6	0.1	0.4	2.7	3.5	0.8	0.4	1.5	2.2	1.3	1.5
Poland	0.8	0.5	1.1	0.8	0.7	1.5	1.8	2.4	0.8	0.3	1.1	1.8	1.2	1.3
Slovakia	0.7	0.5	1.3	1.0	0.3	0.6	2.8	3.6	1.2	0.8	2.1	3.1	1.1	1.5
Slovenia	0.7	0.3	1.3	1.2	0.7	1.8	2.4	2.9	1.1	1.4	2.2	3.1	0.9	1.0
<b>Central &amp; Eastern Europe</b>	<b>0.8</b>	<b>0.4</b>	<b>1.2</b>	<b>1.1</b>	<b>0.5</b>	<b>1.0</b>	<b>2.3</b>	<b>3.3</b>	<b>0.9</b>	<b>0.7</b>	<b>1.5</b>	<b>2.4</b>	<b>1.2</b>	<b>1.4</b>
Ireland	0.6	0.1	1.2	0.6	0.3	0.6	2.7	2.2	0.8	0.8	0.9	1.5	1.4	1.3
UK	0.6	0.2	0.8	0.5	0.3	0.7	3.9	3.3	0.5	1.5	2.2	2.5	1.6	1.3
<b>UK &amp; Ireland</b>	<b>0.6</b>	<b>0.2</b>	<b>1.0</b>	<b>0.6</b>	<b>0.3</b>	<b>0.7</b>	<b>3.2</b>	<b>2.8</b>	<b>0.7</b>	<b>1.2</b>	<b>1.4</b>	<b>2.0</b>	<b>1.5</b>	<b>1.3</b>

Source: own calculations based on EU-SILC Longitudinal UDB 2005-2008 (version 4).

**TABLE 5F - Structure of Chronic Relative Material Deprivation and Longitudinal Poverty – Education level of the reference person**

Country	Primary		Secondary – lower		Secondary – higher		Post secondary – non tertiary		Tertiary	
	A	B	A	B	A	B	A	B	A	B
Cyprus	1.8	1.9	1.8	0.9	0.4	0.4	0.8	0.5	0.2	0.1
Greece	1.4	1.3	1.1	1.3	0.7	0.7	0.4	0.4	0.1	0.2
Italy	1.2	1.4	1.3	1.3	0.7	0.7	0.7	0.5	0.3	0.2
Portugal	--	--	--	--	--	--	--	--	--	--
Spain	1.3	1.3	1.0	1.1	0.8	0.6	0.9	0.4	0.3	0.3
<b>Southern Europe</b>	<b>1.3</b>	<b>1.2</b>	<b>1.1</b>	<b>1.0</b>	<b>0.6</b>	<b>0.5</b>	<b>0.7</b>	<b>0.4</b>	<b>0.2</b>	<b>0.2</b>
Austria	4.8	4.9	2.1	2.6	0.9	0.8	0.6	0.7	0.5	0.4
Belgium	1.8	2.2	1.5	1.3	0.9	0.9	1.1	0.8	0.4	0.2
France	1.2	1.6	1.6	1.7	1.0	0.9	---	---	0.4	0.2
Luxembourg	1.8	1.8	1.1	1.2	0.8	0.7	0.3	0.7	0.3	0.3
<b>Continental Europe</b>	<b>2.3</b>	<b>2.4</b>	<b>1.6</b>	<b>1.6</b>	<b>0.9</b>	<b>0.8</b>	<b>0.7</b>	<b>0.8</b>	<b>0.4</b>	<b>0.3</b>
Denmark	---	---	1.7	2.2	0.9	0.9	---	---	0.7	0.5
Finland	---	---	1.4	1.7	1.1	1.2	0.0	0.5	0.6	0.3
Sweden	1.7	1.7	1.7	0.6	0.8	1.0	0.4	1.0	0.9	0.7
<b>Nordic Countries</b>	<b>1.8</b>	<b>1.6</b>	<b>1.6</b>	<b>1.5</b>	<b>1.0</b>	<b>1.0</b>	<b>0.2</b>	<b>0.8</b>	<b>0.7</b>	<b>0.5</b>
Estonia	2.1	1.9	1.9	1.7	1.0	1.1	0.8	0.7	0.4	0.5
Latvia	1.7	2.6	1.7	1.7	1.0	1.0	0.8	0.8	0.3	0.3
Lithuania	1.8	1.7	1.6	1.7	1.1	1.3	0.8	0.8	0.3	0.2
<b>Baltic Countries</b>	<b>1.8</b>	<b>2.1</b>	<b>1.7</b>	<b>1.7</b>	<b>1.1</b>	<b>1.1</b>	<b>0.8</b>	<b>0.8</b>	<b>0.3</b>	<b>0.3</b>
Czech Republic	--	--	2.1	3.1	1.0	0.9	0.6	1.3	0.3	0.2
Hungary	2.2	2.0	2.0	2.1	0.8	0.8	0.5	0.3	0.1	0.1
Poland	1.7	1.6	--	--	0.9	1.0	0.8	0.4	0.2	0.1
Slovakia	2.9	3.7	2.8	2.7	0.9	0.9	--	--	0.3	0.2
Slovenia	2.9	2.3	2.2	2.0	0.7	0.8	--	--	0.1	0.1
<b>Central &amp; Eastern Europe</b>	<b>2.0</b>	<b>2.5</b>	<b>2.0</b>	<b>2.1</b>	<b>0.9</b>	<b>0.9</b>	<b>0.8</b>	<b>0.6</b>	<b>0.2</b>	<b>0.1</b>
Ireland	1.5	1.6	1.2	1.0	0.6	0.7	0.6	0.3	0.4	0.2
UK	--	--	1.7	1.9	1.0	0.9	0.9	1.4	0.4	0.3
<b>UK &amp; Ireland</b>	<b>1.8</b>	<b>1.4</b>	<b>1.4</b>	<b>1.5</b>	<b>0.8</b>	<b>0.8</b>	<b>0.7</b>	<b>0.9</b>	<b>0.4</b>	<b>0.3</b>

Source: own calculations based on EU-SILC Longitudinal UDB 2005-2008 (version 4).

TABLE 5G - Structure of Chronic Relative Material Deprivation and Longitudinal Poverty – Household type

Country	Single or couple – no children (<65)		Single or couple – no children (>65)		Other type – no children		Single parent household		Couple - at least one child		Other type – at least one child	
	A	B	A	B	A	B	A	B	A	B	A	B
Cyprus	1.1	0.8	1.7	3.8	1.1	0.8	1.6	2.9	0.3	0.5	1.1	0.4
Greece	0.9	0.8	1.3	1.3	1.0	0.8	1.3	0.7	0.5	0.8	1.5	1.6
Italy	0.6	0.7	0.8	1.4	1.0	0.7	1.4	1.6	0.8	1.0	1.7	1.6
Portugal	0.8	1.2	1.0	1.4	1.0	0.7	3.6	2.1	0.7	0.7	1.1	1.3
Spain	0.7	0.7	1.1	1.7	1.0	0.7	1.8	1.8	0.6	1.0	1.7	1.4
<b>Southern Europe</b>	<b>0.8</b>	<b>0.8</b>	<b>1.1</b>	<b>1.8</b>	<b>1.0</b>	<b>0.7</b>	<b>1.8</b>	<b>1.8</b>	<b>0.6</b>	<b>0.8</b>	<b>1.5</b>	<b>1.3</b>
Austria	0.9	1.1	0.8	1.8	0.8	0.5	3.3	2.7	0.9	0.8	1.5	0.9
Belgium	1.1	0.9	0.8	1.6	0.8	0.5	3.0	2.7	0.6	0.6	1.6	1.5
France	0.9	0.6	0.6	0.9	0.9	1.0	2.1	2.1	0.7	0.8	1.9	1.8
Luxembourg	0.7	0.6	0.1	0.2	0.5	0.6	3.2	3.2	1.2	1.3	1.6	1.4
<b>Continental Europe</b>	<b>0.9</b>	<b>0.8</b>	<b>0.6</b>	<b>1.0</b>	<b>0.8</b>	<b>0.6</b>	<b>2.9</b>	<b>2.7</b>	<b>0.8</b>	<b>0.9</b>	<b>1.7</b>	<b>1.4</b>
Denmark	1.3	0.7	0.6	2.8	0.6	0.5	7.2	1.1	0.6	0.7	1.3	1.2
Finland	1.2	1.1	0.8	1.7	0.9	0.9	3.8	2.3	0.5	0.7	1.6	1.0
Sweden	0.7	0.8	0.4	1.4	1.3	0.6	4.6	2.4	0.7	0.8	1.7	1.8
<b>Nordic Countries</b>	<b>1.1</b>	<b>0.9</b>	<b>0.6</b>	<b>1.9</b>	<b>1.0</b>	<b>0.7</b>	<b>4.9</b>	<b>2.0</b>	<b>0.6</b>	<b>0.7</b>	<b>1.6</b>	<b>1.3</b>
Estonia	0.9	1.6	0.8	1.1	1.0	0.7	2.3	2.7	0.4	0.7	1.3	1.2
Latvia	0.9	1.3	1.3	1.8	1.0	0.8	1.4	1.7	0.8	0.6	1.0	0.8
Lithuania	0.8	1.2	1.1	1.1	1.1	0.8	1.9	2.4	0.8	0.8	1.0	1.1
<b>Baltic Countries</b>	<b>0.9</b>	<b>1.3</b>	<b>1.1</b>	<b>1.4</b>	<b>1.1</b>	<b>0.8</b>	<b>1.8</b>	<b>2.2</b>	<b>0.7</b>	<b>0.7</b>	<b>1.1</b>	<b>1.0</b>
Czech Republic	0.7	0.9	0.8	0.8	1.0	0.5	2.6	7.5	0.9	0.7	1.5	1.7
Hungary	0.7	1.0	0.6	0.4	0.9	0.6	2.0	3.1	1.0	1.4	1.5	1.5
Poland	0.8	0.8	0.7	0.3	1.0	0.7	1.7	2.1	0.7	1.1	1.3	1.5
Slovakia	1.1	1.2	1.2	1.0	0.8	0.7	3.2	4.0	0.8	1.4	1.3	1.2
Slovenia	1.1	2.0	0.8	2.2	1.1	0.7	1.5	2.6	0.6	0.8	1.1	1.1
<b>Central &amp; Eastern Europe</b>	<b>0.8</b>	<b>1.1</b>	<b>0.8</b>	<b>0.8</b>	<b>0.9</b>	<b>0.7</b>	<b>2.2</b>	<b>3.4</b>	<b>0.8</b>	<b>1.1</b>	<b>1.4</b>	<b>1.4</b>
Ireland	1.1	1.7	0.7	1.2	0.9	0.7	3.5	3.6	0.7	0.5	1.2	0.8
UK	0.8	0.8	0.4	1.4	0.8	0.6	4.2	3.0	0.7	0.7	1.9	1.2
<b>UK &amp; Ireland</b>	<b>0.9</b>	<b>1.2</b>	<b>0.6</b>	<b>1.3</b>	<b>0.9</b>	<b>0.7</b>	<b>3.8</b>	<b>3.3</b>	<b>0.7</b>	<b>0.6</b>	<b>1.5</b>	<b>1.0</b>

Source: own calculations based on EU-SILC Longitudinal UDB 2005-2008 (version 4).

## **ImPRovE: Poverty Reduction in Europe. Social Policy and Innovation**

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

The two central questions driving the ImPRovE project are:

How can social cohesion be achieved in Europe?

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

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

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

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