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Poorer and More Deprived? Low Income and Material Deprivation
Overlaps in Spain after the Great Recession

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Abstract

This study analyses how the economic crisis has modified the relationship between income and material deprivation in Spain, using data from the Living Conditions Survey 2004-2012. To this end, a material deprivation index is first defined, in order to overcome some of the limitations of the measure currently included in the Europe 2020 at-risk-of-poverty or exclusion indicator, and a multinomial logistic regression model is estimated using data from 2008 and 2012. The results demonstrate that the degree of overlap between low income and material deprivation has increased by around 50% in this period, even despite the offsetting effect of the reduction in the (relative) income poverty threshold. After identifying the most important factors explaining why some households are at greater risk of being deprived than of having only low income, we show that the Great Recession has produced a significant recomposition of the poverty profile in Spain. A result that is worth emphasizing is the increasing role played by long-term unemployment and by differences in tenure status of households in predicting the overlap between low income and material deprivation, four years after the bursting of the property bubble.

Keywords: Low income, poverty, material deprivation, poverty profile, Great Recession..

JEL codes: D31, I31, I32.

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1. Introduction

The analysis of poverty using material deprivation indicators has rapidly become popular in the European sphere since, in the final quarter of the XX century, Peter Townsend (1979) published his influential study in the United Kingdom. Some years ago, both the United Kingdom and Ireland established objectives and measurements of progress in the fight against poverty which incorporated results in terms of income and material deprivation. Currently, the focus has gained even more prominence in the countries of the European Union, due to the redefinition of the poverty-reduction goal in terms of a new indicator of “risk of poverty or social exclusion” based on low income, severe material deprivation and low work intensity within the household. Outside the European sphere, the material deprivation approach, although less popular, has also increased its presence in recent years¹.

One of the main empirical regularities confirmed by the literature on poverty and material deprivation is the existence of a limited overlap between the groups receiving “low income” and those experiencing “material deprivation”, whatever the thresholds chosen. This imperfect coincidence has been observed in both national studies and in comparative international analyses (Notten and Roelen 2010; Sullivan, Turner and Danziger 2008; Hillyard and Scullion 2005; Whelan, Layte and Maître 2004; Bradshaw and Finch 2003; Perry 2002, among others). Although it has been shown that the imbalance between low income and deprivation depends partly on the indicators and dimensions considered, even when selecting the subgroup of indicators most closely linked to income, and establishing thresholds which identify groups of the same size, the degree of overlap remains modest. The explanation and evaluation of this fact has generated a broad debate in the literature, with diverse approaches to the theoretical and empirical reasons for the disparity of results and different social policy implications.

¹ See, for example, UNICEF (2012), Nicholas and Ray (2012) for Australia, Pilkauskas et al. (2012) and Ouellette *et al.* (2004) for the United States. Boarini and d’Ercole (2006) offer a good review of the application of the material deprivation approach within the OECD.

The question is even more important at the current time, following more than five years of economic recession in a large part of the developed world. In many countries, the crisis appears to have had different effects upon income poverty and material deprivation, but little is yet known of the final impact of the macroeconomic shock on the relationship between the two phenomena and the concrete transmission mechanisms. Although a recession typically involves changes which could increase the degree of overlap between low income and deprivation, there also exist, as discussed later in the text, processes which can counteract the previous outcome. Moreover, the decrease in average family income, significant in many countries, may be accompanied by differences in the evolution of monetary poverty depending on whether the threshold is “anchored” or not in a base year, affecting the degree of overlap between low income and deprivation. It is also to be expected that dynamic aspects play an important role in the crisis, with different effects on the profiles of low income and deprivation in its initial, intermediate and final phases.

This study aims to shed light on this issue, by investigating changes in the degree of overlap and the profile of the population suffering low income and material deprivation in Spain over the recent period. Spain is especially valuable as a case study, for a number of reasons. Firstly, it is one of the European countries hit hardest by the crisis, with a huge impact on unemployment and real family incomes. After a decade of strong economic growth with average rises in GDP amounting to 3,5% annually, growth rates became negative from 2009 on and the unemployment rate increased from 8,2% in 2007 to 26,1% in 2013, the second highest rate in the EU-28 after Greece. Secondly, income inequality has experienced a sharp increase since 2007 and disposable income in the lowest decile has decreased the most, according to recent OECD data (OECD 2014). Thirdly, the decade before the beginning of the economic crisis was also the time when house prices most increased, fuelled by the migratory boom (the percentage of the immigrant population rose from under 3% at the end of the 1990s to over 13% in 2009) and abnormally low interest rates. As in the case of the United States, many families with insecure jobs and low salaries purchased a home, thereby taking out mortgage loans which

became a significant economic burden to them after the recession. This might have affected the deprivation profile of post-crisis low income households, increasing the financial stress and material hardship levels of families situated at the bottom of the income distribution.

The structure of the study is as follows. Firstly, a review is made of the factors which may affect the degree of overlap between low income and material deprivation and the potential sources of change following the onset of the crisis. Secondly, given its importance in this study, the definition of the concept of “material deprivation” is the subject of a specific analysis, the results of which permit the incorporation of some methodological improvements to the index currently employed in EU statistics. Thirdly, we describe recent trends in the degree of overlap between low income and material deprivation, using data from 2004 and 2012. Fourthly, we analyse the effect of the crisis upon the pattern of overlap between low income and material deprivation. To this end, a multinomial logistic regression model is estimated for 2008 and 2012 in order to explore how far the explanatory variables influencing the probability of experiencing situations of low income and/or deprivation have changed throughout the Great Recession. The study ends with some brief conclusions.

2. Theoretical framework and previous studies

Of the three dimensions included in the official Europe 2020 indicator, material deprivation is the most direct indicator of poverty and that which best reflects the real impact of low income or low work intensity on the standard of living. By contrast, income has traditionally been conceptualised as a variable indirectly related to poverty (Sen 1979, Ringen 1988). Below, an examination is made of the main visions and explanations of the “mismatch” between these two approaches, according to the evidence accumulated by previous studies, and the changes to be expected during a recessionary phase such as the current one are discussed.

a) *Making sense of the “mismatch”*

When analysing the limited overlap between low income and deprivation, it is important to recognise from the beginning that the interpretation given to the “mismatch” may vary, depending on the conceptual approach to poverty and on several aspects related to the measurement process. In fact, various viewpoints exist in the literature regarding the correct way of treating this lack of adjustment.

An influential group of authors has defended the convenience of simultaneously using both approaches, proposing a criterion of “consistent” or “true” poverty, defined on the basis of the intersection of the two indicators (Maître, Nolan and Whelan 2006, 2013; Layte *et al.* 2001; Nolan and Whelan 1996; Halleröd 1995). Such an approach to the problem is in line with the well-known Ringen’s suggestion that income and material wellbeing provide two incomplete evaluations of poverty, so that combining income and deprivation may help to identify those who suffer a low standard of living due to a lack of resources (Ringen 1988). Under this perspective, those not included in the intersection group are not poor in the strict sense, since they fail to meet at least one of the two basic requirements. Within the “consistent” poverty approach, the material deprivation indicators are seen as a way of validating the information regarding income, useful to separate those who really suffer economic shortages from those who, for different reasons, “do not appear to be «poor»”(McKay and Collard 2004: 65) despite their low income. Yet at the same time, income levels permit the state of deprivation to be validated, since those households with incomes above the poverty line showing deprivation are also excluded. This procedure of double-check would serve to eliminate the inconsistency between the theoretical concept of poverty and the tools used to identify the poor according to the conventional criterion, based only on income².

² Ireland is the country which has gone furthest in the application of this approach: the national plans to fight poverty include as an objective, from the year 2002 on, a measure of consistent poverty (Government of Ireland 2007: 24). In the United Kingdom, the Child Poverty Law of 2010 also includes a consistent poverty index, defined as the combination of income lower than 70% of the average *and* material deprivation, together with another three measures aimed at monitoring child poverty, anchored poverty and persistent poverty (HM Government 2012: 14).

The consistent poverty approach is nevertheless open to various possible criticisms. On the one hand, the identification of the “true” poor on the basis of the intersection between low income and material deprivation indicators rests on the implicit assumption that both measure sufficiently well the two key concepts, resources and standard of living. If one of the two indicators presents strong biases (for example, significant economic resources are excluded from the definition of income) the justification for considering only the intersection group as poor loses strength.

On the other hand, arbitrariness in the establishment of the threshold may also pose significant problems. Given that the lines established to delimit the poor and the non-poor in the two dimensions are essentially arbitrary, so, up to a certain point, is the size of the intersection group. Furthermore, once fixed at a starting point, the two thresholds may follow divergent patterns of evolution over time, given that the low income line is routinely determined as a certain proportion of the median national income in the European countries, while material deprivation is usually measured by a fixed (yet periodically reviewed) standard. Thus, individuals classified as “consistent” or “non-consistent” poor may vary due to the “moving” nature of the threshold applied, in both time and space terms. Even if the analysis is restricted to a specific country, a person who suffers simultaneously low income *and* material deprivation in a base year can be reclassified within the group of “non-consistent” poor in successive years, as the result of the decrease in the poverty line due to an economic crisis, without real changes in his or her income or standard of living.

This possibility is not merely theoretical, but rather describes the real evolution undergone in many countries during the current recessionary period. The latest follow-up report published in Ireland shows a sharp increase in the rate of material deprivation which is scarcely reflected, nevertheless, in the levels of “consistent” poverty, which continue to be low due to the scanty variation in the relative poverty rate (CSO 2013). Equally, in the United Kingdom, the Government implemented in 2012 a consultation process to improve the measures of child poverty, after confirming that in 2011 300.000

children left poverty behind due almost exclusively to the decline in average household income (HM Government 2012). Of course, the difficulties of interpretation derived from combining a relative indirect criterion with a direct measurement of the standard of living are multiplied when tackling international comparisons which include countries with very heterogeneous levels of wealth.

These problems have led some authors to favour a separate analysis of the two spheres, especially when the study covers different countries. From this perspective, low income and material deprivation represent two concepts of poverty which are related but intrinsically different, and which empirically may coincide to a greater or lesser degree, depending on a series of factors. Thus, the lack of overlap between the two criteria cannot be interpreted as an imbalance or incoherence, but rather as the most likely outcome. A recent example of this vision is the child poverty report published by UNICEF in 2012, which defends that low income and material deprivation are two “complementary” but basically “incompatible” measures of poverty, and thus the combination of the two criteria gives a whole that is “less useful than the sum of the parts” (UNICEF 2012: 4)³.

The perspective adopted in this study is situated at a point between the two foregoing positions. We assume that the two approaches outlined above are useful to identify the risk of poverty, and that the combination of low income and deprivation offers a useful criterion to investigate the profile of an especially vulnerable group of households. However, given that they are different approximations to poverty, which may obey different dynamics, we believe it risky to simply identify this group with the “true” poor. Thus, we believe it necessary to investigate the changes in the level and composition of “consistent” poverty, but also those of the households which, at a given moment, are classified as poor from only one of the two perspectives.

³ As stated in the report, “(b)oth the child deprivation rate and the relative child poverty rate are useful to policymakers, to social scientists, to the media, and to advocates for child wellbeing. Combining them into a common measure would be like combining oil and water, in that the whole would be less useful than the sum of the parts” (UNICEF 2012: 14). However, the author of the report accepts that the “consistent” poverty approach may make sense when analysing poverty in a specific country.

b) *Explanatory factors*

Whatever the approach adopted, it is obviously interesting to determine, theoretically and empirically, why these two approaches, “low income” and “material deprivation”, identify as poor distinct groups of people, even when omitting the differences derived from the level at which the threshold is fixed (in other terms, why each criterion generates different rankings of the population). Thanks to the strength of the material deprivation approach in recent decades, numerous studies of this question have been published and have permitted the systemization of the principal causal links, although it is true that, as noted by Neubourg et al. (2012), relatively few overlap analyses based on EUSILC data exist so far.

From a theoretical perspective, there exist at least three groups or reasons which may prove significant, and whose importance has been confirmed in diverse contexts and at diverse moments of time. Firstly, there exist potentially important economic resources beyond current income, whose availability affects the degree to which an episode of low income has effects on the level of material deprivation. Accumulated wealth, access to public services, or informal networks of family protection are obvious candidates. Home-owners have, according to diverse studies, levels of deprivation inferior to those living in rented accommodation, especially if the mortgage is totally paid off⁴. Such differences are a potentially important factor in Spain, due to the great predominance of owner-occupied dwellings and the intense rise in property prices and mortgage indebtedness in the period prior to the onset of the crisis. Although the conventional definition of poverty as “low income” ignores the effect of wealth inequalities, the release of specific data sources, such as the Family Wealth Survey (*Encuesta Financiera de las Familias*) in Spain, has permitted the emergence of studies simultaneously taking into account income

⁴ See, among others, Martínez and Navarro (2008) for Spain, Berthoud, Bryan and Bardasi (2004) for the United Kingdom, Nicholas and Ray (2012) for Australia, Perry (2002) for New Zealand, or Fusco Guio and Marlier (2010a,b) and Sauli and Törmälehto (2010) for the countries of the European Union.

and wealth levels. Such studies clearly show that the capacity to confront a negative income shock depends largely on the level and type of assets held by households⁵.

Secondly, households may have different needs, which could be inadequately translated into the income indicator. Adjustments of income to reflect needs are usually based on very simple equivalence scales which take into account household size, but not other sociodemographic factors which may increase (single parenthood, disabilities, chronic illness, etc.) or reduce (free housing, etc.) expenditure needs, independently of household size. Similarly, geographical variations in the cost of living are often neglected, although they may be substantial in the case of important household expenditures, such as transport or housing (Tunstall *et al.* 2013). A recent study of Australia concluded that differences in housing costs compensate in large part for the positive income differentials of urban zones over rural zones (Nicholas and Ray 2012). In Spain there also exists a sharp regional differentiation in housing markets (Garrido-Yserte *et al.* 2012), and some recent studies have shown that the poverty map in Spain varies when account is taken of the regional differences in the cost of living (Ayala, Jurado and Pérez-Mayo 2014; Morollón, Navamuel and Vázquez 2013). In parallel, various studies have identified an independent effect of the age of the family head, household composition or the existence of problems of health or disabilities in the family upon the risk of suffering material deprivation, controlling for the “adjusted” income level (Notten 2013; Bibi, Makdissi and Yazbeck 2012; Fusco, Guio and Marlier 2010a,b; Ayllón, Mercader and Ramos 2007; Layte *et al.* 2001; Callan, Nolan and Whelan 1993).

Thirdly, but no less importantly, the deprivation indicators may be capturing dynamic aspects of poverty which are not adequately reflected in an income indicator whose standard reference period is the twelve previous months. Numerous empirical studies have found a greater correlation between long-term income or consumption and material deprivation, in comparison to current income (Meyer and

⁵ Azpitarte (2012) offers an interesting comparative analysis of the poverty profile in Spain and the United States, using jointly family income and wealth levels.

Sullivan 2013, 2003; Fusco 2012; Sullivan, Turner and Danziger 2008; Berthoud, Bryan and Bardasi 2004; McKay and Collard 2004). On the other hand, transitions into and out of the labour market and employment insecurity can have a significant effect, independently of income, on the level of material deprivation, reflecting the economic vulnerability associated with the instability of the income flow (Layte *et al.* 2001, Ayllón, Mercader and Ramos 2007).

From a practical point of view, there exist additional questions related to the operational measurement of the variables considered. The collection of data on household income is a complex statistical operation subject to diverse types of measurement error (biases associated with non-responses, reporting errors due to forgetfulness, ignorance or desire to conceal, etc.). There also exist differences in the reliability of income according to the collection method (surveys, tax and administrative registers, or mixed), which affect comparability among countries or over time. In the case of material deprivation indicator biases may also be produced, related to subjectivity in the interpretation of the questions formulated, feelings of shame of the interviewees⁶ or difficulties in eliminating the impacts of differences in tastes and styles of life upon the measurement of material deprivation.

In real life, one or more of the foregoing causes may be decisive in explaining a specific pattern of overlap between low income and material deprivation, with potentially important consequences when it comes to deciding how to treat –from the dual point of view of statistics and of policy formulation– groups in a situation of risk from only one of the two perspectives.

⁶ As highlighted by Peter Adamson: “The published survey results may have the appearance of objective data, but behind every statistic of child deprivation is an individual parent answering a survey question about whether or not they can afford to allow their child ‘to participate in school trips and events’, or ‘to invite friends home to play and eat’, or ‘to have a quiet place with enough room and light to do homework’” (UNICEF 2012: 12).

c) *Low income and material deprivation in a period of crisis: what do we know?*

Whatever are the variables which at a given time explain a specific pattern of overlap between low income and deprivation, it is foreseeable that a prolonged period of recession entails changes which modify the initial situation. The effects of the economic cycle upon monetary poverty have been analysed in many studies, especially in countries which, like the USA, have long time series of income data. But less is known regarding the effects of recessions on the relationship between low income and material deprivation, partly because it is only in recent years this latter approach has begun to be applied in a general way in European countries. In Spain, some studies have equally confirmed the existence of a significant disagreement between the criteria of low income and material deprivation when it comes to delimiting the population at risk of poverty (Ayala, Jurado and Pérez-Mayo 2011; Devicienti and Poggi 2011; D'Ambrosio, Deutsch and Silber 2011; Martínez 2010; Izquierdo and Serrano 2009; Pérez-Mayo 2005, 2009; Ayala and Navarro 2008; Martínez and Navarro 2008; Ayllón, Mercader and Ramos 2007), but there has been no thorough exploration of the way in which the economic crisis has modified the relationship between income and material deprivation.

The most straightforward effect of a recession is, generally, the loss of jobs and the reduction or disappearance of the regular income sources on which the family economy of many households was based. At overall level, the most probable consequence is an increase in the at-risk of poverty rate, although the impact may vary depending on the income replacement mechanisms of a public (social transfers) or private (savings, credit, or family help) nature available to families, as well as the intra-family distribution of unemployment (Ayala, Cantó and Rodríguez 2011).

It is important to qualify that, given that recessions usually entail a reduction in household aggregate income, the increase in poverty may be of different magnitude depending on whether a “moving” or an “anchored” threshold is applied. In the first case, the reduction of the threshold itself

may moderate (or even make invisible) the increase in monetary poverty provoked by the crisis, affecting alike the evolution of “consistent” poverty. In general, it is to be expected that the crisis has clear effects upon material deprivation and “anchored” poverty, while the effects upon relative poverty depend largely on inequality trends⁷.

The impact of changes in employment upon the standard of living and deprivation may vary on the basis of the strategies available to the household to cope with economic shocks. Changes in labour supply of household members and a fall in consumption, especially spending on durable goods, are typically important reaction mechanisms in the face of adverse shocks suffered by labour income (Blundell 2011, Benito 2006). At the European level, recent research (Deutsch et al. 2015) has found that, when households face economic difficulties, certain expenditures, such as holidays or furniture, tend to be curtailed first than other categories, producing a “deprivation sequence” which does not differ substantially between EU member states or social groups. In the case of Spain, some studies have shown that the crisis has provoked, among other effects, an increase in the underground economy, a reduction in the purchase of luxury goods and an increase in precautionary saving behaviour (Velazco and Ballester 2010). It is important to emphasise that the possibilities of cushioning the negative effects of a loss of income are usually lower in low-income families, who do not have significant quantities of savings or wealth, and greater in households which accumulate greater levels of capital, have higher educational levels and own their homes (Casado 2011). A decisive element in the scenario of the current crisis is the room for manoeuvre of households to adjust housing costs downwards, as income after housing costs is in fact what determines the resources that households really have to meet household members’ needs, as emphasised by a recent UNICEF report (UNICEF 2012).

⁷Although an increasing number of studies in the European field adopt the perspective of anchored poverty to analyse the effects of the crisis (see for example Natali et al. 2014, or Chzhen 2014), there do not yet exist, as far as we know, analyses which tackle the way in which the degree of overlap varies depending on the approach employed.

Also of great importance in predicting the potential effects of the crisis is the duration of episodes of unemployment, typically higher in recessionary phases, increasing the probability that households suffer situations of persistent low income. Several studies with long time series published in the United States have shown that both income and consumption poverty are sensitive to macroeconomic conditions (Meyer and Sullivan 2011) and that differences between income and consumption inequality trends can be explained by changes in the persistence of income shocks (Blundell, Pistaferri and Preston 2008). In the Spanish case, there also exists sufficient evidence of the negative effect of unemployment upon the risk of low income and material deprivation (see, among others, VVAA 2014; Martínez and Navarro 2014; Addabo et al. 2013; Arnal, Finkel and Parra 2013; Malgesini 2013; Gradín and Cantó 2012; or Ayllon, Mercader and Ramos 2007), but studies to investigate possible changes in the overlap of the two phenomena during the crisis are still lacking.

The increase in unemployment, especially that of long duration, the drop in income levels, the difficulties of adjusting housing costs downwards and uncertainty with regard to the future are all factors which make foreseeable an increase in the degree of overlap between low income and material deprivation. Nevertheless, factors such as the decrease in the income level used as a threshold may limit this effect to a certain extent, as it increases the size of the group which suffers material deprivation without having “low” income. Other compensatory elements to be taken into account may be the decreases in the prices of certain goods due to the crisis (for example, housing in Spain, following the bursting of the property bubble), and similarly a downwards re-evaluation of “need” (McKnight 2013). Thus, it is essential to empirically analyse the effects of the crisis on the size and profile of the population which simultaneously suffers low income and material deprivation, and also those groups who are poor using exclusively one of the two criteria.

3. Material deprivation index

The measurement of the degree of overlap between low income and material deprivation requires the selection of a measure of monetary poverty and an index representing the accumulation of deprivations. In this study, we use the conventional Eurostat definition of low income to evaluate the risk of monetary poverty. According to this criterion, people is considered to have low income if they live in a household with an equivalised disposable income (after social transfers) below the at-risk-of-poverty threshold, which is set at 60 % of the national median equivalised disposable income. In the case of material deprivation, our analysis takes as a starting point a subset of the material deprivation indicators available in EUSILC, but uses a deprivation index which deviate on some points from the severe material deprivation measure used in Eurostat statistics. As is well known, the Eurostat index of severe deprivation lists the lack of at least four elements from a list of nine indicators which include the impossibility of permitting oneself certain activities (a week's holiday away from home, heating the home sufficiently, eating meat or fish at least every other day), the existence of financial difficulties (delays in the principal periodic payments, incapacity to meet unforeseen expenditure) and the lack, for economic reasons, of four consumer durables (telephone, television, washing machine and car). Although this is the index currently included in the Europa 2020 strategy (together with low income and low work intensity), it presents certain limitations which reduce its usefulness for the analysis of changes in material deprivation in a country such as Spain.

On the one hand, four of the nine indicators are consumer durables whose possession is highly generalised in Western European countries, to the point at which their lack is very rare and of little relevance. Hardly any of the families interviewed by the INE (Instituto Nacional de Estadística, the Spanish Statistical Office) in 2012 had to do without a television, a telephone or a washing machine due to the lack of income, while even for cars the values did not exceed 6%. This implies that the threshold of four or more hardships is finally applied de facto to a list of six (rather than nine) indicators, thus

reflecting only situations of very severe deprivation which affect a small proportion of the Spanish population (approximately 4% on average in the period 2004-2012).

On the other hand, the heavy weight of access to consumer durables within the total list reduces the sensitivity of the index to the economic cycle, given that the lack of this class of goods is only made clear at the moment of renovation, following a prolonged period of insufficient income. In fact, the percentage of families suffering severe material deprivation did not reach in Spain the level of 5% until 2012, after four years of crisis.

For the set of countries of the European Union, 2012 saw the publication of a far-reaching study aimed at improving the measurement of material deprivation, undertaken on behalf of Eurostat (Guio, Gordon and Marlier 2012). This exhaustive analysis also arrived at the conclusion that it was necessary to modify the scale used to quantify deprivation, given that some of the items included did not pass the basic tests of suitability, validity and reliability in many countries. As a result, a new widened list of indicators has been collected in all countries since the year 2013 and will have to serve to support a new deprivation index. However, the majority of these additional indicators are not available for the period 2004-2012, except as part of the special module of material deprivation which accompanied the 2009 survey.

The strategy followed in the present study is to employ an index of material deprivation which improves the properties of the Eurostat measurement of severe deprivation, within the limitation of not yet having available the widened list of variables. To do this we employ the principal tests of validity, reliability and suitability applied in Guio, Gordon and Marlier (2012) and also in other previous studies undertaken for Spain⁸, with data from 2012 (the last year available at the time of drafting this document).

⁸ Ayala and Navarro (2008) used a latent variables model to define a reliable deprivation index based on a series of variables which gathered together a series of basic requirements of suitability (according to the criterion of majority possession in society) and validity (analysed through the relationship with income and health variables).

We take as a starting point a set of 18 indicators of diverse forms of material deprivation and household problems which are usually included in material deprivation indexes and are available in the Living Conditions Survey for the period 2004-2012 (Table 1). All these variables are collected solely for the household as a whole, which requires the adoption of the hypothesis that they adequately describe the situation of its members. For the possession of consumer durables the habitual criterion is followed of considering that deprivation is suffered only by those who declare they do not possess the good and, furthermore, state that this is due to not being able to afford it, and not to other reasons.

(TABLE 1)

d) Dimensional structure

To be able to summarise this information in one or various deprivation indexes an analysis is made, firstly, of the dimensional structure of the set of variables, which will permit us to detect which variables are most strongly correlated and, therefore, can a priori measure the same concept. Following Guio, Gordon and Marlier (2012), we perform a factorial analysis by applying tetrachoric correlations to take into account the binary or dichotomic nature of the indicators or variables employed.

The selection of the number of factors always implies a certain arbitrariness. The rule established by Kaiser recommends the choice of the number of factors with an eigenvalue (values which show the variance explained by each factor) equal to or above 1, which in the present case would lead us to select four factors. However, a criticism of this rule is that it can tend to overstate the number of factors to be retained, meaning that it is habitual to use more than one criterion (Zwick and Velicer 1986). The scree plot of eigenvalues (Graph 1) relates the size of the eigenvalues to the number of factors, which constitutes an additional criterion to decide the number of the latter (Cattle 1966). The test proposed by Cattle suggests ceasing to extract factors from the point of inflection at which the

eigenvalues no longer have a significant slope. The point at which the curve begins to flatten is the fourth factor, indicative of the maximum number of factors to be extracted.

(TABLES 2 and 3) (GRAPH 1)

The four-factor solution clearly separates a first factor from the rest. This factor includes the indicators which are habitually used to define material deprivation and which refer to basic household commodities or goods and economic or financial stress: not being able to meet unforeseen expenditure, not being able to afford paid holidays away from home at least one week per year, delays in the payment of rent or mortgage, bills and loans, not being able to afford to eat meat, chicken or fish at least every other day, not being able to heat the household adequately, living in a situation of overcrowding, lacking certain basic elements such as a telephone, washing machine, television, car or computer, and having housing costs of over 40% of household income. This factor, which groups together 12 of the 18 initial indicators, includes the variables which a priori could configure the basic index of material deprivation, and excludes, among others, some indicators more closely related to the problems of housing or its surroundings (problems of leaks, damp or rot, noise, crime, contamination or insufficient natural light), which are concentrated in another of the factors, coinciding with the results of numerous previous studies⁹. In Table 4, which shows the matrix of correlations among factors (oblique rotation), it can be seen how the correlation between the two factors, the first (basic index) and the third (problems of the dwelling and its environment), is low (0,18).

(TABLE 4)

e) *Suitability*

⁹ Whelan, Nolan and Maître (2012) and Guio, Gordon and Marlier (2012) offer two recent examples.

A second important aspect is that of the suitability of the indicators. In this case, it principally implies checking that the items included in the index which a priori could configure the basic index of material deprivation are perceived as necessities by the majority of society, as required by the consensual approach proposed by Mack and Lansley (1985). Similarly, in a series of elements it is important to differentiate whether the lack is due to economic reasons or to other motives.

A Eurobarometer (TNS 2007) was performed in 2007 in the EU countries to investigate this question. Families were asked if they considered items from the list necessary or not to reach “a decent standard of living in their countries” (Guio, Fusco and Marlier 2009; Dickes, Fusco and Marlier 2010). Like Guio, Gordon and Marlier (2012), we define the degree of importance of each element as the proportion of persons desiring it (including both the persons who possess it and those who desire it but lack it as they cannot afford it). Of the 12 indicators which on principle could configure the basic index of material deprivation, the goods for which this information is available in the ECV 2012 number only five: telephone (landline or mobile), colour television, computer, washing machine and car.

(TABLE 5)

Table 5 shows the proportion of individuals who “desire” or “do not desire” each element, at a confidence level of 95%. Although these are goods desired by a very wide majority of the population, there exist differences among the three most basic (television, telephone and washing machine, with rates of close to 100%) and the other two (89% for cars and 83% for computers). The five elements are possessed or desired by over 80% of the population, which shows their suitability as indicators of a material deprivation index.

f) *Validity*

To test the validity of each indicator we have also analysed its significance in relation to variables habitually correlated with deprivation. Ayala and Navarro (2008) used income and the state of health as contrasting variables to select, from among the indicators which represented items of majority possession, those which would be included in the latent variables model employed to construct the deprivation index. Using a similar approach, Guio, Gordon and Marlier (2012) employ low income, health problems and subjective economic difficulties to validate deprivation indicators. The tests performed with these three variables, considered both in isolation and in aggregation, reveal that 11 of the 12 indicators are valid to represent deprivation. The indicator of the lack of a television is not significant in two of the three variables (Table 6), meaning it would be excluded from the index.

(TABLE 6)

g) Reliability

A fourth useful criterion in the selection of indicators is the reliability or consistence of the indicators as a whole. Cronbach's Alpha evaluates the reliability of a scale or set of indicators to measure the same latent concept via the degree of internal correlation of those indicators. That is to say, on the basis of Cronbach's Alpha an evaluation is made of how well such indicators create a scale capable of measuring a single concept, in this case material deprivation. The higher is the value of the scale reliability coefficient as a whole, the greater will be the correlation between the estimated value and the real or true value. This coefficient will increase in line with the inclusion of more consistent indicators, which measure the same latent concept as the rest. And on the contrary, it will be reduced according to how many more indicators we include which measure a concept different to the rest.

(TABLE 7)

The Cronbach's Alpha for each indicator shows how the Alpha of the scale would change if the indicator in question were excluded from the scale. Table 7 shows that some indicators have an Alpha greater than that of the scale, meaning its exclusion would increase the overall value of the Alpha. This is in particular the case of the indicators of lacking a telephone or a washing machine. Eliminating these variables from the index, the Cronbach's Alpha of the set of nine indicators would reach 68%, very close to the threshold of 70% habitually used, while the current list of nine indicators used by Eurostat is six points below, at 62%.

In addition to testing the reliability of the set of indicators, it is useful to evaluate the consistency of each of the variables forming part of the index or scale. To do this we shall use latent trait models. This type of model identifies the concept of deprivation as a latent concept (non-observed feature or concept) which cannot be measured directly but can indirectly, through a set of indicators. Table 8 shows the results of the two-parameter latent variables model for the set of indicators which do not present problems of suitability, validity or reliability: not being able to meet unforeseen expenditure, not being able to permit oneself holidays, delaying periodic payments, not being able to afford a meal with meat, not having a car, not having a computer, not being able to heat the dwelling adequately, living in a situation of overcrowding, and having housing expenditure of over 40% of available household income. These confirm the consistency of the nine indicators which comprise the deprivation index.

(TABLE 8)

The second column in the table shows the values of the severity parameter¹⁰ for each of the deprivation indicators selected. This parameter identifies the level of deprivation suffered by the person who responds positively to the deprivation indicator, that is to say the probable severity of the

¹⁰ The severity parameter is the name this value receives in this area or in others such as health, while in the area of education it is known as the difficulty parameter.

deprivation experienced by a person who responds positively to that indicator. The third column gives the parameters of discrimination, which represent how well that indicator distinguishes between those who suffer deprivation and those who do not. The last column reflects this information on the basis of the correlation between the distinct indicators and the deprivation index.

The results show that the individuals who state they cannot meet unforeseen expenditure or cannot go on holiday away from home once a year are those who suffer the lowest level of deprivation (lesser severity). In turn, those who cannot permit themselves a meal of meat, chicken or fish (or their vegetarian equivalent) at least every other day and those who suffer problems of overcrowding are likely to suffer a more severe level of deprivation. The analysis of those parameters permits the adequacy of the set of indicators to be corroborated. On the one hand, none of them exceeds the limit of three standard deviations from the severity measure average, a threshold which has been used in other studies as a criterion of exclusion (Guio, Gordon and Marlier). On the other, all the indicators present a correlation with the overall index equal to or greater than 0,60, far higher than the value of 0,40, which could be considered as a minimum acceptable level. Thus, it is confirmed that the set of indicators listed in Table 8 meets all the conditions of suitability, validity and consistency required to form part of a material deprivation index.

4. Basic descriptives

Once the material deprivation index has been defined, this section presents the evolution of the overall levels of low income and material deprivation in Spain over the recent period, paying special attention to the degree of overlap between the two phenomena before and after the onset of the crisis. Table 9 shows the nine indicators chosen to represent the concept of deprivation by applying the criteria explained in the previous section and the results obtained for the years 2004, 2008 and 2012. As can be seen, the majority of the indicators follow a downward trend until 2008 (the most important exception is the variable measuring the overburden of housing costs, which was already rising before the bursting of the property bubble). During the period 2008-2012, by contrast, all the deprivation variables, except for the two referring to the possession of consumer durables, increased their incidence.

(TABLE 9)

The last line of Table 9 shows the percentage of persons who can be considered as suffering material deprivation, taking as threshold the existence of three or more material hardships. This threshold has the advantage of delimiting a population group similar in size to that derived from applying the relative poverty criterion, which facilitates the analysis of the overlap between the criteria of low income and deprivation.

Table 10 shows the percentages of the population who only suffer low income (according to the conventional criterion of median income, adjusted by using the OECD modified equivalence scale), only material deprivation, low income and material deprivation, or neither of the two problems, over a period of nine years, 2004-2012, which includes the end of the expansionary phase and the first years of the crisis. On the one hand, the data prove that there is a limited overlap between the two phenomena, which coincides with other studies undertaken to date, inside and outside the country. On the other,

there is a sharp increase in the degree of overlap during the crisis, so that in the year 2012 the percentage of persons responding to the profile of “consistent” poverty was 11,7%, approximately 50% greater than in 2008. This increase is larger, in relative terms, than that registered by the rate of low income (which grew by only 7%) and by material deprivation (which rose by 37%)¹¹. It is clear, therefore, that following four years of crisis the poor¹² in Spain suffered greater levels of deprivation than at the onset of the recession. Or, in other terms, there are fewer and fewer poor whose insufficient income is not linked to situations of deprivation. In parallel, the two groups which are disadvantaged according to only one of the two criteria have experienced a contrary evolution during the crisis: in 2012 there were fewer families with low income but without material deprivation than in 2008 and, in turn, more who suffered deprivation even with incomes above the threshold.

(TABLE 10)

As argued earlier, various factors may explain this evolution. Firstly, there must be taken into account the effects of the reduction of the poverty threshold itself, due to the declining median income during the crisis, and which de facto constitutes a hardening of the criterion applied to consider that a household has “low income”. This could have limited the increase in “consistent” poverty during the crisis, by converting situations of “low income and deprivation” into situations of “deprivation without low income”. This explanation provides at least part of the key, given that the profile with the second highest increase during the crisis (24%) is precisely that of “deprivation only” group, as Table 10 shows. The second possible effect of the reduction of the threshold, with different implications for the degree of overlap, is the crowding-out effect from poverty of persons who did not suffer material deprivation despite their low income and who following the crisis came to form part of the group of those having no

¹¹ It should be noted that the increases in the rate of material deprivation and that of “consistent” poverty between 2008 and 2012 prove significant for a confidence level of 95%, which is not the case for the increase in the relative poverty rate.

¹² To simplify and avoid repetition, we often employ throughout the document the label “poor” to refer to persons with income below the threshold, without this implying that we share the identification between poverty and low income. The same caveat is applicable to the “consistent poor” or “doubly poor”, which we use frequently to refer to persons who simultaneously suffer low income and material deprivation.

disadvantage in either of the two fields. This may be the case of many pensioners, given the intense reduction of their relative poverty rate during the crisis period. The reduction of almost 20% in the group which presents only low income also suggests that this explanation has intervened in the Spanish case.

The magnitude of the two effects can be evaluated by comparing the results obtained with the relative and “anchored” thresholds in 2012, taking as base incomes for 2008 to calculate the second poverty line. The comparison suggests that 14,1% of the population would have suffered low income and deprivation in 2012 if the poverty threshold had not been lowered, 2,4 points above the rate observed with the “moving” threshold. In parallel, 3,6% of the population considered “not poor” in 2012 using the relative threshold, would remain within the profile of “only low income” if the 2008 line had been maintained constant in real terms. Thus, the decrease in the threshold has generated, in net terms, a reduction of the rate of “consistent” poverty and of the ratio of overlap.

The fact that consistent poverty has increased in reality by somewhat more than 50%, despite the foregoing effect, suggests the presence of other important changes in the profile of the poor population. A possible explanation is that the increase in the degree of overlap is due simply to the fact that the line applied in 2012 reflects situations of more extreme poverty than in 2008, as a result of the reduction of the threshold. In this case the change would be due, above all, to the different level of income employed as reference, and not necessarily to a modification of the pattern of poverty. This hypothesis is, however, discounted on simulating the results from 2008 using the poverty threshold of 2012, kept constant in real terms. Applying in 2008 a line equivalent to that used in 2012 has the effect of reducing the rates of low income and consistent poverty, but does not increase the degree of overlap between low income and material deprivation. Taking these values as base, the crisis would have increased the incidence on the three risk groups, but most especially the group of “consistent” poor which would have almost doubled its size between 2008 and 2012.

The foregoing arguments reinforce the idea that, beyond the effect of the income level chosen to define the threshold, the crisis has produced a genuine transformation in the link between low income and material deprivation, deteriorating the living conditions of the poor and intensifying the risk of social exclusion for those on the lowest rungs of income. Various processes may have played an important role in this change. Long-term unemployment and labour precariousness tend to generate, in contexts of crisis, situations of persistent low income, more associated with material deprivation than transitory episodes of a fall in income. In addition, housing costs, in the form of rents, mortgages, taxes and bills, can generate a burden which is difficult to adjust downwards in the short term, following income drops. Likewise, the inadequacy of the guaranteed minimum income system in Spain makes possible very sharp levels of monetary poverty in families which have exhausted the right to unemployment benefits. Lastly, the very uncertainty with regard to the unemployment and economic situation and the increasing restrictions on the access to credit can cause a strong reduction of consumption, reflected in the goods and activities included in the material deprivation index.

5. Low income and material deprivation in a period of crisis: results from the multinomial model

Several fundamental questions can be posed in the light of the results given in the previous section: What factors are associated with the different profiles of income and deprivation in the current context of economic crisis? What sociodemographic features do the “doubly poor” have compared to those who present a situation of low risk under only one of the two criteria? Has the crisis really meant a recomposition of the factors of social vulnerability?

To attempt to answer these questions, a multinomial logistic regression model is estimated, at the onset of the crisis (2008) and four years later (2012), using data from the ECV 2008 and 2012. As categories of the dependent variable consideration has been made of the four possibilities which delimit

the two criteria proposed: (1) the individual is neither poor in terms of income nor suffers material deprivation; (2) he or she suffers deprivation but does not have low income; (3) he or she has low income but does not suffer deprivation, and (4) he or she simultaneously suffers low income and deprivation. Groups 2 and 3, associated with the profiles of “only deprivation” and “only low income”, are the most interesting categories to compare, since the differences in the profile of these two groups can help to clarify the factors which “push” a household towards monetary poverty, but not towards deprivation, and vice versa. Consequently, one of these two categories has been chosen in the model, in particular the category of “only low income”, as base category.

The characteristics used as predictors are the variables which, according to the theoretical model, can involve differences in the household resources and/or needs not reflected in current income, together with some basic sociodemographic features of the reference person. The predictors attempt to reflect the situation of the household as a whole, even when the unit of analysis is the individual; thus, in the case of variables collected at individual level (such as educational level or gender) the status of the reference person¹³ is attributed to all the household members. In the final model, the explanatory variables are the tenure status of households (a categorical variable of five classes), the population density of the nucleus in which the household is located (two classes), the low work intensity status (three classes), the employment status of the reference person, differentiating between salaried workers and self-employed and taking into account whether there have been changes in status during the previous year (eight classes), the temporary nature of the contract in the current or previous job (two classes), the existence of limitations in daily activities due to health problems (two classes), the country of birth (three classes), the highest ISCED level attained by the reference person (five classes), gender (two classes) and household type (ten classes).

(TABLE 11)

¹³ The person of reference is considered to be the household member responsible for the accommodation.

The results from the model shed light upon which factors are associated with the different profiles of income and deprivation and also the changes experienced during the period of crisis. The first interesting result is that in both 2008 and 2012 the descriptive variables of tenure status, the population density in which the household is located and the variable which displays the existence of limitations due to health problems are identified as the principal differential factors between the low income groups and the materially deprived; this means that they are variables important to explain why a specific group of persons have a greater risk of belonging to the profile of deprivation than of belonging to a profile of low income. Thus, the fact of having a mortgage or paying rent, residing in densely populated areas or having health problems are factors which increase the risk of suffering material deprivation with respect to suffering only low income, compared to those whose dwelling is fully paid for, who reside in areas of low population density or who have no limitations in activities because of health problems, independently of income level and controlling for the remaining explanatory variables. This result is in line with some of the principal theoretical reasons for the lack of adjustment between the criterion of income and the criterion of material deprivation. The higher costs which have to be met by those who are not owners of a dwelling already paid for, live in urban areas or suffer limitations due to health problems involve extra expenditure which is not included in the concept of income employed.

Housing tenure is, of the three mentioned, the variable with the greatest impact both at the beginning of the crisis, 2008, and, even more clearly, after four years. Having a mortgage or living in rented accommodation (independently of the cost: at market price or below), in comparison with having the dwelling paid for, is associated with a greater probability of suffering material deprivation, independently of income level. Specifically, in 2012 the relative log odds of experiencing “consistent” poverty with regard to the group which only has low income will increase by 1,55, 2,32 and 1,66, respectively, if moving from outright owner to owner paying mortgage or living in rented accommodation. And the relative log odds of suffering deprivation without low income, with respect to

the group which only has low income will increase by 1,67, 2,04 and 1,28, respectively, if moving from outright owner to owner paying mortgage or living in rented accommodation. All the coefficients exceed those obtained in 2008, and in addition are more significant. Particularly notable is the increase in the explanatory power of mortgage repayments in the profile of consistent poverty, and also that of rental at market prices in situations of material deprivation (with and without low income).

This greater quantitative impact of tenure status after four years of crisis is an important finding with relevant policy implications. The capacity of households to confront a negative income shock as strong as that resulting from the current economic crisis is conditioned by their net wealth level and their possibilities of obtaining liquidity from property assets in case of necessity, two aspects which have undergone a serious deterioration as a result of the crisis. Consequently, in a context such as that of 2012, characterised by high rates of unemployment and a situation of paralysis in the housing market, having to make rental or mortgage payments is associated with a greater increase in the probability of suffering deprivation than in 2008. In comparison with mortgaged households, those in rental accommodation do not even have available the hypothetical safety net represented by the asset, but can in turn have easier recourse, at least in theory, to strategies based on moving to less expensive housing. Whatever the case, it is evident that housing is an element capable of sharpening (or, on the contrary, mitigating) the effects of reductions in income upon the standard of living, and this has played an important role in the crisis.

Together with housing-related costs, the existence of limitations in daily activities because of health problems is more closely associated to situations of material deprivation than to those of low income. The relative log odds of belonging to the profile of “only deprivation” with respect to “only low income” will increase by 0,59 in 2012 if moving from a healthy individual to a person with limitations, slightly above that of the effect observed in 2008. In 2012, furthermore, having limitations due to health problems also significantly increases the probability of simultaneously suffering low income and

deprivation, in comparison with healthy individuals. As in the case of housing costs, this variable may be considered as associated to additional expenditure needs not taken into account in the income indicator, which would imply a greater risk of deprivation, given a certain level of income.

Lastly, residing in an urban dwelling (a densely populated zone) is also linked to a greater probability of suffering problems of deprivation than of low income, with regard to those living in less populous areas, both at the beginning of the crisis and after four years, although in this case the explanatory power is somewhat lower in 2012 than in 2008. It should be emphasised that this factor also increases the probability of belonging to the group of those who suffer neither low income nor deprivation, respect to suffering only low income. That is to say, families living in urban areas have a greater probability of being “non-poor” or of suffering deprivation than of having low income without experiencing situations of material deprivation.

A second important finding is that although there exists a strong relationship between certain employment variables and the probability of having low income, these variables do not always have the same impact in terms of material deprivation, and some of the profiles most closely associated to deprivation are precisely the ones which have grown rapidly with the crisis. Households with very low employment intensity during the previous period, those whose household reference person had been unemployed for at least one year at the time of the interview and those who had in their last job (or currently have) a temporary contract are the profiles which have a greater probability of belonging to the group of the “consistent” poor than that suffering “only low income” or “only deprivation”, in comparison with the respective reference categories. This is coherent with the theoretical model, given that the three variables tend to identify unemployment which is long-term and/or stems from more precarious jobs.

The low work intensity of the household, one of the three indicators selected in the Europe 2020 Strategy to identify the risk of poverty or social exclusion, is significantly closer to the probability of suffering low income and deprivation than that of having only low income, in both 2008 and 2012. In turn, the profile of “only low income” is more probable in this group of households, whose size has increased with the crisis, than the profiles “neither low income nor deprivation” or “deprivation without low income”, in both 2008 and, especially, 2012.

The fact of being a member of a household whose reference person has been unemployed for at least one year is equally more associated to the probability of simultaneously suffering low income and deprivation than to any of the other three profiles in the year 2012. It should be emphasised that this variable did not in turn prove to be statistically significant in 2008 to discriminate between the profile of the “doubly poor” and that of only low income, which suggests a change in the structure of “consistent” poverty following four years of crisis. On a different point, it is interesting to compare the results from the model for this group and that of those who have/had been unemployed for less than one year; in both 2008 and 2012, the recently unemployed are less likely than the employed to belong to the group of “non-poor”, but are not clearly concentrated in any of the three risk profiles, in contrast to the long-term unemployed.

In turn, the temporary nature of the previous or current job also makes it more likely to suffer consistent poverty than to be “non-poor” or to suffer only low income or only deprivation, both at the beginning of the crisis and after four years. It is interesting to note that, in this case, discriminatory capacity was greater in 2008 than in 2012. A possible explanation of this change is the diversion produced between precarious employment and unemployment throughout the crisis (unemployment has disproportionately affected workers who had temporary contracts at the end of the expansionary phase).

The remaining employment categories included in the model reduce in some cases the probability of belonging to the group of the “non-poor”, in comparison with stable salaried workers but, in distinction to those mentioned, they do not significantly increase the probability of being in consistent poverty compared to having only low income. Living in a household whose reference person is self-employed is, both at the beginning of the crisis and after four years, the factor most closely associated to the profile of “only low income”, in distinction to that of material deprivation. In particular, the relative log odds of suffering only deprivation with respect to only having low income will decrease by 2,28 if moving from salaried workers to self-employed. This result, which coincides with that of previous studies inside and outside Spain, has often been explained by the high incidence of the under-reporting of income within this collective¹⁴.

Having a part-time job, having found a job less than a year ago or being in a situation of inactivity other than that of retirement are all circumstances which also increase the probability of having low income to a greater extent than that of suffering material deprivation. Although this pattern has not been modified with the crisis, the significance and coefficient of part-time work is greater in 2012 than in 2008, while the weight of the other two variables decreases somewhat. That is to say, following four years of crisis these variables discriminate slightly less than in 2008 between the two “non-consistent” profiles. The negative panorama of the current labour market, with an unemployment rate exceeding 24% and a profound instability of employment in many fields, generates especially difficult conditions for those households whose person of reference does not have a stable salaried job, increasing the probability of suffering episodes of low income and/or material deprivation. Whatever the case, and as stated above, the persistence of unemployment and its generalisation to the diverse household members

¹⁴ A datum which supports this hypothesis is the reduction in the rates of risk of poverty among self-employed workers following the change in the methodology used in the ECV to obtain income data, in 2013. From this wave on, household income has been estimated on the basis of a mixed methodology which combines the use of administrative registers and interviews, in place of solely interviews (INE 2014). Comparing the 2012 and the 2013 surveys, it can be seen that self-employed working full time are the type of workers most affected by the methodological change, with a decrease in the risk of poverty from 34% in 2012 to 22% in 2013.

are the factors which, especially in 2012, most increase the probability of simultaneously suffering low income and deprivation.

Lastly, living in a household whose reference person is retired increases significantly in 2008, but not in 2012, the probability of belonging to the profile of “only low income”. In fact, in 2008 this group has, compared to the reference category (stable salaried worker), a greater probability of having low income without deprivation than of being included in any of the other three profiles. Nevertheless, the differences are no longer significant four years later: the fact that an individual lives in a household headed by a retired person no longer serves to predict a pattern of overlap distinct to that existing in the case of stable salaried workers.

A third finding which should be underlined is the importance of the educational level of the person of reference as an explanatory factor of “consistent” poverty and the change in its impact following the period of crisis. A level of education less than upper secondary education is in 2008 a feature differentiating the “consistent poor” from those suffering only low income or only material deprivation. In 2012, in turn, the profile of the consistently poor reaches as far as those who have completed the lower secondary education. In parallel, education gains explanatory power in 2012, becoming the second factor (after costs associated with housing) which most increases the probability that an individual is consistently poor with respect to having only low income. The significance of this variable in a model which incorporates many other predictors of poverty is relevant, since it implies that a high level of education protects to a certain degree against the risk of belonging to the most vulnerable group (that of the “doubly poor”), even controlling for other variables. On the other hand, in 2012 a higher educational level is necessary than in 2008 to obtain this protective effect.

The last finding to be emphasised is the decrease in the explanatory weight of sociodemographic factors such as household type, gender or the origin of the reference person after four years of crisis,

together with a certain recomposition of the characteristics of risk. Starting from the vector of age, the households formed by individuals or couples of over sixty-five have in 2008 a greater probability of belonging to the profile of “only low income” than that of “only deprivation” or that of the “non-poor”, in comparison with the reference category (an adult couple without children). In 2012 these differences were no longer significant, and in turn the negative association with the profile of consistent poverty comes to be so. Elderly people in 2012 have a lower probability than non-elderly adults of combining low income and material deprivation, whether living alone or as part of a couple. This result is coherent with those of other studies which show that in Spain elderly people have been the demographic group least affected by the crisis, due to factors such as the stability of their income, proceeding largely from the pensions system, and the lower exposure to the recent fluctuations in the property market (relatively few of the elderly make mortgage payments or pay market rents).

In parallel, couples with children, and especially large families, have more probability of belonging to the profile of “only low income” than to that of “only deprivation”, but the coefficients are in general lower in 2012 than in 2008. Other types of families, such as single parent families, were in 2008 more closely associated to the profile of the “doubly poor” than to that of only low income, but the difference ceases to be significant in 2012. These changes can be due in part to the reduction of the income level employed as the poverty threshold following the crisis, given the sensitivity of the poverty rates of some household types to the level of adjusted income at which the poverty threshold is set, but also to the greater explanatory power of factors such as the tenure status or unemployment following the crisis.

Lastly, the gender and origin of the household reference person also witness a reduction in their importance as elements of discrimination among the three risk groups throughout the period of crisis. In the first case, a female rather than male head of household increases the probability of belonging to the group of persons who suffer deprivation, despite not having low income. In 2008, the relative log odds

of belonging to that group, with regard to that of only low income will increase by 0,71, if moving from male to female. In 2012 the relationship is maintained, but the coefficient is lower (0,52). In turn, in 2008 the households whose person of reference was an immigrant from outside the EU had a significantly greater probability of combining low income and material deprivation, or of suffering material deprivation even without having low income, in comparison to those households headed by persons of Spanish origin, even after controlling for the remaining explanatory variables. In 2012, in turn, although extracommunity origin continues to be positively associated to the risk of poverty or deprivation, this does not help to predict a pattern of overlap distinct to that of native households. In some sense, the economic crisis has equalized downwards the economic prospects of the immigrant and native working classes, especially once the two first years of the crisis had been overcome. At the peak of the expansionary period many immigrant households had high levels of deprivation despite having various members in full-time employment, a situation much less usual among native families. In 2012, in turn, unemployment and low work intensity represented the principal mechanisms of social and economic exclusion for both groups.

6. Conclusions

The Great Recession has caused important changes in the income distribution and living conditions of broad social groups. Spain belongs to the small group of European countries whose unemployment rate more than doubled over the first four years of crisis, reaching values in excess of 25% of the active population. Nevertheless, the impact of this economic shock upon the level and composition of poverty varies significantly according to the indicators adopted. The present paper has investigated this question by combining the perspectives supplied by the approach to poverty as low relative income, dominant in the European Union, and that of material deprivation, which also has a long tradition in some European countries and is currently included in the Europe 2020 Strategy as a defining element of the risk of poverty or social exclusion.

The study has assessed the effects of the crisis upon the degree of overlap between low income and material deprivation, as well as the changes in the characteristics of the groups delimited by the crossover of the two criteria, with particular attention paid to the profile of the “doubly poor” and of those who display material deprivation despite not having low income, as opposed to that of households whose low income is not accompanied by situations of objective deprivation. To do this, previous definition has been made of an index of material deprivation which replaces some of the indicators currently employed by Eurostat by others more sensitive to the economic cycle; these configure an aggregate index which presents adequate properties in terms of suitability, validity and reliability.

Our analysis has revealed some important changes in the structure of poverty in Spain over the recent period. Firstly, the crisis has increased by 50% the percentage of persons who simultaneously suffer low income and material deprivation, reaching 12% of residents in 2012, as opposed to the 8% obtained for 2008. Although the degree of overlap between the groups delimited by these two criteria continues to be modest, the “doubly poor” have increased during the crisis at a greater pace than relative poverty and material deprivation taken separately. It has been shown, moreover, that the increase in the size of this group would have been greater (82%) if use had been made of a poverty threshold anchored at 2008 income levels, since the decrease in the poverty line has meant a certain reallocation from the group of “consistent” poor to that displaying “only material deprivation”.

The estimation of the multinomial model has permitted the formal identification of which variables contributed to the lack of adjustment between poverty and deprivation, before and after four years of crisis. The analysis performed for the year 2008 has identified the variables describing tenure status, population density and health-related limitations as the main differential factors making a specific group have a greater risk of belonging to the profile of deprivation than of forming part of a profile of low income. On the other hand, employment variables have been identified as the factors most closely

related to the profile of low income. Another of the principal findings is the significance of the educational level of the reference person as one of the major differentiating features of the profile of the “consistent poor”, compared to the profile of only low income or only material deprivation.

The estimation of the previous model with data from 2012 describes a panorama in which, even while maintaining in general terms the results obtained in 2008, some important changes can be appreciated in the relative weight of certain risk factors. Firstly, the greater impact of housing on the risk of material deprivation is notable, with or without low income. The effect of tenure status, which was already important in 2008, is reinforced after four years of crisis, coming to constitute in 2012 the principal differentiating factor between those who have “only low income” and those who suffer material deprivation. This result is especially important in Spain, a country notable for the small size and high prices of the rental market, the marked predominance of owner-occupied housing, the negative impact of the property bubble upon housing affordability for new households (principally young people and immigrants) and the difficulty in adjusting downwards housing costs during the period of crisis, which has aggravated the risk of poverty and deprivation for an increasing proportion of households.

Secondly, the profile of the consistent poor is in 2012 determined much more by unemployment than in 2008. Following four years of crisis, households headed by a person unemployed for at least one year have a greater probability of simultaneously suffering low income and deprivation than of belonging to any of the remaining profiles. This group of households, whose demographic weight has increased from 3% of the population in 2008 to 10% in 2012, has at the end of the period a greater risk of monetary poverty and, especially, material deprivation than in 2008. It is important to emphasise that the group of the “consistent poor” has not increased solely due to the extension of unemployment, but also because unemployment in 2012 is more closely associated than in 2008 to situations of material deprivation.

Together with unemployment and housing costs, there are other variables which in 2012 influence differently the probability of consistent poverty in comparison to 2008. The study has shown that educational level has become more determinant in discriminating between the “doubly poor” and those who do not suffer deprivation, at the same time as the risk has broadened to medium-lower levels of education, and not only to pre-primary education, as prior to the crisis. Equally, the existence of limitations in activities because of health problems, which was not significant as a determinant of this profile in 2008, came to be so in 2012. These changes confirm the idea that the economic crisis has not harmed all workers equally, but instead has struck more deeply those having a lower level of human capital and more fragile positions in the labour market at the end of the expansionary phase. In parallel, sociodemographic variables such as household type, the urban/rural dichotomy, gender or the national origin of the reference person lose explanatory weight as determinants of the pattern of overlap between low income and material following four years of crisis.

The results described have methodological and social policy implications. First, our empirical analysis confirms the convenience of rethinking the indicators used at European Union level to identify the population at risk of poverty. The criterion of low relative income, in the current definition, does not include adjustments which permit the taking into account of differences in housing costs, nor those associated to dependence, to urban zones or to certain characteristics of the households which have been demonstrated to significantly affect the levels of material deprivation, beyond income level. Tenure status is, as has been seen, one of the most important factors in explaining the “mismatch” between the criteria of low income and deprivation, and thus it is urgent to incorporate adjustments which take into account inequalities in this field. The measurement of income which includes imputed rent, compiled and published by the INE on request from Eurostat, constitutes a first step in this direction, but there is still a need for studies which evaluate the validity and real impact of the new methodology. This is especially true in a country such as Spain, in which households which are “house-rich” but “cash-poor” are a quantitatively important group. At the same time, it is essential to reorient housing policy in Spain

in order to reduce the socioeconomic breach in the access to a good which the Constitution recognises as a fundamental right.

Together with an improved definition of income, the results underline the importance of including a dynamic analysis of the link between low income and material deprivation during the period of crisis. It has been seen that precarious employment and unemployment have a clear relationship with the probability of experiencing episodes of low income, but there exist mediating elements which influence the risk of “consistent” poverty. The results from the model make it clear that the duration of unemployment, the type of previous contract and the low work intensity of the household are factors clearly associated to the profile of low income and deprivation in 2012, suggesting a deficit in the protection of the households most afflicted by unemployment following the onset of the Great Recession. However, it is important to investigate more thoroughly which variables contribute to explaining the different deprivation trajectories of households which have suffered similar negative income shocks.

Finally, we wish to emphasise once again the usefulness of combining low income and material deprivation in the monitoring of poverty. This study has shown that variations in the low income rate can seriously underestimate the effects of the economic crisis upon poverty, due to the downward adjustment of the threshold and to the possible changes in the relationship between low income and deprivation. The experience of Spain shows that the Great Recession has had sharper consequences upon material deprivation than upon low income levels, increasing the weight of the “doubly poor” at a much faster pace than suggested by the statistics of the population “at risk of poverty”. Furthermore, this process has not been solely due to the increase in the demographic weight of the vulnerable groups because of the recession, but also to the greater impact of factors such as long-term unemployment or the costs associated with housing on material deprivation, after four years of crisis. Our work shows data which should be taken into account when redesigning the mechanisms of social protection of families of

working age, in a country whose welfare state model has proved to be barely effective in mitigating the social impact of the crisis.

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ANNEX: TABLES AND GRAPHS

Table 1. List of Material Deprivation Items (ECV)

| Items |
|--|
| 1. Cannot afford to face unexpected expenses |
| 2. Cannot afford to pay for one week annual holiday away from home |
| 3. Cannot afford to avoid arrears in mortgage or rent, utility bills or hire purchase instalments or other loan payments |
| 4. Cannot afford a meal with meat, chicken, fish (or vegetarian equivalent) every second day |
| 5. Cannot afford a car |
| 6. Cannot afford a computer |
| 7. Cannot afford a telephone |
| 8. Cannot afford a TV |
| 9. Cannot afford a washing machine |
| 10. Absence of indoor flushing toilet for sole use of the household or bath or shower in the dwelling ¹ |
| 11. Cannot afford to keep home adequately warm |
| 12. Overcrowding ² |
| 13. Housing cost overburden ³ |
| 14. Leaky roof, damp walls/floors/foundations or rot in window frames or floor |
| 15. Darkness, not enough day-light |
| 16. Suffer from noise from neighbours or from the street |
| 17. Suffer from pollution, crime or other environmental problems |
| 18. Suffer from crime violence or vandalism in the area |

Source: ECV 2004-2012 cross-sectional data, author's computation.

Notes:

¹ To avoid redundancy problems, we combine the variables of lacking an indoor toilet and lacking a bath or shower in a single indicator, as proposed by Guio, Gordon and Marlier (2012).

² According to Eurostat definition, a household is considered as overcrowded if it doesn't have at its disposal at least: i) one room for the household; ii) one room for each couple; iii) one room for each single person aged 18+; iv) one room for two single people of the same sex between 12 and 17 years of age; v) one room for each single person of different sex between 12 and 17 years of age; and vi) one room for two people under 12 years of age". In this analysis, we don't consider single households as deprived if they live in a studio with a bedroom not separated from the living room.

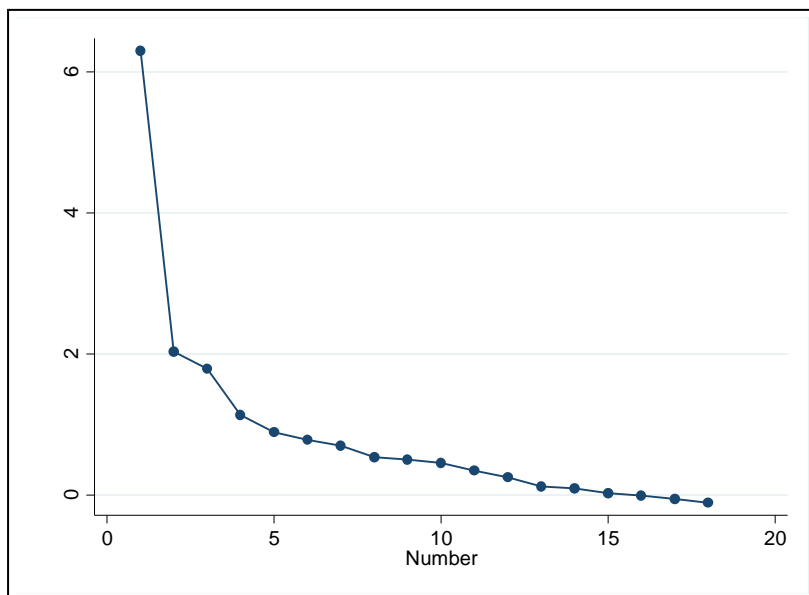
³ The housing cost overburden rate is the percentage of the population living in households where the total housing costs ('net' of housing allowances) represent more than 40 % of disposable income ('net' of housing allowances).

Table 2. Total Variance explained

| Factor | Eigenvalue | Difference | Proportion | Cumulative |
|----------|------------|------------|------------|------------|
| Factor1 | 6,295 | 4,256 | 0,397 | 0,397 |
| Factor2 | 2,039 | 0,246 | 0,129 | 0,526 |
| Factor3 | 1,793 | 0,651 | 0,113 | 0,639 |
| Factor4 | 1,142 | 0,245 | 0,072 | 0,711 |
| Factor5 | 0,897 | 0,113 | 0,057 | 0,767 |
| Factor6 | 0,784 | 0,080 | 0,049 | 0,817 |
| Factor7 | 0,704 | 0,164 | 0,044 | 0,861 |
| Factor8 | 0,540 | 0,034 | 0,034 | 0,895 |
| Factor9 | 0,506 | 0,049 | 0,032 | 0,927 |
| Factor10 | 0,456 | 0,106 | 0,029 | 0,956 |
| Factor11 | 0,351 | 0,097 | 0,022 | 0,978 |
| Factor12 | 0,254 | 0,126 | 0,016 | 0,994 |
| Factor13 | 0,128 | 0,028 | 0,008 | 1,002 |
| Factor14 | 0,100 | 0,070 | 0,006 | 1,008 |
| Factor15 | 0,031 | 0,031 | 0,002 | 1,010 |
| Factor16 | -0,001 | 0,054 | 0,000 | 1,010 |
| Factor17 | -0,054 | 0,051 | -0,003 | 1,007 |
| Factor18 | -0,105 | | -0,007 | 1,000 |

Source: ECV 2012 cross-sectional data, author's computation.

Graph 1. Scree plot of "eigenvalues", 2012



Source: ECV 2012 cross-sectional data, author's computation.

Table 3. Rotated Factor loadings and unique variances

| Items | Factor1 | Factor2 | Factor3 | Factor4 | Uniqueness |
|--|---------|---------|---------|---------|------------|
| Cannot afford to face unexpected expenses | 0,8601 | | | | 0,1909 |
| Cannot afford to pay for one week annual holiday away from home | 0,7717 | | | | 0,3417 |
| Cannot afford to avoid arrears | 0,8455 | | | | 0,2968 |
| Cannot afford a meal with meat/chicken/fish every second day | 0,4028 | 0,3165 | | | 0,6354 |
| Cannot afford a car | 0,6382 | | | | 0,5473 |
| Cannot afford a computer | 0,6683 | | | | 0,4413 |
| Cannot afford a telephone | 0,7666 | | | | 0,4121 |
| Cannot afford a TV | 0,3740 | | | -0,8361 | 0,0175 |
| Cannot afford a washing machine | 0,4151 | 0,5006 | | | 0,2758 |
| Absence of indoor flushing toilet or bath/shower in the dwelling | | 0,9072 | | | 0,1920 |
| Cannot afford to keep home adequately warm | 0,5129 | 0,3442 | | | 0,4393 |
| Overcrowding | 0,4104 | | | 0,8870 | 0,0927 |
| Housing cost overburden | 0,6571 | | | | 0,6368 |
| Leaky roof, damp walls/floors/foundations or rot | | 0,4844 | 0,3516 | | 0,5401 |
| Darkness, not enough day-light | | 0,6313 | 0,4226 | | 0,3860 |
| Noise from neighbours or from the street | | | 0,9136 | | 0,1902 |
| Pollution, crime or other environmental problems | | | 0,7099 | | 0,4830 |
| Crime violence or vandalism in the area | | | 0,6131 | | 0,6118 |

Source: ECV 2012 cross sectional data, author's computation.

Note: The blank spaces represent factor loadings lower than 0.3. Unique variance shows the proportion of the common variance not associated with the factors. It is calculated as 1 - communality.

Table 4. Correlation matrix of the promax rotated common factors)

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|----------|----------|----------|----------|----------|
| Factor 1 | 1,000 | 0,450 | 0,176 | -0,078 |
| Factor 2 | 0,450 | 1,000 | 0,195 | -0,162 |
| Factor 3 | 0,176 | 0,195 | 1,000 | 0,084 |
| Factor 4 | -0,078 | -0,162 | 0,084 | 1,000 |

Source: ECV 2012 cross-sectional data, author's computation.

Table 5. Percent of People wanting the Item.

| | Wanting | Do not wanting | Linearized Std. Err. | [95% Conf. Interval] | |
|-----------------|---------|----------------|----------------------|----------------------|--------|
| Car | 0,8928 | 0,1072 | 0,0035 | 0,8859 | 0,8996 |
| Computer | 0,8332 | 0,1668 | 0,0040 | 0,8253 | 0,8412 |
| Telephone | 0,9832 | 0,0168 | 0,0022 | 0,9788 | 0,9876 |
| Television | 0,9972 | 0,0028 | 0,0006 | 0,9961 | 0,9984 |
| Washing machine | 0,9975 | 0,0025 | 0,0006 | 0,9964 | 0,9986 |

Source: ECV 2012 cross-sectional data, author's computation.

Table 6. Validity problems.

| Items | Low Income | Subjective financial stress | Health problems | Low income + subjective financial stress + health problems |
|--|------------|-----------------------------|-----------------|--|
| Cannot afford to face unexpected expenses | 0 | 0 | 0 | 0 |
| Cannot afford to pay for one week annual holiday | 0 | 0 | 0 | 0 |
| Cannot afford to avoid arrears | 0 | 0 | 1 | 1 |
| Cannot afford meat every second day | 0 | 0 | 0 | 0 |
| Cannot afford a car | 0 | 0 | 1 | 1 |
| Cannot afford a computer | 0 | 0 | 1 | 1 |
| Cannot afford a telephone | 0 | 0 | 1 | 1 |
| Cannot afford a TV | 1 | 0 | 1 | 2 |
| Cannot afford a washing machine | 0 | 0 | 1 | 1 |
| Cannot afford to keep home adequately warm | 0 | 0 | 0 | 0 |
| Overcrowding | 0 | 0 | 1 | 1 |
| Housing cost overburden | 0 | 0 | 0 | 0 |

Source: ECV 2012 cross-sectional data, author's computation.

Note: 0 = significant (no validity problems), 1= non-significant (validity problems). The last column shows the result of a logistic regression including the three variables as predictors, so that the significance of each variable when controlling for the other two can be tested. Low income= equalised household income below 60% median. Health problems= limited in daily activities due to health problems. Subjective financial stress= the household has great difficulties to make ends meet.

Table 7. Reliability. Cronbach's Alpha.

| Item | Item-test correlation | Item-rest correlation | Average interitem covariance | Alpha |
|--|-----------------------|-----------------------|------------------------------|--------|
| Cannot afford to face unexpected expenses | 0,767 | 0,576 | 0,0088 | 0,590 |
| Cannot afford to pay for one week annual holiday | 0,743 | 0,533 | 0,0091 | 0,606 |
| Cannot afford to avoid arrears | 0,559 | 0,408 | 0,0126 | 0,636 |
| Cannot afford a meat every second day | 0,311 | 0,22 | 0,0153 | 0,668 |
| Cannot afford a car | 0,434 | 0,312 | 0,0142 | 0,655 |
| Cannot afford a computer | 0,468 | 0,337 | 0,0138 | 0,651 |
| Cannot afford a telephone | 0,232 | 0,179 | 0,0158 | 0,674 |
| Cannot afford a washing machine | 0,113 | 0,089 | 0,0162 | 0,679 |
| Cannot afford to keep home adequately warm | 0,508 | 0,359 | 0,0132 | 0,646 |
| Overcrowding | 0,371 | 0,233 | 0,0146 | 0,665 |
| Housing cost overburden | 0,456 | 0,271 | 0,0136 | 0,662 |
| Test Scale | | | 0,013 | 0,6733 |

Source: ECV 2012 cross-sectional data, author's computation.

Table 8. Two-parameter Item Response Theory Model. Results.

| Items | Severity parameter | Discrimination parameter | Standardized factor loading |
|--|--------------------|--------------------------|-----------------------------|
| Cannot afford to face unexpected expenses | 0,316 | 3,785 | 0,9668 |
| Cannot afford to pay for one week annual holiday | 0,132 | 3,245 | 0,9556 |
| Cannot afford to avoid arrears | 1,772 | 1,965 | 0,8912 |
| Cannot afford meat every second day | 3,028 | 1,605 | 0,8487 |
| Cannot afford a car | 2,414 | 1,703 | 0,8623 |
| Cannot afford a computer | 2,198 | 1,802 | 0,8744 |
| Cannot afford to keep home adequately warm | 1,984 | 1,743 | 0,8674 |
| Overcrowding | 2,924 | 0,155 | 0,7559 |
| Housing cost overburden | 2,427 | 0,983 | 0,7009 |

Source: ECV 2012 cross-sectional data, author's computation.

Table 9. Material Deprivation in Spain, 2004-2012.

| Items | 2004 | 2008 | 2012 | %Δ 2004-08 | %Δ 2008-12 |
|--|-------|-------|-------|------------|------------|
| Cannot afford to pay for one week annual holiday | 0,449 | 0,362 | 0,466 | -19 | 29 |
| Cannot afford meat every second day | 0,022 | 0,022 | 0,026 | -3 | 17 |
| Cannot afford to keep home adequately warm | 0,095 | 0,059 | 0,091 | -37 | 54 |
| Cannot afford to face unexpected expenses | 0,396 | 0,299 | 0,421 | -24 | 41 |
| Cannot afford to avoid arrears | 0,079 | 0,082 | 0,109 | 3 | 33 |
| Cannot afford a car | 0,068 | 0,059 | 0,057 | -14 | -3 |
| Cannot afford a computer | 0,149 | 0,089 | 0,066 | -40 | -26 |
| Housing cost overburden | 0,049 | 0,101 | 0,143 | 105 | 42 |
| Overcrowding | 0,135 | 0,056 | 0,057 | -58 | 1 |
| Material Deprivation (3+items) | 0,239 | 0,169 | 0,231 | -29 | 36 |

Source: ECV 2004, 2008 and 2012 cross-sectional data, author's computation.

Table 10. Low income, material deprivation and distribution of the population according to the overlap between the two indicators, 2004-2012.

| | Low income | Material deprivation | Overlap group | | | | Overlap ratio |
|------------|------------|----------------------|---------------|------------------|-----------------|-------|---------------|
| | | | None | Only deprivation | Only low income | Both | |
| 2004 | 0,201 | 0,239 | 0,652 | 0,147 | 0,109 | 0,092 | 0,26 |
| 2005 | 0,202 | 0,207 | 0,680 | 0,118 | 0,113 | 0,088 | 0,28 |
| 2006 | 0,203 | 0,191 | 0,691 | 0,105 | 0,117 | 0,086 | 0,28 |
| 2007 | 0,197 | 0,167 | 0,709 | 0,094 | 0,124 | 0,073 | 0,25 |
| 2008 | 0,207 | 0,169 | 0,700 | 0,092 | 0,130 | 0,077 | 0,26 |
| 2009 | 0,201 | 0,203 | 0,687 | 0,112 | 0,110 | 0,091 | 0,29 |
| 2010 | 0,215 | 0,214 | 0,676 | 0,110 | 0,111 | 0,104 | 0,32 |
| 2011 | 0,222 | 0,201 | 0,684 | 0,095 | 0,116 | 0,106 | 0,34 |
| 2012 | 0,222 | 0,231 | 0,665 | 0,114 | 0,105 | 0,117 | 0,35 |
| %Δ 2008-12 | 7 | 36 | -5 | 24 | -20 | 51 | 35 |

Source: ECV 2004-2012 cross sectional data, author's computation.

Note: The overlap ratio is obtained by dividing the number of people suffering low income *and* material deprivation by the number of people suffering low income *or* material deprivation.

Table 11. Multinomial Logistic Regression Results.

| Variables | 2008 | | | | | | 2012 | | | | | |
|---|------------------------------|-------|---------------|-------|----------------------|-------|------------------------------|-------|---------------|-------|----------------------|-------|
| | Neither poor nor deprived | | Only deprived | | Poor and deprived | | Neither poor nor deprived | | Only deprived | | Poor and deprived | |
| | Coef. | t | Coef. | t | Coef. | t | Coef. | t | Coef. | t | Coef. | t |
| Household Type | | | | | | | | | | | | |
| <i>2 adults, no dependent children, both <65</i> | | | | | | | | | | | | |
| 2 adults, no dependent children, at least one >65 | -0,59 | -3,90 | -0,88 | -3,21 | -0,49 | -1,80 | -0,33 | -1,79 | -0,43 | -1,78 | -0,83 | -3,14 |
| One person household <65 | -0,80 | -4,35 | -0,07 | -0,28 | 0,21 | 0,74 | -0,69 | -3,34 | -0,33 | -1,28 | -0,21 | -0,76 |
| One person household >65 | -1,10 | -6,67 | -1,40 | -4,67 | -0,22 | -0,73 | -0,10 | -0,51 | -0,09 | -0,32 | -0,81 | -2,60 |
| Other households without dependent children | 0,41 | 2,40 | 0,68 | 2,82 | -0,03 | -0,11 | 0,03 | 0,20 | 0,14 | 0,61 | -0,42 | -1,62 |
| 2 adults, one dependent child | -0,58 | -3,36 | -0,34 | -1,46 | 0,21 | 0,70 | -0,66 | -3,63 | -0,52 | -2,24 | -0,18 | -0,65 |
| 2 adults, two dependent children | -1,45 | 9,75 | -1,59 | -6,69 | -0,32 | -1,16 | -1,16 | -6,62 | -1,39 | -6,17 | -0,28 | -1,13 |
| 2 adults, three or more dependent children | -2,22 | -9,79 | -2,29 | -6,23 | 0,56 | 1,75 | -2,02 | -8,21 | -1,43 | -3,80 | -0,38 | -1,22 |
| Single parent household, one or more dep.children | -1,62 | -5,44 | -0,63 | -1,62 | 0,81 | 2,12 | -1,12 | -3,99 | -0,55 | -1,63 | 0,58 | 1,78 |
| Other households with dependent children | -0,53 | -2,92 | 0,06 | 0,27 | 0,67 | 2,23 | -0,88 | -4,31 | -0,22 | -0,91 | 0,11 | 0,42 |
| Sex of reference person | | | | | | | | | | | | |
| <i>Male</i> | | | | | | | | | | | | |
| Female | 0,35 | 3,61 | 0,71 | 4,77 | 0,14 | 0,83 | 0,39 | 3,40 | 0,52 | 3,63 | 0,22 | 1,43 |
| Country of birth of reference person | | | | | | | | | | | | |
| <i>Spain</i> | | | | | | | | | | | | |
| Rest of Europe ² | -0,90 | -3,70 | 0,19 | 0,56 | 0,21 | 0,55 | -0,46 | -1,41 | -0,63 | -1,49 | 0,66 | 1,85 |
| Other countries | -0,87 | -3,77 | 0,58 | 2,16 | 0,78 | 2,84 | -1,32 | -6,20 | -0,16 | -0,73 | 0,15 | 0,67 |
| Highest ISCED level attained of reference person | | | | | | | | | | | | |
| <i>Tertiary education</i> | | | | | | | | | | | | |
| Upper secondary education and post-secondary | -0,40 | -2,55 | 0,27 | 1,16 | 0,30 | 1,04 | -0,70 | -4,37 | 0,09 | 0,40 | 0,33 | 1,35 |
| Lower secondary education | -0,83 | -5,89 | 0,38 | 1,71 | 0,39 | 1,40 | -1,27 | -8,32 | 0,04 | 0,19 | 0,74 | 3,27 |
| Primary education | -1,12 | -7,94 | 0,32 | 1,40 | 0,47 | 1,65 | -1,49 | -9,33 | 0,01 | 0,03 | 0,91 | 3,92 |
| Pre-primary education | -1,53 | -8,80 | 0,59 | 1,97 | 1,24 | 3,72 | -1,57 | -7,60 | 0,54 | 1,87 | 1,67 | 5,88 |

Table 11. Multinomial Logistic Regression Results (cont.)

| Variables | 2008 ¹ | | | | | | 2012 ¹ | | | | | |
|---|------------------------------|--------|------------------|-------|----------------------|-------|------------------------------|--------|------------------|-------|----------------------|-------|
| | Neither poor nor deprived | | Only deprived | | Poor and deprived | | Neither poor nor deprived | | Only deprived | | Poor and deprived | |
| | Coef. | t | Coef. | t | Coef. | T | Coef. | T | Coef. | t | Coef. | t |
| Very low work intensity status of household | | | | | | | | | | | | |
| <i>Not</i> | | | | | | | | | | | | |
| Yes | -1,51 | -9,96 | -0,84 | -3,52 | 0,67 | 3,00 | -1,78 | -11,59 | -1,11 | -5,68 | 0,66 | 3,49 |
| N/A (aged 60 or over) | -0,66 | -7,72 | -0,77 | -6,07 | 0,02 | 0,14 | -0,62 | -5,26 | -0,67 | -4,65 | 0,22 | 1,35 |
| Employment status of reference person | | | | | | | | | | | | |
| <i>Stable³ salaried worker, working full time</i> | | | | | | | | | | | | |
| Stable ³ self-employed, working full time | -2,30 | -16,21 | -2,36 | -9,21 | -0,96 | -3,64 | -2,35 | -14,88 | -2,28 | -8,90 | -0,18 | -0,62 |
| Stable ³ part-time worker | -0,76 | -2,79 | -0,68 | -1,98 | -0,21 | -0,52 | -1,46 | -4,80 | -1,11 | -2,95 | 0,02 | 0,04 |
| Working, job found last year | -1,52 | -5,61 | -1,17 | -3,55 | -0,09 | -0,25 | -1,12 | -3,16 | -0,80 | -2,34 | 0,01 | 0,03 |
| Unemployed for at least one year | -1,72 | -7,28 | -1,44 | -4,24 | -0,07 | -0,20 | -1,32 | -6,14 | -0,60 | -2,39 | 0,63 | 2,09 |
| Unemployed, less than one year | -1,31 | -4,78 | -0,63 | -1,89 | -0,10 | -0,25 | -1,06 | -4,15 | -0,56 | -1,96 | 0,47 | 1,39 |
| In retirement | -0,71 | -4,28 | -0,62 | -2,58 | -0,75 | -2,67 | -0,12 | -0,63 | -0,24 | -1,02 | -0,24 | -0,73 |
| Other inactive person | -1,60 | -9,97 | -1,61 | -6,68 | -0,44 | -1,54 | -0,92 | -4,45 | -0,89 | -3,50 | -0,04 | -0,13 |
| Fixed term contract of reference person (current or last job) | | | | | | | | | | | | |
| | -0,26 | -2,43 | 0,21 | 1,37 | 0,76 | 4,48 | -0,32 | -2,44 | -0,05 | -0,36 | 0,38 | 2,52 |
| Housing tenure status | | | | | | | | | | | | |
| <i>Outright owner</i> | | | | | | | | | | | | |
| Owner paying mortgage | 0,59 | 4,84 | 1,56 | 8,98 | 0,68 | 3,17 | 0,67 | 5,23 | 1,67 | 10,45 | 1,55 | 8,03 |
| Tenant paying rent at market rate | 0,02 | 0,09 | 1,40 | 5,55 | 1,70 | 6,70 | 0,24 | 1,05 | 2,04 | 8,77 | 2,32 | 9,24 |
| Accommodation is rented at a reduced rate | -0,17 | -0,84 | 0,86 | 2,71 | 1,47 | 4,74 | -0,17 | -0,56 | 1,28 | 3,71 | 1,66 | 4,64 |
| Accommodation is provided free of charge | -0,27 | -1,89 | 0,48 | 2,01 | 0,60 | 2,66 | -0,31 | -1,79 | 0,46 | 1,80 | 1,06 | 4,98 |
| Live in a densely populated area | 0,41 | 4,92 | 0,62 | 4,66 | 0,66 | 4,21 | 0,37 | 3,66 | 0,30 | 2,41 | 0,47 | 3,41 |
| Reference person is limited in daily activities due to health problems | -0,07 | -0,79 | 0,50 | 3,47 | 0,18 | 1,24 | 0,08 | 0,72 | 0,59 | 4,19 | 0,52 | 2,96 |
| Constant | 4,06 | 21,58 | -0,65 | -2,30 | -2,32 | -6,27 | 4,24 | 20,15 | 0,16 | 0,57 | -2,41 | -6,37 |

Source: ECV 2008 and 2012 cross-sectional data, author's computation.

Notes: ¹In 2008: F(96, 1957)= 22,12; Prob>F= 0,0000. In 2012: F(96, 1914)= 22,27; Prob>F=0,0. ² Rest of EU-27 for 2012. ³ Labour status unchanged over the past year.

