

# **SOCIAL EXCLUSION IN THE EU**

## **A capability-based approach**

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#### Abstract

Fighting social exclusion is close to the top of the policy agenda of most EU countries. However, the very concept of social exclusion remains quite vague. The present paper attempts to operationalise it in the framework of Amartya Sen's 'capabilities deprivation', treats chronic cumulative disadvantage as a proxy for 'social exclusion' and provides an empirical application using the information of the European Community Household Panel. The empirical results suggest that the problem of social exclusion is more severe in Southern European countries with relatively underdeveloped welfare states and the countries usually associated with the 'Liberal' welfare state regime. Lack of full-time employment, low educational qualifications, lone parenthood, non-EU citizenship and bad health are found to be positively and significantly associated with increased risk of social exclusion in most EU countries.

**Keywords:** Social exclusion, deprivation, poverty, EU

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## **1. Introduction**

Since the late 1980s, in the political discourses of several European countries the term ‘poverty’ has been gradually substituted primarily by the term ‘social exclusion’ and, to a lesser extent by the terms ‘social disintegration’, and ‘social marginalisation’. Comprehensive definitions of ‘social exclusion’ used in the academic literature interpret it as the denial of social, political and civil rights of citizens in society or the inability of groups of individuals to participate in the basic political, economic and social functionings of the society [Silver (1994), de Haan (1998)]. In practice, though, policy makers as well as a number of social scientists in EU member-states seem to interpret ‘social exclusion’ as ‘exclusion from the labour market’, ‘acute poverty and material deprivation’ (or both) or, less frequently, ‘inability to exercise basic social rights’ [Mayes et al (2001), Atkinson et al (2002)]. Few empirical studies investigating aspects of social exclusion can be found in the literature and, among them, there exists little agreement regarding its proper operationalisation.

The present paper builds on earlier work of the authors [Tsakloglou and Papadopoulos (2002a, 2002b), D’Ambrosio et al (2002)] and attempts to outline a methodology for the identification of population members at high risk of social exclusion based on Sen’s concept of capability failure, using the information of the European Community Household Panel (ECHP).

## **2. Social exclusion and capabilities**

Earlier studies of social exclusion claimed that ‘poverty’ and ‘social exclusion’ differ in two fundamental respects: ‘poverty’ is unidimensional since it is only concerned with lack of income, whereas ‘social exclusion’ is multidimensional since it is related to a broad range of aspects of deprivation and, further, ‘poverty’ is a static whereas ‘social exclusion’ a dynamic concept [Berghman (1995)]. Both claims are controversial. Although a considerable number of empirical poverty studies equate poverty with lack of income, at least since the pioneering work of

Townsend (1979), many social scientists have argued that poverty is a multidimensional phenomenon and several of them have incorporated aspects of multiple deprivation in their analysis. Further, in recent years with the advent of panel data and the extensive use of administrative records, a large number of empirical studies have been devoted to the investigation of dynamic aspects of poverty. In fact, as Sen (2000) points out, social exclusion might not be such a ‘new’ concept after all. Notions of poverty conceptualised in broader than monetary terms can be found even in Aristotle’s *Nicomachean Ethics*, whereas the notions of exclusion and inclusion are at the centre of the concept of poverty used by Adam Smith in the *Wealth of Nations*.

Sen (1985a, 1999, 2000) argues that in order to assess one’s well being it is essential to define the latter in terms of capabilities rather than opulence or utility. Capabilities, as a freedom notion, is much wider than owning commodities or being happy or even fulfilling desires, as with the classic utilitarian approach. People own commodities, which in turn have certain characteristics that are used in order to satisfy various needs. The way people use these characteristics defines their ‘functionings’; in other words their achievements. The notion of capabilities represents the freedom that a person has in terms of choice among a wider set of functionings and commodities. Limited choice among ‘functionings’ can lead to capability deprivation and, in extremis, social exclusion.

A number of practical problems arise when one tries to assess well-being using the capability approach. The problem first concerns the list of ‘functionings’ that are considered to be important (they may depend on the reference society). The second is a weighting problem on the importance of different functionings, whereas a third problem has to do with the valuation not only of the set of functionings that are chosen but also of the other sets that are not; in other words, the valuation of capabilities. Sen (1983) argues that deprivation in the space of capabilities has an absolute core; it is only in the space of commodities that escaping from a form of deprivation may depend on the reference society. For example, being free

or well-fed is a universal goal but the importance of the particular commodities and/or functionings that will guarantee the satisfaction of these needs may depend on the conditions of the society in which the individual lives. In this sense, it is not necessary to observe a conceptual conflict between the capability approach, which has an “absolutist” core, and an outright relativist approach in Townsend’s research tradition [Sen (1983, 1985b), Townsend (1985)]. In order to assess deprivation in the space of capabilities, one might need to take a relative approach in the space of commodities.

Sen (2000) puts social exclusion in this perspective. Social exclusion is a particular form of relational capability deprivation, closely related to the notion of poverty. It is important to note, though, that not all kinds of deprivational situations should be analysed under the concept of social exclusion. The key point that should be kept in mind is the relational aspects of deprivation that can be brought to attention using this notion. The context given to the idea of social exclusion by Sen, traces the following broad lines. Social exclusion is connected with poverty in the sense that poverty means poor living and not just having fewer commodities or lower monetary income. Thus, social exclusion, like poverty under the capability approach, is multidimensional. Further, as noted earlier, social exclusion is relational. Sen argues that exclusion from social relations is itself as important as other forms of ‘mainstream’ deprivation but it can also lead to these other forms, such as employment deprivation, economic poverty, etc. Finally, there is an issue of relativity in addressing this problem in practice, based on society rules and customs. After all, even under the notion of social exclusion as a particular form of relational capability deprivation, one needs to establish a connection with the particular society that people run the risk of being excluded from; hence the need for a relative analysis in the space of commodities.

Sen makes two further remarks regarding the way social exclusion can lead to deprivation. First, social exclusion has ‘constitutive relevance’, in the sense that it has a distinctive importance of its own, no matter what

other consequence. Moreover, it also has ‘instrumental importance’, in the sense that there are categories of relational deprivation or even unfavourable inclusion that might not be so bad by nature, but their consequences could lead to far more fierce forms of deprivation. As a result, on the one hand social exclusion can be viewed both as a state and as a process leading to deprivation and, on the other hand, other forms of deprivation may reinforce situations of exclusion. Second, a distinction should be made between ‘active’ and ‘passive’ exclusion. The criterion used in this case is whether a policy maker makes a deliberate attempt to exclude from the society particular groups of individuals. This distinction is more important at the level of policy analysis. Sen notes that, even in the case of ‘passive’ exclusion where there is no direct attempt to exclude, it is the policy maker’s responsibility to remedy the possible reasons that lead to exclusion.

### **3. Empirical implementation**

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

The quantification of social exclusion is not an easy task. There is no consensus on a specific method on either ‘functioning’ and ‘capability’ valuation. Sen (1985a) suggests that a good approach of researching well-being based on capabilities would be to use ‘responses to questionnaires’ and ‘non-market observations of personal states’. Regarding which functionings are important, Sen (1985a, pp. 30-31) argues that ‘in the richer countries, the functionings involving longevity, nourishment, basic health, avoiding epidemics, being literate, etc., may have less variation from person to person, but there are other functionings that do vary a great deal. The ability to entertain friends, be close to people one would like to see, take part in the life of the community, etc. may vary a good deal even within a rich country, such as USA or the UK’.

On a slightly different note, Sen (2000) suggests that the quantification of social exclusion calls for discrete treatment in areas such as: lack of access to health care, lack of educational opportunities, absence

of social safety nets, credit market exclusion, lack of facilities for disabled persons, marketing limitations, political and cultural exclusion, employment exclusion, etc. Especially for the latter, Sen (1997) points out that labour market exclusion and social exclusion are not one and the same thing and should not be treated as such, although he admits that that long term unemployment can be both a constitutive and instrumental factor in an exclusionary process.

The data requirements for the operationalisation of Sen's approach are extremely heavy and the information required for its full implementation does not exist in any data set currently available in any country. In this section, we attempt to provide an operational approximation using the information of the first five waves of the ECHP, which cover the period 1994-1998. The ECHP is an ambitious effort at collecting information on the living standards of the households of the EU member-states using common definitions, information collection methods and editing procedures. It contains detailed information on incomes, socio-economic characteristics, housing amenities, consumer durables, social relations, employment conditions, health status, subjective evaluation of well-being, etc. [Eurostat (1996)]. One of the main objectives of the ECHP is the collection of data that could be used for the analysis of various aspects of deprivation and social exclusion. However, in many cases, the information collected refers to 'functionings' rather than 'capabilities'.<sup>1</sup>

Our general approach is the following. In the first step, we construct static indicators of deprivation in particular fields (proxies for capability deprivation). In the second stage, we 'aggregate' this information in order to derive a static indicator of cumulative disadvantage. In the final stage,

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1. For nine EU member-states – Belgium, Denmark, France, Greece, Ireland, Italy, the Netherlands, Portugal and Spain – the ECHP data sets that were provided to the research community contain full information for all (five) waves currently available. In the cases of Germany, Luxembourg and the UK, after the fourth wave the original ECHP data sets were replaced by national panels harmonised, to the extent possible, with the methods and variable definitions of the 'original' ECHP. Information on a number of variables of interest for our analysis is not available in the latter ('harmonised national') panels. Austria and Finland joined the ECHP at later stages of the project, whereas in the case of Sweden a national panel containing relatively limited information was harmonised ex post to fit the ECHP.



we focus on chronic cumulative disadvantage, which can be considered as a reasonable approximation to the concept of ‘social exclusion’ as outlined above.<sup>2</sup> Throughout the paper, the unit of analysis is the individual (population member), although most of the information used has been collected at the household level. All estimates are weighted, using the population weights contained in the ECHP.

Four blocks of information are used in order to construct deprivation indicators: Income (Poverty), Living Conditions, Necessities of Life and Social Relations. The ECHP contains information on several other fields that, under different circumstances, could be exploited for the purposes of the identification of population members at high risk of exclusion (such as current health status, highest education level attained, indebtedness, social security coverage, etc.). This information is not used here for various reasons (quality of information, cross-country comparability, information related to outcomes rather than ability to participate (capability), etc.).

### **3.2. Deprivation, cumulative disadvantage and social exclusion**

The first deprivation indicator examined is lack of sufficient income (poverty). The use of such an indicator in the framework of the present analysis is not uncontroversial. However, as Sen (1999, p. 90) points out, ‘while it is important to distinguish conceptually the notion of poverty as capability inadequacy from that of poverty as lowness of income, the two perspectives cannot but be related, since income is such an important means to capabilities’.

Two concepts of ‘disposable income’ are available in the ECHP. The first is ‘net income from all sources during the previous year’. The second is ‘current net monthly income’. The former is more comprehensive and, *ceteris paribus*, more appropriate for empirical poverty research but,

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2. Relatively similar approaches have been adopted by Schokkaert and Van Ootegem (1990), Brandolini and D’Alessio (1998), Burchardt et al (1999, 2002) and Klasen (2000) in their analyses of living standards, poverty and/or social exclusion in Belgium (among the unemployed), Italy, the UK and South Africa, respectively. See also the axiomatic approaches to the measurement of social exclusion developed by Chakravarty and D’Ambrosio (2002) and Bossert et al (2005).

unlike the latter, it is not contemporaneous with the household's characteristics and refers to the year prior to the survey.<sup>3</sup> In the cases of Austria, Belgium, Denmark, France, Greece, Ireland, Italy, Netherlands, Portugal and Spain we were able to match the information on the household's 'net income from all sources during year  $t$  with the information on the household's characteristics in year  $t-1$ . For this group of countries we were able to create a data set with full information for all the variables used in our analysis for the waves 2-4 (1995-1997). In the cases of Germany, Luxembourg and the UK we had to use the original ECHP data set for the period 1994-1996, since the 'harmonised national' panels did not contain variables crucial for our analysis. As a consequence, the concept of income used in these countries is 'current net monthly income'.<sup>4</sup>

As Sen (1999, p. 89) indicates, 'relative deprivation in terms of *incomes* can yield *absolute* deprivation in terms of *capabilities*' (italics in the original). Hence, in line with the current practice of Eurostat, we adopted a relativist approach and the poverty line used in our analysis is set at 60% of the median equivalent income per capita, using the 'modified OECD equivalence scales'. The latter assign a weight of 1.00 to the household head, a weight of 0.50 to each of the remaining adults in the household and a weight of 0.30 to each child. The estimates of the poverty rate derived using this method on the data of the third wave of the ECHP are reported in the first column of Table 1 (ranks in brackets). They show that relative poverty tends to be higher in countries with higher levels of aggregate inequality such as the Southern European countries associated with the 'rudimentary' welfare state regime and countries associated with the 'liberal' welfare regime (UK and Ireland) and lower in the low inequality countries of Northern and Central Europe with 'corporatist' or

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3. Note that since both concepts do not contain either private or publicly-provided incomes in-kind, they cannot be considered as very good approximations of the concept of 'command over resources'.

4. In the case of Finland that we did not have information for a sufficient number of waves we present only cross-sectional results, whereas, due to the limited information available, we were obliged to leave Sweden out of our analysis.

‘social-democratic’ regimes.<sup>5</sup> The results of sensitivity analysis are provided in the first three columns of Table A1 in the Appendix, as the poverty line rises from 50% to 60% and, then, to 70% of the median equivalent income per capita. Even though in all countries the poverty rates rise sharply as the level of the poverty line increases, in broad terms, the relative ranking of countries hardly changes.

----- Table 1 here -----

The second deprivation indicator used in the paper covers the field of Living Conditions. In this field, the ECHP contains information on 22 items related to the availability of certain household amenities, the existence of particular problems in the accommodation and the enforced lack of a number of durable goods.<sup>6</sup> Naturally, these items are not equally important in all countries. Hence, in order to aggregate the available information into a single ‘welfare indicator’ in the field of Living Conditions, for every item under consideration we assigned to each population member living in a particular country and having access to a particular item (housing amenity or lack of problem or durable good), a weight equal to the proportion of the country’s population living in dwellings not lacking the corresponding amenity or not reporting the relevant problem or not reporting enforced lack of the particular durable good. As a consequence, if a particular item is very rare (common) in a particular country, an individual living in a household with such an item

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5. Despite its popularity, an important drawback of the poverty rate as a deprivation indicator is that it is not sensitive to the distance of the deprived individual from the deprivation threshold; that is, the poverty line. This drawback is also common in the rest of deprivation indicators used in our analysis.

6. The information of the ECHP on household amenities refers to the existence of the following amenities in the dwelling: A separate kitchen, A bath or shower, An indoor flushing toilet, Hot running water, Heating or electric storage heaters, and A place to sit outside (e.g. terrace or garden). The, self-reported, information on problems with a household’s accommodation refers to the following problems: Shortage of space, Noise from neighbours or outside, Too dark, not enough light, Lack of adequate heating facilities, Leaky roof, Damp walls, floors, foundation etc., Rot in window frames or floors, Pollution, grime or other environmental problems caused by traffic or industry, Vandalism or crime in the area. Finally, the information on enforced lack of durable goods due to financial reasons, concerns the following items: Car or van (available for private use), Colour TV, Video recorder, Micro wave, Dishwasher, Telephone, Second home (e.g. for vacation).

is assigned a low (high) welfare weight. Then, the weights of each person are added and the resulting sum is divided by the sum of the average ‘welfare scores’ for each item for the entire population.<sup>7</sup> Finally, a cut-off point in the distribution of this welfare indicator is selected and the population members falling below this threshold are defined as persons at high risk of deprivation in the field of Living Conditions. For the purposes of our analysis, we selected a cut-off point equal to 80% of the median of the distribution of the above welfare indicator. The resulting estimates using the data of the third wave of the ECHP are reported in the second column of Table 1. In absolute terms, the cross-country differences are substantially larger than the differences reported in the first column of the table although. However, with few exceptions – such as the UK and, to a lesser extent, Germany – the differences in the relative ranking of the countries does not differ substantially in these columns. In general, higher aggregate deprivation rates are reported in the poorest EU member-states. It should be kept in mind that these scores are purely relative, in the sense that they have been derived using national cut-off points. Naturally, the particular threshold selected, like the poverty line selected before, is quite arbitrary. Nevertheless, as the evidence of Table A1 of the Appendix shows, the results are fairly robust in terms of the ranking of the various countries when the threshold changes but, of course, not so the share of the population classified as deprived.

The third static deprivation indicator concerns the field of Necessities of Life. The households that participated in the ECHP were asked a

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7. In algebraic terms, the formula used for the calculation of each person’s ‘welfare indicator’,  $u_j$ , is:

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

where  $I$  is the total number of items for which information is available (22 items),  $w_i$  is the proportion of the country’s population living in accommodation with item  $i$  and  $X_{ij}$  a variable that takes the value of 1 (0) if individual  $j$  lives in a household that is (is not) equipped with item  $i$ . For each population member the ‘welfare indicator’,  $u_j$ , takes values between 0 (complete deprivation) and 1 (no deprivation).

number of questions about their ability to afford (if they wanted to) a number of activities considered as quite basic.<sup>8</sup> The method used for the construction of a deprivation indicator in the field of Necessities of Life is similar to that outlined above for the construction of a deprivation indicator in the field of Living Conditions. We first constructed country-specific welfare indicators for each population member based on the proportion of the country's population residing in households where the reference person replied positively to each of the questions asked. After experimenting with several thresholds, we selected a cut-off point equal to 60% of the national median and derived the estimates reported in the third column of Table 1. Again, as a general tendency, higher deprivation rates are reported in the poorest EU member-states and the ranking of the countries in the third column does not differ considerably from the corresponding ranking in the first column. As the results of sensitivity analysis reported in the last three columns of Table A1 of the Appendix show, in the case of Necessities of Life the country rankings are not as robust with respect to the threshold used as in the cases of Income (Poverty) and Living Conditions. The latter should be attributed primarily to the limited number of items used for the construction of the welfare indicator in the field of Necessities of Life, which results in a rather discontinuous distribution of welfare scores.

The fourth static deprivation indicator covers the field of Social Relations. In this case, we classified as deprived those population members aged 16 or above who reported that they talk to their neighbours 'once or twice a month' or less frequently and, in addition, they meet friends 'once or twice a month' or less frequently and, further, they are not members of a club or organisation (such as a sport or entertainment club, a local or neighbourhood group, a political party, etc.). Children aged

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8. The ECHP contains information on the ability of the households to afford (if they want to) the following items: Keep their homes adequately warm, Pay for a week's annual holiday away from home, Replace a worn-out furniture, Buy new, rather than second-hand, clothes, Eat meat, chicken or fish every second day and Have friends or family for a drink or meal at least once a month.

below 16 were classified as deprived or non-deprived in this line with the classification of the reference person of their households. The corresponding estimates are reported in the last column of Table 1. Unlike the other non-monetary deprivation indicators used in this paper that are likely, at least to some extent, to be correlated with the financial conditions of the individual and his/her household, this indicator aims to capture non-material aspects of exclusion. This is evident if the ranking of the countries in this column is compared with the corresponding rankings in the previous columns of the table. Undoubtedly, an individual classified as deprived according to the above definition must live a very isolated life, even if she has the capability to sustain a relatively high material standard of living. Nevertheless, using the information of the ECHP we cannot be sure whether the individual chose to be in this state (unlikely but not impossible) or not.

In the next stage, we proceed to the examination of the ‘cumulative disadvantage’ experienced by the members of each country’s population; that is, the number of indicators according to which each population member is classified as deprived. It should be noted that this approach is not uncontroversial, since it gives equal weight to all deprivation indicators. The corresponding estimates, using the data of the third wave of the ECHP, are reported in Table 2. In all countries, the majority of the population is not classified as deprived according to any of the four deprivation indicators. The proportion of the population classified as deprived according to at least one indicator varies between 20.5% in Denmark and 43.5% in Greece. In all countries, substantially fewer population members are classified as deprived according to at least two indicators than according to at least one indicator. The proportion of the population classified as deprived according to three or four indicators varies between 5.5% in Portugal and less than 1% in Luxembourg. Undoubtedly, being classified as deprived according to one criterion only, may be due to a chance factor. On the contrary, limiting the group of people at high risk of cumulative disadvantage to those classified as

deprived according to three or four criteria would, in most cases, restrict the group to an extremely small group of seriously disadvantaged persons and would not allow any further analysis of the group's characteristics. Therefore, we decided to consider as persons at high risk of (static) cumulative disadvantage, those that are classified as deprived according to at least two of the above deprivation indicators. Using this criterion, the population share of the group varies between 3.4% in Denmark and 18.8% in Greece. High shares are also recorded in Portugal, the UK, Italy, Ireland Spain and France, whereas the corresponding shares in the Netherlands, Luxembourg, Finland and, to a lesser extent, Germany, Austria and Belgium are relatively low.

----- Table 2 here -----

As noted in section 2, one of the characteristics of social exclusion that has been emphasised a lot in the literature is its dynamic nature. Being excluded today may lead an individual to a trap with little prospect of escaping exclusion in the future. Table 3 provides estimates about the number of times each country's population members are classified as being at high risk of cumulative disadvantage during a period of three years using the longitudinal sample of the first three waves of the ECHP.

Taking into account the evidence of Tables 1 and, particularly, 2, it is not surprising to find that in all countries the great majority of the population is not classified as being at high risk of cumulative disadvantage in any of the three years. The share of those classified as being at high risk of cumulative disadvantage in at least one year varies significantly across countries; from 7.6% in Denmark to 26.5% in Greece. Substantial variation is also observed with respect to the population share of those classified as being at high risk of cumulative disadvantage during all three years; from less than 1% in Denmark to over 10% in Portugal.

----- Table 3 here -----

Being at high risk of cumulative disadvantage only once may be attributed to a chance factor and does not necessarily provide a strong indication of high risk of social exclusion. Similarly, escaping high risk of

cumulative disadvantage only once in a period of three years may also be attributed to a chance factor and should not be considered as a strong indication of low risk of social exclusion. Therefore, we decided to focus on those classified as being at high risk of cumulative disadvantage at least twice during a period of three years and classify them as being at high risk of social exclusion. The corresponding estimates are shown in the third column of Table 3. They demonstrate that the cross-country variation is considerable. Only 1.5% of the Danish population are classified as being at high risk of social exclusion, whereas the corresponding proportion for Greece is 15.6%. High proportions are also recorded in Portugal (15.0%) and the UK (13.0%) and relatively low ones in the Netherlands (4.2%), Germany (5.4%) and Luxembourg (5.5%). For the rest of the countries under consideration the relevant share varies between 6.1% and 9.8%.<sup>9</sup>

### **3.3. Population groups at high risk of social exclusion**

This approach can also be used for the identification of population groups at exceptionally high (or low) risk of social exclusion within each country, as well as for the quantification of their contribution to the aggregate risk of social exclusion in the country under examination. Such an analysis is performed in this sub-section. For the purposes of our analysis, each country's population (balanced sample only) is subdivided into mutually exhaustive and exclusive groups according to seven criteria: employment status of the individual and his/her reference person (household head), educational level of the individual and his/her reference person and the individual's household type, health status and citizenship. The corresponding results are reported in Table 4.<sup>10</sup> Two types of estimates are

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9. Comparing these estimates with the estimates of the poverty rate reported in the first column of Table 1, it can be observed that even though the relative ranking of countries does not change dramatically, the cross-country variation reported in the third column of Table 3 is substantially higher than the corresponding variation in the first column of Table 1.

10. Due to the very small number of individuals classified as being at high risk of social exclusion in Danish sample, no such analysis is performed for Denmark. The notation used in Table 4 is the following, Austria: A, Belgium: B, Germany: D, Spain: E, Greece: EL, France: F, Ireland: IRL, Italy: I, Luxembourg: L, the Netherlands: NL, Portugal: P



reported. The first is the relative risk of social exclusion of the population group in comparison with the national average (column A). Figures substantially higher (lower) than 1 indicate a high (low) risk of social exclusion in comparison with the rest of the population within a particular country. However, since the population shares of these groups may differ substantially across countries, two identical relative risk factors may represent very different contributions to the aggregate risk of social exclusion. For this reason, we also report the contribution of each group to the aggregate risk of social exclusion; that is, the share of the group's members among those classified as being at high risk of social exclusion (column B).

----- Table 4 here -----

In the first two panels of Table 4 the population members are grouped according to the employment status of the household's reference person and the individual himself/herself, respectively. Since a considerable proportion of the information required for the construction of the indicator of social exclusion was collected at the household level, it is likely that the characteristics of the reference person may be more important than those of the individual for the determination of the individual's risk of social exclusion. Five groups are formed in the first panel of the table: 'Employed full-time', 'Employed part-time',<sup>11</sup> 'Unemployed', 'Retired' and 'Other inactive'. The latter consists mostly of persons engaged in housework and, to a lesser extent, students.

The estimates reported in the first line of Table 4 show that in all countries, the relative risk of social exclusion of population members living in households where the reference person is employed full-time is lower than the national average. However, in some countries the relevant risk

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and the United Kingdom: UK. Since during a period of three years, several changes in status may be observed, for the purposes of our grouping we used the most frequently observed classification. In cases of ties, the allocation between the observed categories was random, with one exception: In the case of employment status, if one of the three observed classifications was 'unemployed', the individual was classified as unemployed.

11. Following Eurostat's definitions, the criterion for distinguishing between full-time and part-time employment is whether the individual works more than 30 hours per week.

factor is below 0.2 (Ireland, Belgium, UK), whereas in others it is higher than 0.6 (Luxembourg, Italy, Portugal, Austria). As a consequence, in some countries over 40% of those classified as being at high risk of social exclusion live in households where the reference person is employed full-time (Luxembourg, Portugal, Italy) whereas in others the relevant share is around 10% (Ireland, Belgium, UK). The estimates reported in the second line of the table show that in most countries, the small group of persons living in households where the reference person is employed part-time face a risk of social exclusion higher but, with few exceptions (Ireland, Luxembourg, France), not considerably higher than the national average. Due to its small population share, in no country apart from Ireland the group's contribution to the aggregate risk of social exclusion is higher than 10%. On the contrary, in all countries living in a household whose reference person is unemployed is associated with a very high relative risk factor.<sup>12</sup> In the Netherlands, France and Germany the members of this group are over five times more likely to face social exclusion than the average population member, whereas in Belgium, Italy and the UK the relevant relative risk factor is between 4 and 5. At the other extreme, the group's relative risk factors in Luxembourg and Greece are lower than 2. These disparities combined with the fact that the group's population share varies quite substantially across countries, result in very significant cross-country differences with respect to the group's contribution to the aggregate risk of social exclusion. The corresponding contributions are between 20% and 30% in Ireland and Spain but lower than 10% in Luxembourg, Greece and Austria. Cross-country differences are also observed in the next line of the table. In most countries, the relative risk factor of persons living in households whose reference person is retired is close to the national average; the only strong outliers being Greece (risk factor: 1.70) and Ireland (risk factor: 0.31). In most countries between a fifth and a third of those classified as being at high risk of social exclusion

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12. It should be noted that, as Sen (1999, pp.94-95) points out, it is important to distinguish unemployment as constitutive of capability failure and as a cause of capability failure.

are members of the group. The exceptions are on the one side Ireland (3.4%), Netherlands (12.5%), Spain (16.9%) and the UK (17.3%) and on the other Belgium (41.7%) and Greece (34.6%). Finally, the heterogeneous group of persons living in households whose reference person belongs to the 'Other inactive' group appear to face a risk of social exclusion substantially higher than the national average in almost all countries under examination and, in some countries, over a third of those classified as being at high risk of social exclusion are members of this group (the Netherlands, the UK, Ireland, Belgium).

In the second panel of Table 4 the grouping factor is the employment status of the population member. The groups used are the same as those used in the first panel of the table, with three exceptions: 'discouraged workers', 'constrained workers' and 'precariously employed'. Such groups appear with increasing frequency as vulnerable population groups in policy debates. The group of 'precariously employed' persons is formed by extracting them from the group of those employed full-time or part-time. They are persons that were in employment in a particular wave of the ECHP but had experienced at least two unemployment spells during the previous five years or one unemployment spell lasting for over one year during the same period and, in addition, they reported that they felt 'extremely' or 'very' insecure in their current employment. The groups of 'discouraged workers' and 'constrained workers' were extracted from the group of 'other inactive' and consist of two types of inactive but not retired persons. 'Discouraged workers' are those who left the labour market because, as they reported, believed that there was no proper job for them. 'Constrained workers' are those, mostly females, who reported that they would have liked to have a job but were not searching for one because of housework or caring for children or other people.

Like the results of the first panel of the table, the results of this panel suggest that, in all countries those on full-time employment face a substantially lower risk of social exclusion than the rest of the population. Again, a considerable dispersion in the corresponding relative risk factors

is observed (from 0.11 in Ireland to 0.64 in Portugal). On the contrary, unlike the first panel of the table, the evidence of the second panel suggests that in most countries persons employed part-time face a lower risk of social exclusion than the average population member, even though the group's contribution to the aggregate social exclusion is higher than the contribution of the group of persons living in households headed by a part-time employee. Presumably, this difference should be attributed to the fact that most of the part-time employees are spouses or children of other household members (reference persons) who are employed full-time. In most cases, the opposite picture emerges with respect to the group of unemployed persons. Their relative risk of social exclusion is always higher than the national average but, in most cases, lower than the corresponding risk of persons living in households whose reference person is unemployed, implying that many unemployed persons live in households headed by persons with a different employment status (presumably employed). In almost all countries, the groups of 'discouraged workers' 'constrained workers' and, to a slightly lesser extent, 'precariously employed' persons face a risk of social exclusion higher than the rest of the population. Only the second of these groups, 'constraint workers' has a relatively high population share in all countries and, as a result, in some countries over a fifth of those classified as being at high risk of social exclusion are members of the group (Ireland, Spain, UK) In line with the results reported in the top panel of the table, both the relative risk and the contribution of the 'Retired' to the aggregate risk of social exclusion vary considerably across countries. On the contrary, once the 'constrained workers' and the 'discouraged workers' are excluded from the group, in most countries the remaining members of the group 'Other inactive' face a risk of social exclusion lower than the national average. Finally, it is important to note that in all but one (Greece) of the countries under examination children aged below 17 face a higher risk of social exclusion than adults. In fact, in four countries the contribution of children to aggregate social exclusion is between 30% and 40% (UK,

Luxembourg, the Netherlands, Belgium), whereas in Ireland almost one in two population members at high risk of social exclusion is a child.

In the third panel of Table 4 the population members are grouped according to their household type. Five groups are formed: ‘older household, no children’ (persons aged over 64 living alone and childless couples where at least one partner is aged over 64), ‘younger household, no children’ (persons living alone or childless couples aged below 64), ‘lone parent household’, ‘couple with children’ and ‘other household types’. In this panel, cross-country differences are more striking than in the first two panels of the table.

In the majority of the countries under examination, the risk of social exclusion of the group of older households without children is close to the national average. There are significant exceptions, though. The corresponding risk factor is around twice as high as the national average Greece, Austria and Portugal, whereas the group’s relative risk factors in Luxembourg, the Netherlands, and, to a lesser extent, Ireland are substantially lower than the national average. These differences, combined with the fact that the group’s population share varies substantially across countries, leads to spectacular cross-country differences with respect to the group’s contribution to the aggregate risk of social exclusion. Less than 5% of those at high risk of social exclusion in Ireland are member of the group, whereas the corresponding figure in Greece is close to 30%. Unlike the estimates reported in the first line of this panel, the estimates of the second line suggest that in all countries the group of younger households without children face a risk of social exclusion lower than the national average. Likewise, in most countries the risk of social exclusion of the members of couples with children is close to the national average. However, due to the fact that in all countries this is a large group, in most countries between 30% and 50% of those at high risk of social exclusion are members of the group. There are exceptions, though. In Luxembourg, Belgium and the UK over half of those classified as being at high risk of social exclusion belong to the group, whereas in

Ireland, despite the fact that the group's risk factor is not very high, over two thirds of those facing a high risk of social exclusion are members of this group. On the contrary, the corresponding shares in Greece and Portugal are lower than 30%. In all countries except Greece, the members of lone parent households face a higher risk of social exclusion than the rest of the population. In some countries, the corresponding risk factors are extremely high – the Netherlands (7.17) and, to a lesser extent, the UK (3.51) and Germany (3.47) – as does the group's population share. As a consequence, in countries such as Greece, Spain and Italy less than 5% of those classified as being at high risk of social exclusion are members of lone parent households, whereas in Ireland, the UK and Germany the corresponding figure is around 10% and in the Netherlands a staggering 26.9%. No particular interest seem to present the results for the heterogeneous group of members of 'Other household types'.

In the next two panels of Table 4, the national samples are grouped according to the educational status of the reference person (fourth panel) and the individual (fifth panel). Using the information of the ECHP, we are only able to form four groups: 'tertiary', '2<sup>nd</sup> stage secondary', 'less than 2<sup>nd</sup> stage secondary' and 'still in education'.<sup>13</sup> In several instances in the public discourse, low educational qualifications are cited as one of the main routes to social exclusion. Unfortunately, the information of the ECHP does not allow proper testing of this hypothesis, since the information contained therein on the educational qualifications of the population members is not particularly disaggregated. In some countries, the group 'less than 2<sup>nd</sup> stage secondary' includes almost two thirds of the population members.

The evidence of these panels suggests that, indeed, high educational qualifications are an effective barrier against social exclusion. In all countries, the risk of social exclusion of tertiary education graduates or members of households where the reference person has completed tertiary education is very significantly lower than the national average and, in

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13. As well as 'Aged less than 17' in the fifth panel - a group that was discussed earlier.

most cases, the group's contribution to the aggregate risk of social exclusion is quite small, if not negligible. Moreover, in almost all cases the relative risk factors of upper secondary education graduates or members of households where the reference person has completed the 2<sup>nd</sup> stage of secondary education that are reported in the second line of these panels are higher than the corresponding estimates reported in the first line of the panels but lower than the national average. However, the cross-country differences in the relative risk factors are quite considerable, ranging from 0.15 in Portugal to over 0.9 in Germany. In all countries, the majority of those classified as facing a high risk of social exclusion have not completed the 2<sup>nd</sup> stage of secondary education. Nonetheless, primarily due to differences in population shares, the group's contribution to the aggregate risk of social exclusion varies considerably across countries; from around 30% in the Netherlands and Germany to around 90% in Greece and Portugal. Cross-country differences are also reported in the next line of these panels, regarding the small group of students or households headed by students. In most cases, these are low-risk groups, although the evidence of the Netherlands points to the opposite direction.

In the next panel of Table 4 the population members are grouped according to their self-reported health status into 'Sick/Disabled' and 'Healthy'. More specifically, the first group consists of those who reported that they had "bad or very bad health in general" and, in addition, that they were "severely hampered in daily activities by mental health problem illness or disability", whereas the rest of each country's population members are classified as 'Healthy' (including children aged less than 16, for whom no such information was provided). Although far from uncontroversial, using this classification, we can examine the extent to which health factors are associated with the risk social exclusion in the countries under examination. The results of Table 4 suggest that in all countries those classified as 'Sick/Disabled' face a risk of social exclusion substantially higher than the national average – in most cases between 2 and 3 times higher.

In the last panel, the members of the ECHP are grouped according to their citizenship. In almost all countries, poor immigrants from Third World countries are considered to be among the most vulnerable groups in the society. The information of the ECHP does not allow the classification of the population members according to their citizenship in a way that would be suitable for the purposes of the present work. Here, we use two groups: 'EU citizens' and 'non-EU citizens'. For a number of reasons, the corresponding estimates should be interpreted with great caution. Immigrants, and especially, illegal immigrants, are likely to be seriously underrepresented in the sample of the ECHP. Moreover, not all non-EU immigrants originate from poor developing countries and their composition varies a lot across EU member-states. The estimates of Table 4 suggest that in almost all countries in which a sufficiently large number of non-EU citizens are included in the ECHP sample, this group faces a high relative risk of social exclusion, especially in countries such as the Netherlands, Luxembourg, Austria and, to a lesser extent, France and Germany. In fact, one in five persons at high risk of social exclusion in France and Austria is a member of this group, while the contribution of 'Non-EU' citizens to the aggregate social exclusion is around 10% in Belgium and Luxembourg.

### **3.4. Determining factors**

Several of the factors that were used in the previous sub-section are correlated with each other and, hence, it may not be clear which are the significant determining factors that push population members into or out of social exclusion. For example, in almost all EU countries the unemployment rates of persons with low educational qualifications living in lone parent households are substantially higher than the national average. The results of Table 4 demonstrate that the contributions of lone parent households, unemployed persons and persons with low educational qualifications to the aggregate rates of social exclusion are higher than their population shares in almost all EU countries. One can then ask,



“*ceteris paribus*, which, if any, of these factors are significant for the determination of aggregate social exclusion?”. Moreover, the evidence of Table 3 highlighted that the observed discrepancies in the shares of the population at high risk of social exclusion in the member-states of the EU are very considerable. Similarly, large cross-country differences with respect to the composition of the population at high risk of social exclusion were reported in Table 4. Therefore, it is interesting to investigate to what extent the cross-country discrepancies in the rates of social exclusion can be attributed to differences in the explanatory variables used in our analysis rather than to other national or welfare regime specific factors.

This sub-section attempts to provide an answer to questions like this, using multivariate analysis. For the purposes of the analysis, we use logistic (logit) regression techniques on the longitudinal (balanced) sample of the ECHP. The independent variables are the characteristics of the individual and his/her household reported in Table 4. Due to space limitations, we only report results when the samples of the 13 countries used in our analysis are pooled together (using national thresholds).<sup>14</sup> The corresponding results are reported in Table 5. They are odds ratios and measure the marginal impact of a change in a particular characteristic of the reference group.<sup>15</sup> The odds that an individual with certain characteristics will be excluded are given by the probability that she will be excluded over the probability that she will not be excluded. The odds ratio is the odds of the individual with particular characteristics (in our case, all but one of the characteristics of the reference group) divided by the odds of an individual belonging to the reference group. An odds ratio higher (lower) than 1 implies that changing the particular characteristic of

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14. For a country-by-country analysis, see Tsakloglou and Papadopoulos (2002a).

15. The reference group consists of EU citizens who are in full-time employment, did not complete the 2nd stage of secondary education, did not report serious health problems, live in households consisting of a couple with one or more children and no other adults whose reference person who did not complete the 2nd stage of secondary education and is employed full-time. When interpreting the results of Table 5, it should be kept in mind that the baseline risk (estimated risk of social exclusion of the reference group) is lower than the estimated risk of social exclusion of the entire population.

the reference group increases (decreases) the risk of social exclusion.<sup>16</sup> Along with the odds ratios, we report the statistical significance of the coefficient from which the odds ratio was estimated.

----- Table 5 here -----

In the first column, the set of explanatory variables consists of the variables reported in Table 4 and a set of country-specific dummy variables. In the second column of the table, the country-specific dummy variables are replaced by a set of dummy variables corresponding to the four welfare state regimes observed in the EU [Ferrera (1996), Bonoli (1997)]: Continental-corporatist, Liberal, Social-democratic and Southern. Austria, Belgium, France, Germany and Luxembourg are allocated to the ‘Continental’ regime. The ‘Liberal’ regime is represented by Ireland and the UK. Following Goodin et al (1999), we classified Denmark and the Netherlands in the ‘Social-democratic’ regime. The ‘Southern’ regime countries are Greece, Italy, Spain and Portugal. The weights used in Table 5 are the country-specific sample weights of the ECHP multiplied by the population share of each country in the total population of the 13 countries of our sample.

In both models, the country dummies and the welfare regime dummies turned out to be jointly statistically significant, thus implying that even after controlling for factors such as employment status, educational qualifications, household type health status and citizenship, some part of the dependent variable’s variation can be attributed to national or regime specific factors. The estimates reported in the top panels of the table are broadly in line with the estimates of Table 4. The risk of social exclusion appears to be positively related to any departure from full-time employment of the individual or the household’s reference person (especially unemployment and other kinds of inactivity, apart from retirement in the case of the population member), lone parenthood, low educational qualifications, bad health status and non-EU citizenship.

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16. Hence, an odds ratio higher (lower) than 1 does not imply *ceteris paribus* a risk of social exclusion higher than the national average, but a higher (lower) risk in comparison with the reference category

The estimates reported in the second column of Table 5 suggest that, *ceteris paribus*, the risk of social exclusion is lower in the ‘Social-democratic’ regime vis-à-vis the ‘Continental’ regime (reference group), whereas in the latter the risk of social exclusion is lower than that of the ‘Liberal’ regime. Further, the estimates of this column show that, after controlling for the rest of the variables included in our analysis, the risk of social exclusion is not significantly different in the countries of the ‘Continental’ and the ‘Southern’ regime.<sup>17</sup>

#### 4. Conclusions

The paper outlined a methodology for identifying individuals at high risk of social exclusion in the countries of the EU based on Sen’s capability approach, using the data of the ECHP. In the first step, population members deprived in four fields (Income, Living Conditions, Necessities of Life and Social Relations) were identified. In the second step, the extent of cumulative disadvantage of these individuals was examined and, in the final step, we identified as persons at high risk of social exclusion those who were found suffering from chronic cumulative disadvantage. Application of this method to the data of 13 EU countries revealed very substantial cross-country differences in the population shares of those classified as being at high risk of social exclusion. The highest levels of aggregate risk of social exclusion were recorded in a couple of southern countries (Greece and Portugal) as well as the UK and the lowest in a number of northern and central European countries (Denmark, the Netherlands, Germany and Luxembourg). Medium levels were observed in the remaining countries (Austria, Belgium, France, Ireland, Italy, and Spain).

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17. Nevertheless, it can be argued that one of the main functions of the welfare regimes is to influence variables that have already been included in our analysis (employment, education, etc.) and, thus, the relevant estimates may be biased. Moreover, the estimates of Table 5 should be treated as indicative only. In effect, the method of estimation adopted there ‘forces’ the impact of the independent variables to be the same in all countries and/or welfare regimes and the only national/regime influences operate through the national/regime dummy variables.

The final part of our paper was devoted to the identification of population groups at high risk of social exclusion within the 13 countries. The results of the analysis revealed a number of qualitative similarities and quantitative differences across the EU. In all countries under examination, lack of full-time employment by either the individual or, especially, the household's reference person were found to be positively and significantly associated with increased risk of social exclusion. The strongest effects were associated with unemployment, precarious employment and other types of inactivity apart from retirement. In addition, the risk of social exclusion was found to be strongly negatively associated with education and, in most countries, positively associated with non-EU citizenship, bad health and lone parenthood. When the samples of all countries were pulled together, it was revealed that country and welfare regime effects were significant in explaining the probability of social exclusion even after controlling for the impact of the aforementioned personal characteristics, whereas, *ceteris paribus*, it was found that the risk of social exclusion is higher in the 'Liberal' and lower in the 'Social-democratic' regime, with the effects of the 'Continental' and 'Southern' regimes lying in the middle.

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Table 1. Deprivation indicators

Country	Proportion of the population in the 3 <sup>rd</sup> wave of the ECHP (1996) classified as deprived according to:							
	Income (Poverty)		Living Conditions		Necessities of Life		Social Relations	
Austria	13.6	[9]	6.8	[6]	11.8	[9]	5.9	[4]
Belgium	15.1	[8]	6.8	[7]	10.6	[11]	8.8	[1]
Denmark	10.0	[13]	4.6	[11]	6.5	[14]	4.0	[9]
Finland	12.0	[10]	3.9	[14]	11.5	[10]	2.9	[10]
France	15.4	[7]	6.6	[8]	15.2	[7]	4.3	[8]
Germany	10.3	[12]	6.3	[9]	11.9	[8]	4.7	[6]
Greece	22.3	[2]	10.6	[2]	32.2	[1]	2.0	[12]
Ireland	19.6	[5]	9.7	[3]	15.4	[6]	0.6	[14]
Italy	18.1	[6]	9.2	[4]	16.0	[[3]	6.8	[2]
Luxembourg	9.2	[14]	4.5	[12]	7.7	[13]	6.5	[3]
Netherlands	11.2	[11]	4.2	[13]	9.9	[12]	5.2	[5]
Portugal	22.0	[3]	19.6	[1]	15.9	[4]	4.5	[7]
Spain	19.7	[4]	8.7	[5]	15.6	[5]	2.3	[11]
United Kingdom	23.8	[1]	5.5	[10]	17.6	[2]	1.6	[13]

[ranks in brackets]

Table 2. Indicators of cumulative disadvantage (3<sup>rd</sup> wave of the ECHP - 1996)

Country	Proportion of the population classified as deprived* according to:				
	No criterion	At least one criterion	At least two criteria	At least three criteria	All four criteria
Austria	71.5	28.5	7.6	1.6	**
Belgium	70.7	29.3	8.2	2.8	**
Denmark	79.5	20.5	3.4	1.3	**
Finland	76.6	23.4	5.8	1.0	**
France	70.7	29.3	9.4	2.6	[0.2]
Germany	76.7	23.3	7.3	1.9	**
Greece	56.5	43.5	18.8	4.5	**
Ireland	71.0	29.0	10.6	4.2	**
Italy	65.4	34.6	11.3	3.3	[0.2]
Luxembourg	78.5	21.5	5.5	[0.8]	**
Netherlands	77.7	22.3	5.4	1.0	[0.2]
Portugal	60.0	40.0	15.6	5.5	[0.3]
Spain	65.7	34.3	9.9	2.2	**
United Kingdom	67.7	32.3	14.4	3.5	**

\* Using the criteria of Table 1: Income (Poverty), Living Conditions, Necessities of Life and Social Relations.

Note: Figures in brackets denote that the estimate is derived from a small number of observations (between 20 and 50), while a double asterisk denotes that there are fewer than 20 observations in the sample.



Table 3. Indicators of high risk of 'social exclusion'

Country	Proportion of the population classified as suffering from cumulative disadvantage* during a period of three years (1994-96)			
	Never	At least once	At least twice	Three times
Austria	87.0	13.0	6.1	2.6
Belgium	85.3	14.7	7.5	4.4
Denmark	92.4	7.6	1.5	[0.4]
France	85.2	14.8	6.9	2.9
Germany	87.0	13.0	5.4	1.8
Greece	73.5	26.5	15.6	7.8
Ireland	84.3	15.7	9.8	5.3
Italy	81.0	19.0	9.7	4.6
Luxembourg	88.7	11.3	5.5	[2.1]
Netherlands	91.2	8.8	4.2	1.5
Portugal	75.9	24.1	15.0	10.8
Spain	82.5	17.5	7.1	2.2
United Kingdom	79.8	20.2	13.0	8.0

\* Classified in a particular year as deprived according to at least two of the following criteria: Income (Poverty), Living Conditions, Necessities of Life and Social Relations.

Table 4. Relative risk factors and contributions to the aggregate risk of social exclusion of particular population groups

	A		B		D		E		EL		F		IRL		I		L		NL		P		UK	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
<b>Employment status (ref. person)</b>																								
Employed full-time	0.64	35.1	0.17	10.2	0.56	36.5	0.58	33.9	0.58	39.8	0.45	30.6	0.14	8.1	0.76	45.1	0.77	53.4	0.29	17.4	0.69	47.0	0.19	11.9
Employed part-time	0.70	2.9	0.77	1.1	0.69	1.7	2.28	2.0	1.69	1.7	2.78	4.0	4.51	16.3	1.32	1.3	[2.80]	[3.0]	1.15	5.4	0.90	2.0	0.62	1.7
Unemployed	3.18	7.3	4.72	10.0	5.18	19.6	2.63	27.4	1.92	5.2	5.45	18.7	3.42	29.3	4.46	11.1	**	**	5.49	14.0	3.32	10.1	4.11	20.3
Retired	1.26	28.7	1.50	41.7	0.90	22.6	0.87	16.9	1.70	34.6	1.21	29.2	0.31	3.4	0.78	24.6	0.98	23.3	0.68	12.5	1.31	25.3	0.89	17.3
Other inactive	1.71	26.0	3.66	37.0	4.50	19.6	1.70	19.7	2.33	18.6	4.36	17.5	2.57	42.9	2.82	17.9	4.78	19.5	3.63	50.7	1.83	15.6	4.09	48.8
<b>Employment status (individual)</b>																								
Employed full-time	0.53	21.3	0.13	4.1	0.43	16.5	0.38	9.9	0.58	19.1	0.32	12.2	0.11	3.4	0.46	13.9	0.56	20.1	0.15	4.5	0.64	26.9	0.14	5.0
Employed part-time	0.71	2.9	0.11	0.4	0.73	5.1	1.00	1.7	1.27	1.7	0.97	3.1	0.53	2.3	0.80	1.4	1.06	5.2	0.83	10.6	0.88	2.4	0.37	3.0
Unemployed	2.06	4.2	3.07	9.4	3.67	16.5	2.05	21.2	1.44	7.1	3.51	18.9	2.35	11.6	2.69	15.1	[2.27]	[3.0]	3.55	9.9	1.10	2.9	2.70	12.9
Discouraged	[1.87]	[0.9]	3.78	3.6	3.45	1.5	2.24	2.8	1.95	0.7	2.66	1.1	3.22	4.4	2.50	5.0	--	--	--	--	1.05	0.6	2.39	1.4
Constrained	1.46	11.8	1.82	17.6	1.06	7.7	1.08	21.7	1.09	18.3	2.19	8.4	1.21	21.9	1.38	17.8	1.17	17.9	2.13	10.8	1.51	11.4	2.22	21.3
Precariously employed	[0.86]	[0.2]	0.85	0.9	2.22	1.7	1.53	3.6	1.33	1.9	1.49	0.8	1.81	3.4	2.61	3.4	--	--	0.0	0.0	1.59	1.8	0.76	0.9
Retired	1.79	12.4	1.31	14.3	0.76	3.0	0.57	4.5	0.97	5.4	1.47	17.0	0.44	2.1	0.80	8.2	1.15	6.0	2.02	24.1	0.49	3.9	1.42	3.6
Other inactive	1.32	22.7	0.89	18.2	0.92	19.5	0.81	8.6	1.81	30.7	1.06	18.4	0.49	2.9	0.76	15.2	0.81	12.7	0.51	7.8	1.50	22.6	0.85	13.8
Aged less than 17	1.17	23.6	1.60	31.5	1.69	28.4	1.31	26.2	0.77	15.1	1.06	20.0	1.67	48.0	1.23	20.2	1.69	35.1	1.46	32.3	1.33	27.4	1.82	38.1
<b>Household type</b>																								
Older household, no children	1.88	20.8	0.86	12.8	0.90	14.2	1.08	9.8	2.05	29.0	1.08	14.2	0.69	4.5	0.96	12.8	0.50	5.8	0.54	7.4	1.80	17.5	0.94	15.1
Younger household, no children	0.86	15.3	0.86	15.8	0.77	20.0	0.90	5.2	0.81	9.7	0.97	19.3	0.78	7.2	0.53	5.0	0.96	18.2	0.80	21.9	0.83	5.2	0.56	12.2
Lone parent household	1.40	6.2	1.74	8.3	3.47	10.0	1.80	4.3	0.86	2.0	2.16	7.8	2.62	11.9	1.09	3.7	1.82	5.0	7.17	26.9	1.51	5.2	3.51	10.1
Couple with children	0.95	36.6	1.09	55.8	1.10	42.8	0.98	47.4	0.48	21.4	0.89	43.4	1.11	67.9	0.93	45.9	1.15	56.2	0.83	39.0	0.59	28.8	1.14	54.4
Other Household types	0.77	21.1	0.70	7.3	0.86	13.0	0.97	33.3	1.38	37.9	1.08	15.3	0.47	8.5	1.32	32.6	0.72	14.9	0.57	4.8	1.36	43.3	0.53	8.1
<b>Education level (ref. person)</b>																								
Tertiary	0.59	3.5	0.52	20.5	0.36	9.4	0.13	2.1	0.09	1.6	0.21	4.1	0.05	0.6	0.06	0.5	0.13	2.3	0.14	2.7	0.0	0.0	0.23	5.0
2 <sup>nd</sup> stage secondary	0.58	35.0	0.40	15.5	0.93	43.5	0.33	3.6	0.30	7.3	0.59	22.1	0.59	16.5	0.36	11.8	0.39	12.3	0.69	39.5	0.15	1.0	0.61	18.0
Less than 2 <sup>nd</sup> stage secondary	1.94	57.2	1.45	63.9	1.85	45.8	1.30	94.0	1.58	89.3	1.78	73.1	1.48	82.9	1.21	87.5	1.64	85.4	2.23	43.9	1.15	99.0	1.60	75.3
Still in education	1.46	4.2	0.0	0.0	0.64	1.3	0.40	0.3	1.79	1.8	0.89	0.7	0.0	0.0	0.26	0.1	--	--	3.25	13.9	0.0	0.0	0.76	1.8
<b>Education level (individual)</b>																								
Tertiary	0.43	1.8	0.40	8.3	0.43	6.3	0.16	1.6	0.13	1.7	0.23	3.4	0.06	0.4	0.11	0.5	0.07	0.8	0.20	2.4	0.12	0.4	0.23	3.4
2 <sup>nd</sup> stage secondary	0.58	25.9	0.50	11.4	0.77	29.6	0.38	3.7	0.43	8.1	0.66	17.3	0.37	7.8	0.38	9.2	0.28	6.3	0.50	20.0	0.34	2.1	0.55	13.4
Less than 2 <sup>nd</sup> stage secondary	1.79	42.0	1.23	37.1	1.23	32.8	1.25	66.4	1.60	71.9	1.57	51.6	1.23	41.3	1.18	61.7	1.27	54.8	1.44	30.7	1.11	68.2	1.19	43.3
Still in education	1.03	7.1	1.04	9.0	0.79	2.7	0.33	2.4	0.74	2.8	1.13	6.9	0.37	2.6	0.52	4.7	0.41	1.6	2.68	14.7	0.22	1.6	0.38	1.4
Aged less than 17	1.17	23.2	1.60	34.2	1.69	28.7	1.31	25.9	0.77	15.5	1.06	20.9	1.67	47.8	1.23	23.9	1.69	36.5	1.46	32.1	1.33	27.7	1.82	38.4
<b>Health</b>																								
Sick/Disabled	2.71	6.0	2.89	3.6	3.25	6.8	2.18	4.2	2.64	6.4	2.37	6.0	[1.94]	[0.6]	2.26	5.3	[2.73]	[2.9]	3.15	4.5	1.72	9.9	1.79	3.0
Healthy	0.79	94.0	0.84	96.4	0.88	93.2	0.87	95.8	0.85	93.6	0.82	94.0	0.99	99.4	0.89	94.7	0.84	97.1	0.89	95.5	0.83	90.1	0.88	97.0
<b>Citizenship</b>																								
Non-EU	4.31	20.0	1.92	13.5	3.16	5.1	[1.32]	[0.3]	1.31	1.5	3.55	20.3	[0.0]	[0.0]	3.31	1.0	[5.07]	[9.0]	6.39	5.3	2.31	1.3	2.05	2.6
EU	0.85	80.0	0.69	86.5	0.97	94.9	1.00	99.7	0.99	98.5	0.85	79.7	1.00	100	0.98	99.0	0.93	91.0	0.95	94.7	0.98	98.7	0.98	97.4

Note: -- no cases in the group, \*\* group with 1-20 cases, [] group with 21-50 cases

Column A: Relative risk factor (proportion of the group at high risk of social exclusion divided by the proportion of all persons at high risk of social exclusion)

Column B: Contribution to aggregate risk of social exclusion (proportion of all persons aged 16+ at high risk of social exclusion who are members of the group)

Table 5. Logit estimates of the probability of social exclusion (odds ratios)

	Country model	Regime model
<b>Employment status (ref. person)</b>		
Employed full-time	1.00	1.00
Employed part-time	2.56**	2.49**
Unemployed	6.01**	4.84**
Retired	1.49**	1.50**
Other inactive	5.18**	4.79**
<b>Employment status (individual)</b>		
Employed full-time	1.00	1.00
Employed part-time	1.27	1.26
Unemployed	3.87**	3.55**
Discouraged worker	3.54**	3.29**
Constrained worker	1.63**	1.52**
Precariously employed	4.15**	3.67**
Retired	1.27	1.27
Other inactive	1.58**	1.58**
<b>Household type</b>		
Older household, no children	0.71*	0.71
Younger household, no children	0.72**	0.77
Lone parent household	1.47**	1.55**
Couple with children	1.00	1.00
Other	0.72**	0.69**
<b>Education level (ref. person)</b>		
Tertiary	0.16**	0.17**
2 <sup>nd</sup> stage secondary	0.38**	0.41**
Less than 2 <sup>nd</sup> stage secondary	1.00	1.00
Still in education	0.48*	0.50*
<b>Education level (individual)</b>		
Tertiary	0.65*	0.61*
2 <sup>nd</sup> stage secondary	0.72**	0.74**
Less than 2 <sup>nd</sup> stage secondary	1.00	1.00
Still in education	0.59**	0.57**
Aged less than 17	1.59**	1.55**
<b>Health status</b>		
Sick/Disabled	2.57**	2.63**
<b>Citizenship</b>		
Non EU	2.45**	2.49**
<b>Country</b>		
Germany	1.22	
Denmark	0.22	
Netherlands	0.73	
Belgium	0.78	
Luxembourg	0.90	
France	1.00	
UK	1.81**	
Ireland	0.89	
Italy	1.23	
Greece	2.73**	
Spain	0.52**	
Portugal	1.71**	
Austria	0.79	
<b>Regime</b>		
Continental		1.00
Liberal		1.64**
Social-democratic		0.59*
Southern		1.01
<b>Constant term</b>	0.047**	0.051

\*\* (\*): Odds ratio derived from a coefficient statistically significant at the 5% (10%) level

## APPENDIX

Table A1. Aggregate deprivation indicators – Sensitivity Analysis

Country	Proportion of the population in the 3 <sup>rd</sup> wave of the ECHP classified as deprived according to:								
	Income (Poverty)			Living Conditions			Necessities of Life		
	50%	60%	70%	70%	80%	90%	50%	60%	70%
Austria	7.8	13.6	21.6	2.8	6.8	19.3	6.7	11.8	12.9
Belgium	9.4	15.1	24.2	3.0	6.8	18.5	6.0	10.6	14.0
Denmark	3.7	10.0	19.1	2.3	4.6	14.1	3.3	6.5	8.2
Finland	6.3	12.0	19.5	0.7	3.9	14.2	10.7	11.5	23.1
France	8.5	15.4	23.0	2.5	6.6	20.4	7.7	15.2	18.1
Germany	4.9	10.3	18.6	2.2	6.3	17.4	5.5	11.9	19.1
Greece	16.1	22.3	29.2	4.4	10.6	23.5	22.6	32.2	32.2
Ireland	8.9	19.6	28.7	5.1	9.7	20.8	7.7	15.4	18.1
Italy	12.4	18.1	26.3	3.4	9.2	21.4	14.9	16.0	27.5
Luxembourg	4.0	9.2	19.9	2.0	4.5	13.0	4.8	7.7	15.5
Netherlands	6.7	11.2	20.1	1.3	4.2	15.0	5.3	9.9	15.1
Portugal	14.3	22.0	29.4	13.0	19.6	30.5	15.1	15.9	18.0
Spain	13.7	19.7	27.6	4.4	8.7	22.0	5.8	15.6	15.7
United Kingdom	17.3	23.8	30.9	1.0	5.5	18.4	7.7	17.6	21.2