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# SOCIAL EXCLUSION OF THE ELDERLY

## A COMPARATIVE STUDY OF EU MEMBER STATES

GERDA JEHOEL-GIJSBERS AND COK VROOMAN

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### Abstract

Combating social exclusion is one of the key objectives of pension systems. This report focuses on social exclusion among the elderly (defined as the 55+ age group) in the EU's member states. Social exclusion has been conceptualised as a state of individuals in relation to four dimensions. Two of these dimensions – material deprivation and social rights – are of a structural nature. The other two – social participation and normative integration – pertain to social settings and subcultural factors. Theoretically and empirically, the dimensions refer to one latent underlying social exclusion variable. The original method for measuring social exclusion was devised and tested for the Netherlands, making use of a dedicated dataset. In this study, the measuring instrument has been extended to EU member states, performing secondary analyses of various surveys.

These datasets do not contain information about normative integration, but for each of the other three dimensions it has turned out to be possible to construct valid indices at the EU level. Two indices that are more general have been calculated as well: one is a combined index of material deprivation plus social rights and the other is a macro aggregate covering all three dimensions.

The outcomes suggest that the elderly in the Nordic countries and the Netherlands are the least excluded, in terms of both the three separate dimensions of social exclusion and the more general indices. The Continental and Anglo-Saxon countries follow close behind. Social exclusion among the elderly is generally higher in the Mediterranean countries. The highest social exclusion scores are to be found in the EU's new member states in Eastern Europe, especially in the Baltic States and Poland.

In all EU member states exclusion in terms of social participation increases as people grow older. Material deprivation shows the reverse pattern: in almost all countries, this form of social exclusion decreases with age. With regard to access to social rights – operationalised here in terms of adequate housing and access to medical/dental care – the picture is less straightforward. In nearly all Mediterranean and Eastern European countries, the elderly are more excluded than are the non-elderly in this respect. In the Nordic countries, Germany and the UK, the opposite occurs: access to social rights improves with rising age.

In all countries, poor health is an important factor increasing the risk of social exclusion across all dimensions. Household income has a strong effect on material deprivation and access to social rights in most countries. Age and gender cannot be considered serious risk factors for any of the dimensions of social exclusion after the impact of other variables has been controlled for.


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Multilevel analyses show that only a small part of the country variation in social exclusion (as measured by the combined index) can be attributed to differences in the composition of the population in connection with health, education level, age and gender. A larger part is related to country differences in household incomes. A further (albeit rather small) part has to do with specific traits at the country level. Elderly persons are less excluded if countries attain a higher level of national wealth, spend more on social protection, show less income inequality and generate higher life expectancy. Diverging institutional arrangements – as defined by a classification of countries by their social security and pension regimes – also explain some of the variation in social exclusion. After controlling for the impact of income inequality, however, this effect largely disappears. This result suggests that such regime types mainly influence social exclusion indirectly, through their effects on income inequality. The latter is the country trait with the highest unique contribution to social exclusion of the elderly in the EU.

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## 1. Introduction

Combating social exclusion[1] is one of the key objectives of pension systems. Pensions have to "ensure that elderly people are not placed at risk of social exclusion; that they can enjoy a decent standard of living, that they share in the economic and social well-being of their country, and can accordingly participate in public, social and cultural life" (CEPS, 2004, p. 58). The formulation suggests that social exclusion and poverty are related phenomena, but do not coincide, and that both are sensitive to policy interventions, particularly in pension schemes.

A connection between pension policy and social exclusion is explicitly made in the 'streamlining' of the EU's so-called 'open method of coordination' on social protection and social inclusion. This stipulates that the social inclusion policy and monitoring process should be integrated with the parallel developments on pensions, health and long-term care (European Commission, 2006a, p. 11).

To date, however, there is limited understanding of the position of the elderly with regard to social exclusion. Generally, elderly persons are considered a vulnerable group, mainly because they risk a reduction in participation in various domains of life through the loss of paid work, a decrease in income and an increase in health problems. The extent to which this actually occurs and whether it translates into forms of social exclusion is largely an open question. This applies all the more so to the empirical prevalence of country differences in relation to this phenomenon.

This current project focuses on social exclusion of the elderly in the EU member states. Four research questions are at stake:

1) To what degree do the elderly (aged 55 and older) differ in social exclusion *among* countries?

2) To what degree do the elderly cohorts (aged 55-64, 65-74 and 75 and older) differ in social exclusion from younger cohorts (aged <55) *within* countries?

3) Which risk factors determine whether the elderly (aged 55 and older) are socially excluded?

4) Which country characteristics determine social exclusion of the elderly?

[1] In recent policy documents at the European level, the concept of 'social exclusion' has gradually been replaced by 'social inclusion'. The difference between the two is rather vague. 'Inclusion' suggests a process through which people are 'brought back into society' from a position of backwardness, preferably through wilful and effective governmental interventions. In both policy and research, however, social inclusion is often treated as a lack of social exclusion – the EU's Laeken indicators, for instance, pretend to measure both. In this report, the two concepts are regarded as complements, and throughout we use the term social exclusion.

First, the concept of social exclusion is elaborated and a theoretical framework for social exclusion among the elderly is specified (section 2). This conceptualisation is mainly derived from Jehoel-Gijsbers (2004) and the English-language synthesis publication of this Dutch case study (Jehoel-Gijsbers & Vrooman, 2007).

Then in section 3, some hypotheses are formulated and the research questions are linked with 'regime' typologies of countries that may be relevant for social exclusion among the elderly.

With the conceptual framework as a guideline, the social exclusion concept is subsequently operationalised, making use of available large-scale comparative empirical datasets (section 4). This part draws on the 2002 wave of the European Social Survey (ESS), the 2005 edition of the EU Statistics on Income and Living Conditions (EU-SILC), and the Survey of Health, Ageing and Retirement in Europe (SHARE), which was collected in 2004. In principle, the analyses relate to 24 EU member states (data on Malta are not available), plus Norway and Iceland, but not all datasets include all of these countries.

The empirical results are presented in section 5; the conclusions are summarised in section 6.

## 2. Conceptualisation of social exclusion

Although the term 'social exclusion' has come into widespread use only recently, this does not imply that the social phenomena to which it refers are novelties as well. By the 1960s, social exclusion had already become the subject of debate in France, but only after the economic crisis of the 1980s and the introduction of the *Revenu Minimum d'Insertion* (the national assistance law) was the concept widely used here (Silver, 1994, p. 532). Once social exclusion had become a prominent item on the EU's policy agenda in the second half of the 1990s, attention began to focus on defining and specifying the concept more closely. The policy to combat social exclusion has to be evaluated, and to do this it is necessary to establish what social exclusion entails, which indicators can be used to establish its existence and which factors influence it. While this has considerably intensified the scientific debate on the meaning of social exclusion and some empirical analyses have been performed (cf. Atkinson et al., 2002 and 2005), up until now policy-makers have not been provided with a generally agreed scientific conceptualisation.

An assessment of the way social exclusion has been operationalised shows that most current definitions are *indirect* ones, while in our view a more direct definition would be preferable for policy evaluation purposes. Such an approach has also been advocated by other researchers – for instance, Levitas (2006) also proposes a direct measurement of social exclusion, based on the British Poverty and Social Exclusion survey.

Against this background, we have tried to arrive at a more precise definition of the concept of social exclusion and to develop a methodology for measuring the phenomenon empirically. The results of these efforts have been published in the Netherlands Institute for Social Research | SCP report *Sociale uitsluiting in Nederland* [Social exclusion in the Netherlands] (Jehoel-Gijsbers, 2004); an English summary has been published by Jehoel-Gijsbers & Vrooman (2007).[2]

In this section, we address the various theoretical issues and the conceptual model. As far as possible and necessary, we adjust these to the situation of the elderly within the EU.

[2] The full report for the case study on the Netherlands was published in Dutch (Jehoel-Gijsbers, 2004). A preliminary summary in English was presented at the European Commission's Third European Round Table on Poverty and Social Exclusion (Rotterdam, 18–19 October 2004), which has been adapted and updated in Jehoel-Gijsbers & Vrooman (2007).

Before we introduce our conceptualisation, we discuss the way social exclusion is usually operationalised: by means of risk factors (section 2.1). We then consider the difference between social exclusion and poverty, because these concepts are often treated as interchangeable (section 2.2). The insight gained from these discussions forms the starting point of the conceptualisation of social exclusion.

## 2.1 Risk factors: An indirect definition of social exclusion

The difficulty of providing an adequate characterisation of social exclusion is illustrated by a definition given by a UK government agency (Social Exclusion Unit, 2001): "a short-hand term for what *can* happen when people or areas suffer from a combination of linked problems such as unemployment, poor skills, low incomes, poor housing, high crime environment, bad health and family breakdown". Social exclusion is thus seen as a potential *consequence* of a number of risk factors, without that consequence being spelled out. What may be understood by the term social exclusion is left implicit: in several studies preference is given to an 'indirect' definition, by indicating which factors or indicators influence the *risk* of social exclusion (e.g. Robinson & Oppenheim, 1998, Paugam, 1996, Edwards & Flatley, 1996 and Howarth et al., 1998, in Burchardt et al., 2002, pp. 5–6). In other words, these studies do not observe social exclusion itself, but rather its potential causes or predictors, with the focus being mainly or exclusively on individual risk factors.

Policy documents from the European Commission do not provide a 'direct' definition of social exclusion as a separate concept either. They offer an indirect demarcation, mostly by referring to the rights of social citizenship: "The extent of social exclusion calls on the responsibility of society to ensure equal opportunities for all. This includes equal access to the labour market, to education, to health care, to the judicial system, to rights and to decision-making and participation" (cf. Saraceno, 2001, p. 3).

For the framing of their National Action Plans for social inclusion, the member states have agreed that social exclusion will be defined on the basis of a number of social indicators. These risk factors, which are assumed to exert a negative influence on the prospect of social inclusion, are low income, unskilled labour, poor health, immigration, low education levels, dropping out of school, gender inequality, discrimination and racism, old age, divorce, drug abuse, alcoholism and living in a 'problem accumulation area' (European Commission, 2002, p. 10). Concrete agreements have been reached for the measurement of some of these variables, the so-called 'Laeken indicators' (resulting from the 2001 European Council summit in Laeken). These indicators serve as proxy measures for social exclusion from a policy point of view, aiming at fostering comparability among countries. To date, the consensus predominantly relates to indicators concerned with income and employment, although of late more attention has been given to the position of the elderly (and children).[3] While old age is considered a risk factor in its own right (cf. above), precedence is still given to income and employment; a low income and lack of labour participation are generally considered the main factors inducing social exclusion (see European Commission, 2004a). For example, the Kok report argues that fulfilment of the social objectives will result from economic and employment growth and that primacy should be given to job creation (European Commission, 2004b).

From a theoretical point of view, the Laeken indicators may be in need of some qualification.

[3] Since the Laeken indicators were agreed upon in 2001, they have been refined and extended somewhat (e.g. with the indicator "literacy performance of 15-year old pupils").

- Monitoring activities in relation to the EU standards provide information on the individual risk factors that increase the chance of being socially excluded, but make it hard to gain insight into the social exclusion phenomenon as such.
- Most of the Laeken indicators are related to income and (un)employment. Yet, research shows that the correlation between a low income and unemployment on the one hand and features of social exclusion on the other may not be particularly strong (Saraceno, 2001, pp. 5, 9). The relationship varies substantially among social groups and across countries, depending on differences in the social security system, family arrangements, cultural settings, etc. (Saraceno, 1997; Gallie & Paugam, 2000). A low income or absence of paid work does not by definition lead to social exclusion, and conversely individuals may be socially excluded without having a low income or being unemployed (De Koning & Mosley, 2001, p. 7; Bailey, 2006, p. 180; Levitas, 2006, p. 155). If this limited correlation holds for the two risk factors of 'income' and 'labour participation', it is likely that it also applies to the other – probably less dominant – risk factors selected by the EU. Monitoring such factors may provide some information on the evolution of the *risk* of social exclusion, but it cannot be regarded as an adequate measurement of the development of social exclusion per se. The proxy variables that are commonly used in the indirect approach are simply not close enough.
- In reports of the EU's statistical office, the most important common indicator for social inclusion is the at-risk-of-poverty rate. This rate is operationalised as below 60% of the national median income.[4] It can be questioned whether this is an accurate measure. In terms of this officially adopted criterion, the poverty rate in countries such as Romania and Bulgaria is slightly above 15%, the average of the 15 old EU member states.[5] The problem of social exclusion in these two countries would be less severe than in, for instance, the UK, Italy and Ireland, where the poverty rate ranges from 17% to 21% (Eurostat, 2004a and 2004b). An obvious explanation is that the outcome is a consequence of the relative poverty thresholds the EU uses.[6] In Romania, this amounts to only 14% of the EU-15 average, whereas in the UK the national threshold exceeds it by 28%. If the EU-15 norm were applied to both countries, poverty and social exclusion in Romania would be considerably higher, while the UK figure would drop.

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[4] The primary reference point in the Laeken indicators is the at-risk-of-poverty rate, defined as 60% of the median income. Other poverty indicators include long-term poverty, poverty based on the 60% income threshold anchored in time, the poverty rate before and after social transfers and the poverty gap. Alternative poverty thresholds use 40%, 50% and 70% of median income.

Other Laeken indicators are non-monetary. Examples include the share of long-term unemployment (12 or 24 months) and of persons living in households where no one has paid work; regional cohesion, indicated by the regional dispersion of employment at the NUTS 2 level; the share of early school-leavers and those aged 25-64 having completed lower secondary school or less; and the health situation, mainly measured by life expectancy at birth.

[5] In the Czech Republic and Hungary, the at-risk-of-poverty rate is even much lower: 8% and 9%.

[6] Another explanation is that income in kind was included in the total income definition of the new member states and candidate countries, whereas it is left out of consideration in the EU-15. Eurostat (2004a) justifies this by mentioning that such income components (e.g. own production of food, hunting and fishing; government-provided or subsidised housing, meals and children's day nurseries; revenues and the sale of property) account for a substantial share of total income in the new EU member states. Furthermore, Eurostat (2004a) notes that inequality is low in the new member states and candidate countries (owing to historical circumstances, the lack of information on the hidden economy and the misrepresentation of the very poor and very rich). If one uses a relative poverty threshold, poverty tends to decline if inequality decreases.

- Especially related to the elderly, another important Laeken indicator can be questioned: paid work, operationalised by the share of long-term unemployment and households without paid work. EU indicators for social exclusion are obviously tailored to the population of working age. The stress on labour market position as a main risk factor for exclusion means that social exclusion among the elderly cannot be accurately illustrated. By definition all pensioners are at risk; yet, it is unlikely that this is what one intends to measure.

One starts to wonder whether the current EU indicators of income and work are suitable starting points for the development of a policy to fight poverty and social exclusion, the central goal that was adopted at the European Council meetings in Lisbon and Nice in 2000. Particularly in relation to the social exclusion of pensioners, the second main indicator (having paid work) does not seem quite adequate; it would probably not be very realistic to try to reduce exclusion among the oldest age groups by stimulating paid work (at least not beyond the age of 70 in most countries). From a policy point of view, it may be wise to reconsider the way poverty and social exclusion within the EU are monitored. Taking the above comments into consideration we think social exclusion should be defined in a more *direct* fashion. Moreover, the conceptualisation should be applicable to all age groups and not confined to the working-age population.

Before defining social exclusion in a more direct way, it is appropriate to pay some attention to the conceptual distinction between poverty and social exclusion.

## 2.2 Social exclusion and poverty

Towards the end of the 1990s, policy goals shifted from combating poverty to reducing social exclusion. This led to the use of two different concepts in both literature and research, although they are often used in one and the same breath.

The meaning of each concept is controversial, which can be traced back to differences between the French and the Anglo-American scientific traditions (Gough, 1997, p. 82; Room, 1997, pp. 256–57; Saraceno, 2001, p. 6; Todman, 2004, p. 1). The French school builds upon the theories of Durkheim (1897) on social cohesion and solidarity, the importance of collective values and norms, and the risk of social alienation (anomie). Social cohesion and solidarity are considered essential to uphold the social contract on which a society is based. This perspective tends much more towards the concept of social exclusion than poverty, the core issue in the Anglo-American literature. Here scientific research took its lead from theories of social inequality and relative deprivation, which regard unequal access to income, basic goods, public services and citizenship rights as the starting point for research into poverty and social exclusion. The work of Runciman (1966) and Townsend (1979) can be seen as the most prominent exponents of this tradition. The wider social dimension received little attention in Anglo-Saxon research (Levitas, 2006, p. 133), although this has been changing in recent years (Hills et al., 2002; Pantazis et al., 2006, p. 7; Levitas, 2006, p. 135).

While some authors say that there is hardly any difference between poverty and social exclusion (e.g. Somerville, 1998; Bhalla & Lapeyre, 1997; Nolan & Whelan, 1996), others argue that the two concepts differ fundamentally from each other in a number of respects (cf. Room, 1995; Berghman, 1995; Vrooman & Snel, 1999; Saraceno, 2001; Papadopoulos & Tsakloglou, 2001; Abrahamson, 1997 and 2001; Todman, 2004). The following distinctions are often mentioned.

- *Static condition versus a dynamic process*

  Poverty refers to a static condition, relating to a given income situation or standard consumption pattern at a certain moment. Social exclusion is dynamic and has to do with the *process* through which people become excluded.

- *Absolute versus relative concepts*

  Poverty may be conceived as an absolute lack, e.g. persons who do not attain the income level required for the fulfilment of their basic needs. For social exclusion, there is no such absolute demarcation point. It can only be assessed in a relative way, by comparing a persons' circumstances vis-à-vis others in the same socio-historical context.

- *Unidimensional versus multidimensional disadvantage*

  Poverty relates to a single dimension: a shortage of financial or material resources, or income deprivation. Social exclusion involves deficiencies in several dimensions, which are associated with 'full citizenship': paid work and income, education, housing, health care, legal assistance and accessibility of public provisions.

- *Distributional versus relational focus*

  Poverty relates to the distribution of economic aspects (disadvantage in income or consumption). Social exclusion also concerns relational and socio-cultural aspects, such as solidarity, social bonds and participation, integration, engagement, discrimination and norms of social citizenship (e.g. reciprocity and mutual obligations). This difference is also often described as the material versus non-material nature of the two concepts.

- *Endogenous versus exogenous agency*

  Agency refers to the individual or collective actors that bring about shortages. Poverty is typically analysed at the individual or household level. The agency lies mainly in the characteristics of the disadvantaged themselves and it may be regarded as endogenous. Social exclusion, on the other hand, also derives from a lack of 'communal resources': a person's neighbourhood and social network, social security agencies and the social infrastructure. The excluded may have little or no control over such exogenous factors.

This sharp juxtaposition of poverty and social exclusion has also attracted criticism, however. First, the distinction between static poverty and dynamic exclusion may be questioned. Silver (1994, p. 545) argues that exclusion is not only a dynamic process, but it also points to the outcomes of historical developments. It may therefore very well be regarded as a static condition or a state, sometimes referred to as 'being socially excluded' or 'excludedness'. Poverty, on the other hand, can be regarded in a dynamic fashion, as happens in empirical research on the process of becoming poor and terminating periods of poverty (see e.g. Goodin et al., 1999; Jäntti & Danziger, 2000, pp. 353–62).

The contrast between absolute poverty and relative social exclusion may also be debated. Poverty is sometimes measured in a purely relative fashion, as in the familiar 60% of median income threshold used in many country comparisons. But even 'absolute' poverty measures have a relative aspect. While they refer to the realisation of certain absolute minimum standards, the means this requires may vary over time, location and social setting. This point has been repeatedly made by Sen (1985, pp. 669–71; 1992, pp. 115–16), and it underlines the need for a sensible poverty line to evolve, to some extent, in line with changing standards of living and social perceptions of necessities (cf. Soede & Vrooman, 2008a).

With respect to the uni- versus multidimensional distinction, Vrooman & Snel (1999) state that poverty may very well be analysed in a broad sense. An early definition used by the Council of European Communities (1985) provides a good example: "individuals or families whose resources are so small as to exclude them from the minimum acceptable way of life in the Member State in which they live", with resources being defined as "goods, cash income plus services from public and private sources". Alcock (1991) also uses a wider approach of the poverty concept and tends to regard poverty as a multidimensional phenomenon. At first sight,

poverty, thus conceived, may even seem to be synonymous with social exclusion. Yet, some authors note an essential difference: although deficiencies other than financial shortages are included in the broad definition of poverty, the *reason* for those deficiencies is mainly financial (see Nolan & Whelan, 1996). In the case of social exclusion, by contrast, there may be other causes than a lack of financial means, such as illness, old age, neighbourhood factors and discrimination. Thus, one might be socially excluded without being financially poor (Burchardt et al., 2002, pp. 5–6; Uunk & Vrooman, 2001, p. 144; Saraceno, 2001, p. 4; see also Abrahamson, 1997, p. 130; Room, 1997, p. 256; De Koning & Mosley, 2001).

The agency issue is regularly discussed in the theoretical scientific literature (e.g. Jordan 1996), but is not really prominent in the policy debate or in the National Action Plans, nor is it treated extensively in empirical research. Analytically, the excluding actors can be defined at the micro, meso and macro levels, for both poverty and social exclusion.

There is no reason why an individual cannot be, at least to a certain extent, an agent of his/her own social exclusion. Developing a drug addiction or dropping out of school, for instance, may be important causes of social exclusion and these are partly based on choices made by the individual. On the other hand, poverty cannot always be attributed to its victims; the actions of benefit and job agencies, and government policy on benefit levels and entry conditions may seriously affect poverty rates and they should be taken into consideration. Thus, distinguishing poverty and social exclusion through differences in agency does not seem a very fruitful approach.

The proper way to analyse both is probably to take into account the actions of various agents that may increase the risk of poverty and social exclusion. These would include actions (or negligence) of the afflicted persons themselves or of other individual or corporate actors. Schuyt & Voorham (2000) note that fellow citizens may cause exclusion, by morally rejecting those who are different. Discrimination in hiring and firing by employers on the basis of ethnicity, age or health status provides another example. Intermediate organisations that are charged with carrying out government policy in social security, health, welfare and education may also be agents of poverty and social exclusion, through unclear goal definitions, an inefficient work process, a high case load, the preconceptions and preferences of individual employees, etc. Municipalities and the national government may also be regarded as actors if their policies enhance the risk of poverty or social exclusion (e.g. by denying certain groups access to a sufficient level of education) or if their measures to combat these phenomena are ineffective. And finally, at a more abstract level the welfare state itself may even be regarded as an 'actor' that causes poverty and social exclusion. This follows the well-known neo-liberal critique, which assumes that the welfare state does not in fact help people, but makes them dependent and passive instead (e.g. Murray, 1984 and 1997). From this perspective, social exclusion is regarded as an inevitable outcome of the institutions of the modern welfare state, as it takes away the incentive for individuals to shape their own lives, through both the safety net they provide and the incentives that administrative organisations have in sustaining a passive attitude on the part of their clients.

In addition to the possibility that actors at various levels function as excluders, social exclusion may also result from socio-economic developments that are more general. Examples of these are rising unemployment levels owing to a recession or structural changes in labour supply and demand, demographic transitions (the immigration of low-skilled labourers and refugees) and cultural changes (e.g. a slackening of the work ethic, the rise and fall of certain subcultures).

## 2.3 A conceptual model

Elaborating on these theoretical notions, we have developed a conceptual model with the aim of testing it empirically. As the foregoing discussion makes clear, the concept of social exclusion is defined partly by contrasting it with the concept of poverty, but the distinctive criteria are not sharp. Social exclusion need not relate solely to the process of being socially excluded (dynamic), but can also denote the condition of being socially excluded (static). Social exclusion can relate to both non-material characteristics (relational dimension) and material aspects (distributional dimension). The causes of social exclusion and of being socially excluded may lie at a collective level, but individual characteristics and behaviour can theoretically be important as well. The only distinction that could remain intact is that social exclusion involves different dimensions, while poverty relates only to the financial/material aspect. Even this difference only holds for poverty in a strict sense and not for broader definitions.

Against this background, we think it worthwhile to try to combine the two scientific traditions mentioned earlier (the Anglo-American and French), in order to enhance theoretical and methodological development. We consider social exclusion a concept with two main aspects:

1) economic–structural exclusion, which refers to distributional dimensions, in line with the Anglo-American approach;

2) socio-cultural exclusion, which refers to relational dimensions, as emphasised in the French school.

Within the first aspect we identify two distributional dimensions: a material (income and goods) and a non-material one (social rights). The second aspect is also divided in two different dimensions: social integration and normative integration. Social integration points to social relations and networks. Normative integration regards values and norms. Our approach thus combines the idea that poverty and social exclusion are mainly the result of structural factors (e.g. W.J. Wilson, 1987 and 1997; Katz, 1989) with the thesis that they are predominantly based in specific social settings and subcultures. The latter states that persons facing economic constraints will develop a particular strategy for coping with their backward situation, which is then transmitted over generations and often coincides with geographical segregation (e.g. Lewis, 1968 and 1969; J. Wilson, 1994).

Box 1 contains a more explicit description of these dimensions and delineates the types of indicators one could use.

The last dimension in Box 1, normative integration, may require some qualification. The EU's focus in assessing social exclusion is on whether the rights of social citizenship (equal access to education, employment, housing, etc.) are at stake. Yet, the duties of social citizenship receive little attention. These duties may include, among other things, complying with the moral or legal requirement to accept a job (for persons of working age), having a sense of responsibility towards one's fellow citizens and neighbourhood, social engagement and behaving in accordance with applicable legislation and regulations. Failure to observe such duties may be considered just as much a characteristic of social exclusion (or self-exclusion) as inadequate access to the rights of social citizenship. This issue has been explored in the Netherlands in several qualitative studies focusing on the coping strategies of benefit recipients (cf. Kroft et al., 1989; Engbersen et al., 1993; Engbersen & Staring, 2000). To some extent, this dimension of normative integration may be less applicable to elderly persons who tend to have fewer 'duties' than younger cohorts do, especially because they are not expected to work anymore. Nevertheless, pensioners can also abuse the social security system, for example by claiming a higher state pension through not reporting cohabitation, or by an excessive use of the services or care to which they are entitled.

Of course, at a fundamental level one may question the possibility of assessing a 'dominant culture' at all, especially in a society with a great degree of variation in terms of ethnic origin, religious denomination or lifestyle.[7] Moreover, who is to be the judge in identifying core norms and values, and how perfect does the assimilation into the dominant culture need to be? These reservations may be justified, but should not, in our view, lead to an ultra-relativistic approach. We think it may be possible to identify some central values and norms empirically (for example, those that are enforced by law) and that these should theoretically be incorporated if one wishes to assess the degree of social exclusion. That being stated, the data we have selected for our cross-comparative secondary analyses regrettably does not contain suitable indicators for this dimension.

*Box 1. Characteristics of social exclusion*

**A. Economic–structural exclusion (distributional dimension)**

1. *Material deprivation*

   Deficiencies in relation to basic needs and material goods; 'lifestyle deprivation'; problematic debts; payment arrears (e.g. housing costs)

2. *Inadequate access to government and semi-government provisions ('social rights')*

   Waiting lists, financial impediments and other obstacles to health care, education (especially of children), housing, legal aid, social services, debt assistance, employment agencies, social security, and certain commercial services (such as banking and insurance); unsafe public areas

**A. Socio-cultural exclusion (relational dimension)**

3. *Insufficient social integration*

   A lack of participation in formal and informal social networks, including leisure activities; inadequate social support; social isolation

4. *Insufficient cultural/normative integration*

   A lack of compliance with core norms and values associated with active social citizenship, indicated by a weak work ethic; abuse of the social security system; delinquent behaviour; deviating views on the rights and duties of men and women; no involvement in the local neighbourhood or society at large.

These considerations have led us to three basic assumptions for the development of our conceptual model:

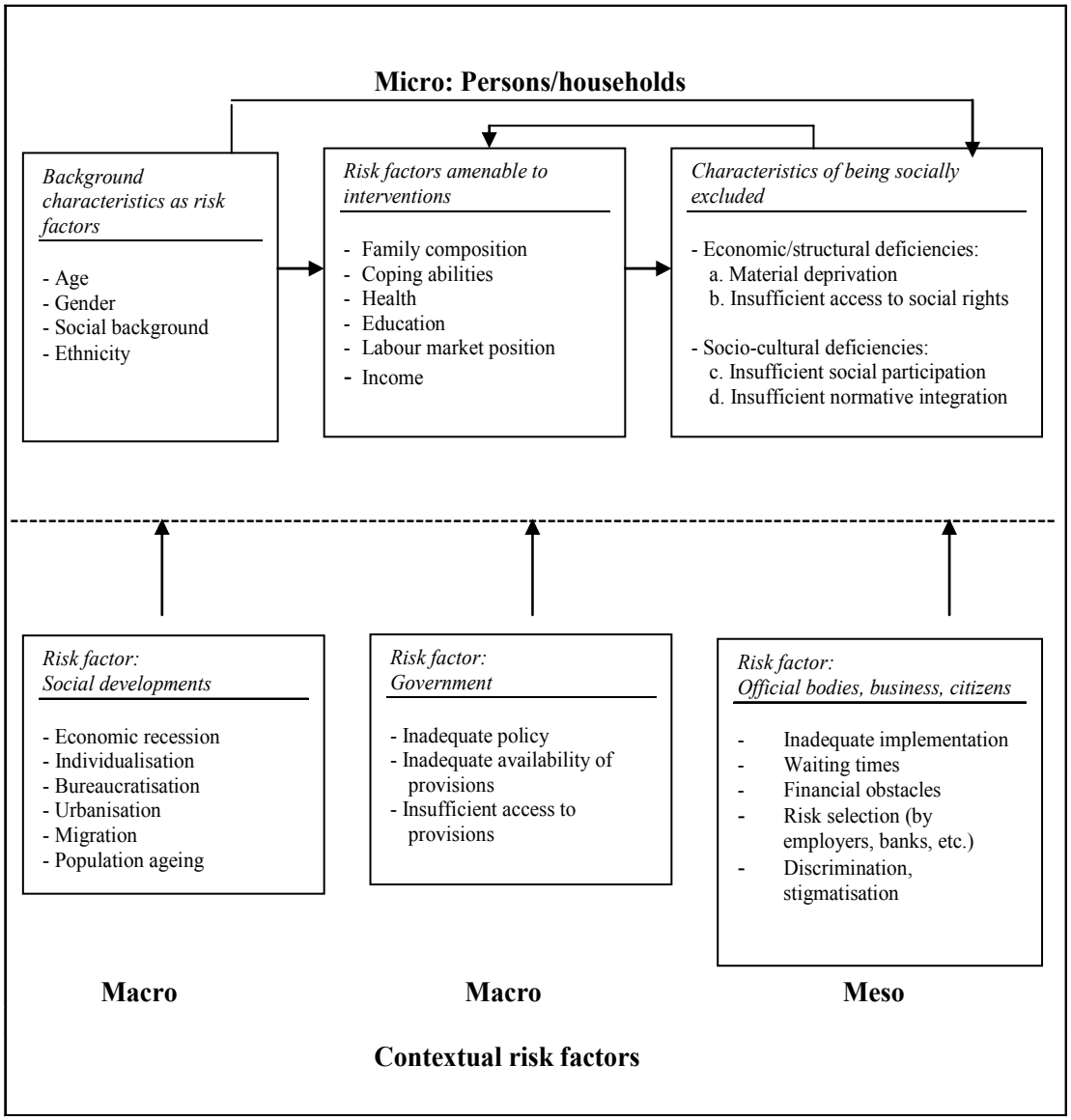
- Social exclusion is a multidimensional phenomenon, which refers to both economic–structural and socio-cultural aspects of life. Theoretically, it consists of material deprivation, insufficient access to social rights, deficient social participation and a lack of normative integration.
- A distinction can be made between traits that describe the actual state of social exclusion (status characteristics) and risk factors that increase the chance of social exclusion (process).

[7] The idea that assimilation into a dominant culture is a prerequisite for social inclusion is, of course, central to Durkheim's theory, for instance in his suicide typology. Silver (1994, p. 542) states that post-modernist uses of the term 'dominant culture' incorporate multicultural notions about how the basis of solidarity is, or should be, reconfigured.

- The risk factors operate at the micro level of the individual, at the meso level of formal and informal organisations and social settings, and at the macro level of government and society at large.

Figure 1 shows the conceptual model. The various aspects of social exclusion as a state or of being socially excluded are the variables to be explained (upper right block in Figure 1). The risk factors are displayed as determinants of these phenomena.

*Figure 1. Conceptual model: Risk factors and characteristics of being socially excluded*




*Source*: SCP (Jehoel-Gijsbers, 2004 (adapted)).

Based on the distinction between risk factors and features of social exclusion as a state, the development in the degree of being socially excluded ought to be measured directly, on the basis of 'deficiencies' in the four dimensions identified. For example, the model does not equate being socially excluded with having a low income but with material deprivation, which shows

in the inability to meet basic needs, having problematic debts, payment arrears, etc. Having a limited income as such, however, is not regarded as an indicator of social exclusion, but as a potential cause of it, i.e. a risk factor.

The conceptual model essentially presumes a one-sided causality: risk factors are considered to increase the likelihood of being socially excluded. But empirically, the relationships between some variables may in fact be reciprocal. For instance, being socially excluded can be a consequence of poor health, but it can also cause deterioration in one's physical or psychological well-being. In fact, most risk factors that are considered amenable to policy interventions in Figure 1 may empirically show a reciprocal relation. Because the aim here is to identify the theoretical causes of social exclusion, such feedback mechanisms are not included in the conceptual model. In empirical research, however, this is a serious issue that must not be neglected, but often cannot easily be solved either. Detailed longitudinal data are needed to create a sufficient time lag between causes and consequences. Since the data used in our study are either cross-sectional (the ESS and SHARE) or longitudinal, but cover a rather short period (EU-SILC), we are not able to estimate such reciprocal effects in our analysis. Therefore, the results represented below (section 5) are interpreted as if the direction of causality were one-sided, as has been assumed in the theoretical model.

## 3. Hypotheses and typologies

In this section, we first formulate a number of hypotheses on the expected degree of social exclusion at the level of individuals and households. Subsequently, we introduce two typologies at the macro level, relating to models of care systems and to social security and pension regimes. These underlie our hypotheses on the expected differences in social exclusion among groups of countries, which are discussed in the final part.

### *3.1 Hypotheses at the micro level*

One evident assumption in the conceptual model is that people will be more socially excluded the more they are exposed to risk factors. Since the current project focuses on the elderly in various countries, and an advanced age theoretically is regarded as a risk factor, the central hypothesis here is that *elderly persons will experience more social exclusion than younger ones*.

From the other micro-level risk factors in the model, several additional hypotheses can be derived. Generally speaking, individuals with the following characteristics are expected to be more excluded than their counterparts: female, living alone, a low socio-economic status of parents, belonging to an ethnic minority, limited coping abilities, poor health, a low level of education, unemployment/benefit recipient and a low income (see also European Commission, 2002, p. 10). Because of data limitations, not all of these risk factors can be analysed here (cf. section 4). At the micro level, *additional hypotheses* can be investigated for

- gender – more social exclusion among women;
- family composition – more social exclusion among single persons;
- health – more social exclusion among persons with poor health;
- education – more social exclusion among those with a low level of education; and
- income – more social exclusion among low-income groups.

In addition to studying the relationship between risk factors and social exclusion at the level of persons/households, we also consider social exclusion at the macro level. In theory, many risk factors could be taken into account here. We limit ourselves to the following ones:

- general country traits, such as the GDP, income inequality, expenditure on social protection, life expectancy and the national education level; and
- coherent sets of institutions or 'regimes'.

The latter factor relates to the divergent institutional setup of social security, health and pension systems, which theoretically may explain why social exclusion among the elderly varies among countries. For this purpose, we have categorised the 26 countries into five groups, each representing countries that are more or less similar in terms of their long-term care and social security and pension regimes. The underlying hypothesis is that different types of regimes – as discussed to some extent below – correlate with varying degrees of social exclusion among the elderly.

## 3.2 Typology of long-term care models

Health is an aspect that is strongly related to age. Obviously, in all countries elderly persons will need more care than young persons will. For the elderly, the 'social rights' dimension of social exclusion possibly will be strongly influenced by access to adequate care. Broadly speaking, a person with a health problem can choose among three options: no care, informal care or formal care. Pommer et al. (2007) note that there are several views on the relationship between formal and informal care, which can be expressed in country typologies. The main criterion they use to distinguish countries is "primary responsibility", which may lie with the individual (Scandinavian model), the nuclear family (Continental model) or the extended family (Mediterranean model). In Mediterranean countries, the family often has a legal duty to support relatives up to the third degree. If care responsibilities are not primarily a family matter, the government may step in, as in the Scandinavian model (Table 1).

Unfortunately, only 10 countries are involved in this typology, with all Anglo-Saxon and Eastern European countries missing.

*Table 1. Classification of countries by primary responsibility for care of the elderly*

| Primary responsibility | Country | Model |
|---|---|---|
| State | Denmark, Sweden, The Netherlands | Scandinavian |
| ↕ | Belgium, France, Germany, Austria | Continental |
| Family | Greece, Italy, Spain | Mediterranean |

*Source*: Pommer et al. (2007).

## 3.3 Typologies of welfare and pension regimes

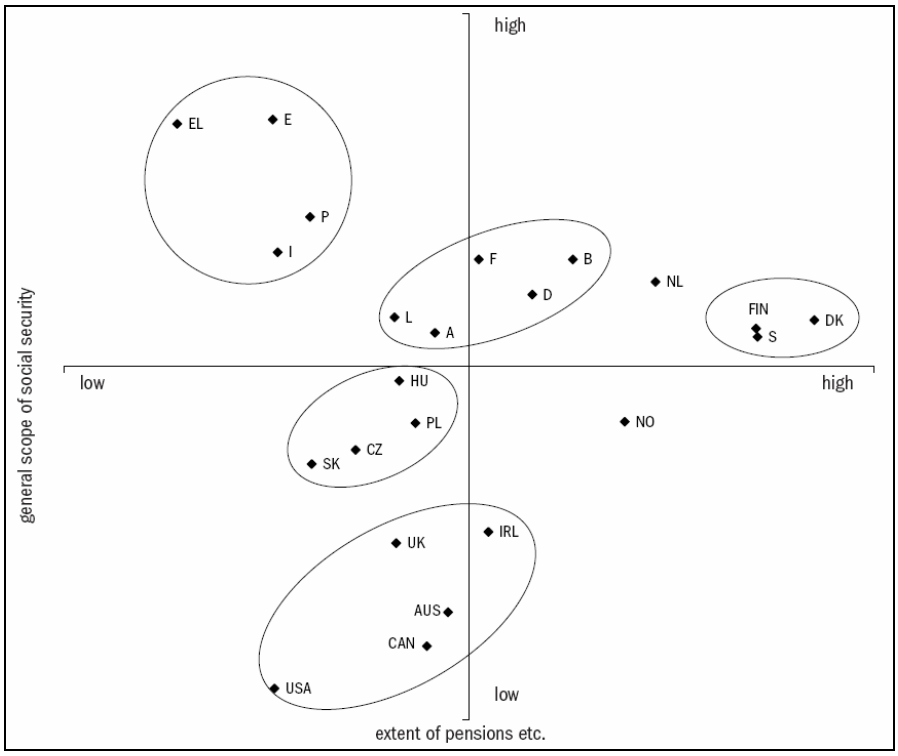
In his largely theoretical typology, Esping-Andersen (1990) made a distinction between countries with "liberal", "social democratic" and "corporatist" welfare regimes. Empirically, this division was largely corroborated by Wildeboer Schut et al. (2001). Soede et al. (2004) tested the empirical validity of Esping-Andersen's typology in a more elaborate fashion by including more countries and more institutional traits, especially regarding pension schemes. Their typology was based on two empirical dimensions, the "general scope of social security" (reflecting the level of benefits, entry conditions, duration, etc.) and the "extent of pension systems" (mainly pension wealth, plus some indicators on disability schemes, etc.). This can be referred to as a *mixed general/pension regime typology*, and resulted in adding two new clusters

to the Esping-Andersen typology. Thus, five clusters of countries with different institutional setups were discerned by Soede et al. (Figure 2):

- the Nordic group, consisting of Sweden, Denmark and Finland, which combine a high scope of social security with a mean extent of pensions (social-democratic regime);
- the Continental cluster (Belgium, France, Germany, Luxembourg and Austria), which score around the mean on both dimensions (corporatist regime);
- the Anglo-Saxon group made up of the US, Canada, Australia, the UK and Ireland, with a (below) average scope of social security and a low extent of collective pensions (liberal regime);
- the Mediterranean cluster (Italy, Portugal, Spain and Greece) with a relative high level of pensions, but a low general scope of social security (Mediterranean regime); and
- the Eastern European group to which Poland, Hungary, the Czech Republic and Slovakia belong. These have a (below) average score on both dimensions (new member states' regime).

The Netherlands takes a position between the Nordic and Continental countries and is regarded as a hybrid regime type. Norway, expected to be in the Nordic group of welfare and pensions schemes, is an outlier in this typology.

*Figure 2. Optimal scaling of 23 countries based on 85 welfare state characteristics*




*Source*: Soede et al. (2004).

Soede & Vrooman (2008b) elaborated on this by devising a specific pension typology, which took into account a great number of characteristics of (collective) pension schemes. The first dimension they found was rather similar to the second one in Figure 2, and mainly referred to 'pension wealth'. On the second dimension, a distinction emerged between countries that have

extensive pension schemes that are operated by the private sector, but enforced by the national law (such as in the Netherlands), and those that do not have such mandatory private- pension schemes.

## 3.4 Hypotheses at the macro level

The long-term care and the mixed general/pension regime typology partly overlap, which suggests that a clustering into Nordic, Continental European, Anglo-Saxon, Mediterranean and Eastern European country groups could be an adequate way to classify the institutional variety relevant for explaining social exclusion among the elderly. In the empirical part of this report, we therefore present the results separately for each country, but group them according to these five clusters.

Based on the characteristics of the regime typologies, we formulated some hypotheses about the relation between social exclusion of the elderly and the regime typology, which theoretically can be regarded as a macro level 'institutional risk factor'.

*1) Material deprivation*

Material deprivation of the elderly will probably be less common in the Nordic countries, the Netherlands and some of the Continental countries, owing to their rather generous pension schemes (above average) combined with the high scope of social security (the upper right quadrant in Figure 2).

In the Mediterranean group of countries, the obvious hypothesis would be that pensioners would experience little material deprivation, as these pension systems are the most extensive ones in the typology. Still, this only applies to the elderly participating in these pension schemes; those who are not eligible may have to resort to the general social security system (especially social assistance), which according to the typology is of very limited scope in the Mediterranean countries. A rather divergent picture therefore is to be expected in this group.

Following the typology, it seems likely that the liberal countries will have the highest degree of material deprivation, while the Eastern European countries will score slightly more favourably (both clusters are in the left bottom quadrant of Figure 2).

*2) Access to social rights*

Because of the relatively low scope of social security, adequate access to (social) provisions probably will be lower in Mediterranean and Eastern European countries, and will most likely be higher in the Nordic countries. This also applies to the formal care system, which is more elaborate in the Nordic group (state care responsibility) than in the Continental countries (nuclear-family care responsibility) and much more than in Mediterranean countries (extended-family care responsibility).

For the liberal countries included in our analysis, the UK and Ireland, it is not easy to formulate a straightforward hypothesis. Although the scope of social security in general is no more than average, the UK and Ireland may be rather atypical exponents of the liberal regime in this field, as both countries have a universalistic national health system, which implies access to basic services for all. For elderly persons, who generally experience more health problems, this would seem a very relevant social right. This factor leads us to expect that the score on the social rights dimension will be rather favourable in these Anglo-Saxon countries.

*3) Social participation*

It is rather difficult to formulate *a priori* expectations for the relationship between the various country clusters and the social participation dimension. If social participation mainly depends

on the material conditions provided by social security and pension schemes, relatively low scores can be expected for the Eastern European and the Anglo-Saxon groups, in line with the hypothesis regarding material deprivation. Nevertheless, in some Eastern European countries, the more dense primary social networks could compensate for that. The caring model in the Mediterranean countries implies probably more social contacts with family members as well.

*4) Cultural/normative integration*

For the theoretical dimension of cultural and normative integration, no straightforward expectations can be derived from the regime and care typologies, although following Larsen (2006) it is likely that certain normative orientations are correlated with regime types. Because there are no indicators available to operationalise this dimension in the datasets analysed here (see section 4.1) this is not problematic.

# 4. Operationalisation and index construction

## *4.1 Data*

The conceptual model (see section 2) serves as a guideline for the analysis. We have selected three datasets as potentially useful: the ESS (2002), EU-SILC (2005) and SHARE (2004). The ESS 2002 edition was chosen in favour of the more recent 2004 wave, because it contains a set of social participation variables that is lacking in the latter. It includes micro data of individuals in 21 European countries:[8] Austria, Belgium, Switzerland, the Czech Republic, Germany, Denmark, Spain, Finland, France, the UK, Greece, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Sweden and Slovenia. Norway, although a non-EU country, has been included as well, as an exponent of the Nordic regime.

EU-SILC contains micro data on households and individuals. In the 2005 wave, 26 countries participated: 24 of the then EU member states (excluding Malta), plus Norway and Iceland. The dataset gives relevant information for the first dimension (material deprivation) and for two aspects of the second dimension (access to social rights), namely access to adequate housing and some elements of health care. SHARE 2004 is used for analysing the long-term care received by the elderly with health problems and their access to formal health care (one aspect of the social rights dimension) in a more detailed way. SHARE contains micro data on the health, socio-economic status and social and family networks of individuals aged 50 and older. The number of countries is more limited here: Denmark, Sweden, the Netherlands, Belgium, France, Germany, Spain, Italy and Greece.

The fourth dimension (normative integration) could not be operationalised with the available data. As previously mentioned, this dimension is probably less important for the social exclusion of the elderly than of younger persons. In general, elderly persons behave more according to the dominant values and norms, except probably for some specific subgroups.

In each of the datasets mentioned above, much attention has been paid to the comparability of data among countries. Nevertheless, an international comparison of survey data is always more complicated than a single country study. Since this problem probably is larger with respect to measuring opinions and feelings of respondents than with respect to measuring actual behaviour and facts, the operationalisation of social exclusion will rely on the latter type of variable as much as possible.

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[8] The International Time Use database was also considered, but was disregarded because these data are rather old (2000–01) and only a limited number of countries participated (the Netherlands, the UK and Hungary; Sweden and Finland are available at restricted levels).

The possible selection bias is an additional problem that is often mentioned concerning survey research aimed at elderly persons. In most face-to-face surveys (such as EU-SILC, ESS and SHARE), individuals who live in institutions are excluded. This means that no information is obtained of the elderly who live in nursing homes or homes for the elderly, which is usually a selective group in terms of income and health. Moreover, the share of institutionalised elderly differs among countries, which may lead to a distortion of the international comparability of the results. But the extent of the problem should not be exaggerated: in the countries with relatively large shares of elderly persons living in (nursing) homes, it only concerns 5%-8% of the individuals aged 65 and older (OECD, 2005).[9] Even in the higher age groups the share of the institutionalised elderly is limited, e.g. in the Netherlands 10% of those aged 75 and older belong to this category (Statistics Netherlands, Statline database). Similar figures for the Mediterranean and Eastern European countries are not available, but given the nature of their caring systems (Pommer et al.'s "family regime"), it is not unreasonable to assume that the share of the institutionalised elderly is smaller there. This assumption would suggest that cross-comparative distortion as a result of disregarding the group is not very substantial.

## 4.2 Operationalisation

Three of the theoretical dimensions have been operationalised: two through the EU-SILC dataset and one based on the ESS (2002). The specific indicators used for each dimension are listed below.

*Material deprivation (1st dimension)*

In the EU-SILC (2005), 15 items about material deprivation are available. Respondents were asked to indicate whether the following characteristics apply:

1) the household has arrears on
   a) mortgage/rent payments,
   b) utility bills,
   c) hire purchase instalments or other loans (yes/no (3x));
2) housing costs are a heavy financial burden (scale);
3) repayments of debts are a heavy financial burden (scale);
4) the household can afford a telephone, colour TV, washing machine and personal computer (yes/no (4x));
5) the household can afford basic needs in terms of
   d) adequate heating for the house,
   e) every second day a full meal (with meat, fish, chicken or vegetarian options),
   f) costs for medical treatment,
   g) dental treatment (yes/no (4x));
6) the household has difficulties in making ends meet (scale); and
7) the household is able to deal with unexpected expenses (yes/no).

[9] In Luxembourg and Germany around 4% of persons aged over 65 are living in a (nursing) home, just below the level in the UK and the Netherlands (5%). In Norway the figure is 6%, in Sweden 8%. (Eurostat, 2005; Statistics Netherlands Database).

*Inadequate access to social rights (2nd dimension)*

The dimension on inadequate access to social rights is more difficult to operationalise than material deprivation is. This latent aspect theoretically concerns a wide diversity of domains, including adequate access to housing, a safe and healthy living environment, health care, labour market, education and legal aid. In the EU-SILC (2005), only a small number of these aspects are available. The factors below seem relevant for measuring the social rights dimension (nine items regarding housing, living conditions and health care):

1) Adequacy of housing
   a) leaking roof, damp walls/floors/foundation or rot in the window frames or floor,
   b) no indoor flushing toilet,
   c) no bathroom/shower in the dwelling,
   d) too dark (yes/no (4x));
2) Poor quality of the living environment[10]
   a) noise from neighbours,
   b) pollution/crime or other environmental problems,
   c) crime, violence and vandalism (yes/no (3x)); and
3) Need for medical or dental examination or treatment during the last 12 months, which the respondent did not receive (because of costs, waiting lists, lack of transportation, etc.) (yes/no (2x: medical and dental)).

In SHARE (2004), several questions were posed about access to home and health care:

1) whether informal home care is available and received, and if so, given by whom (within or outside the household);
2) whether formal home care is available and received;
3) what the waiting times are for medical consultation (emergency and non-emergency);
4) whether the person had to forgo any type of care because of the costs one had to pay; and
5) whether the person had to forgo any type of care because it was not available or easily accessible.

*Insufficient social participation (3rd dimension)*

The operationalisation of this dimension is fully based on the ESS (2002) dataset. The following items have been used:

1) frequency of social contact with family, friends or colleagues (scale);
2) the presence of anyone with whom the respondent can discuss personal matters (yes/no);
3) social contacts – more/equal/fewer than others of the same age (scale);
4) membership of clubs (sporting, social, hobby, choir, etc.) (yes/no; based on the count of all memberships);

[10] The items for living environment did not fit well in the index for social rights and had to be left out.

5) membership of organisations (religious, political, professional, associations for the elderly, etc.) (yes/no, based on the count of all memberships);

6) participation in voluntary work (yes/no);

7) frequency of helping others (scale); and

8) trust in others (scale).

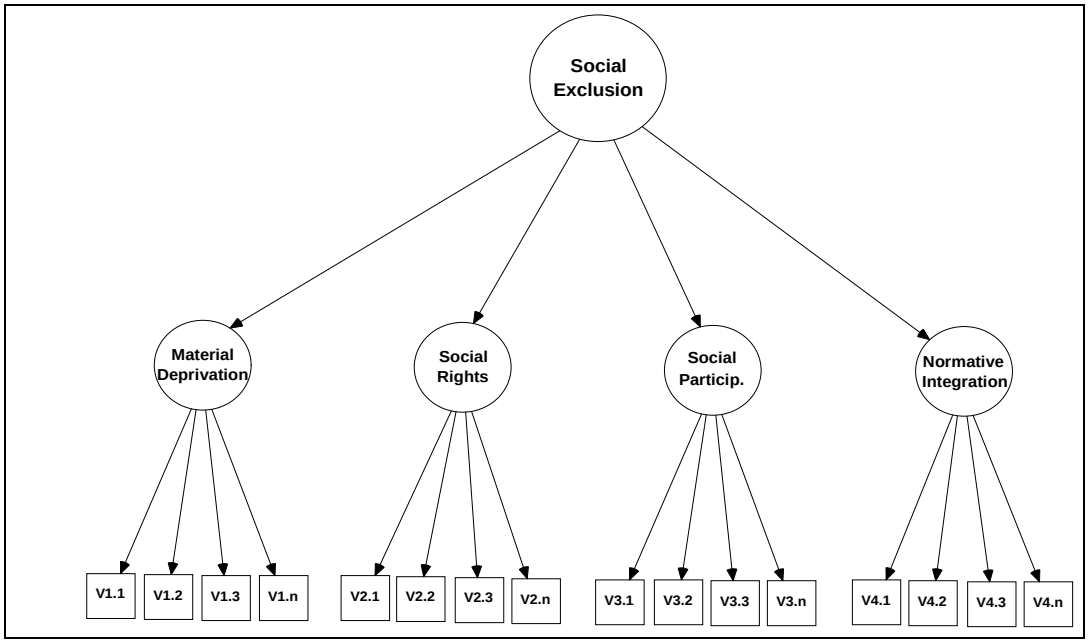
Annex A lists the scores on the separate EU-SILC and ESS items by age group and country.

## 4.3 Construction of indices

Describing social exclusion through separate indicator variables produces a vast amount of information, which is difficult to relate in a straightforward manner to the theoretical meaning of social exclusion described earlier. The information can be reduced by constructing indices for each of the theoretical dimensions, based on the different items mentioned in section 4.2. A further reduction can be accomplished by combining these dimensions into a general social exclusion index.

The general measurement model for social exclusion is presented visually in Figure 3. The various sub-indices can be regarded as latent concepts, underlying the indicator variables that have actually been measured (v1.1, v1.2,...v4.3, v4.n). The general social-exclusion index represents the theoretical, overall latent social-exclusion variable, which brings about the scores on the four dimensions. As noted above, the normative integration dimension could not be operationalised through the available datasets.

*Figure 3. General measurement model for social exclusion*




*Indices for separate dimensions*

The indices for material deprivation (dimension 1), access to social rights (dimension 2) and social participation (dimension 3) have been constructed by applying categorical principal

component analysis (CatPCA). This technique combines nonlinear optimal scaling with principal component analysis (cf. Gifi, 1990). CatPCA is an appropriate technique if different indicators are expected to refer to one common underlying latent concept and some or all indicators have a nominal or ordinal measurement level.

The material deprivation index has been based on 15 items in the EU-SILC (2005) mentioned above. A fairly reliable scale (Cronbach's alpha=0.77) was constructed for the total sample of the 24 EU countries plus Norway and Iceland.

As previously noted, the scale construction for the index on access to social rights showed that the items about the living environment did not fit in well. After eliminating these from the analysis four items remain, referring to adequate housing and access to medical and dental examination or treatment. The reliability of the resulting scale is less than in the case of material deprivation, but acceptable for our purpose (Cronbach's alpha=0.60). Of course, in terms of the theoretical characteristics of the social rights dimension (cf. Box 1) coverage through this dataset is rather limited.

The scale construction for the social participation index has been based on eight ESS items and resulted in scale reliability that is not that high but is acceptable as well (Cronbach's alpha=0.63).

*General index*

The most general way to describe social exclusion would be to reduce the information of the separate dimensions to one common, underlying general index. In order to realise this, micro-level data have to be available for all dimensions in one and the same dataset. This is not possible here, because the first two dimensions are based on the EU-SILC (2005), whereas the social participation is derived from the ESS (2002) (and information on normative integration is lacking altogether). Therefore, we have had to confine ourselves to the construction of an 'overall' micro index based on the first two dimensions – material deprivation and social rights. This index is useful for descriptive purposes as well as the more detailed analyses on social exclusion, such as the (multilevel) logistic regression analyses, that are presented later on in this report.

If we limit ourselves to a description of social exclusion at the macro level (countries), it is possible to create an overall index based on the average country scores on three dimensions, including social participation (see section 5.3). Because of its aggregated nature, however, this index is not suitable for analyses at the micro level.

A summary scale over the first two dimensions (material deprivation and social rights) was constructed by applying nonlinear canonical correlation analysis through the *Overals* procedure. Overals is especially well-suited to our purpose, because it allows us to test simultaneously whether the various indicators actually fall into the coherent dimensions we theoretically expect, and whether a good measure for the general concept of economic–structural exclusion can be obtained by combining these subscales (see also Gifi, 1990, p. 204). The Overals procedure has resulted in a reliable scale (fit value=0.72). Both subdimensions (material deprivation and social rights) turned out to fit well with this scale, which means that there is an underlying common factor. In line with the theoretical distinctions made previously (cf. Box 1) this common factor may be referred to as *economic–structural exclusion.*

Each of the indices for social exclusion is based on an analysis of *all* the respondents in *all* the countries that are considered in this study. Such a 'European' index is necessary in order to be

able to compare the elderly among the different countries. A country-specific index construction would not allow for such a comparison.[11]

The respondents' mean index score on the CatPCA and Overals dimensions by definition equals zero. The original scores run from negative to positive, but they have been transformed into a scale ranging 1–100, which makes for better interpretability.[12] The higher the score, the higher is the level of social exclusion of individuals.

Because the respondent's index scores indicate relative positions on a sliding scale, there is no point that can theoretically be regarded as a 'natural' threshold value that divides the excluded from the non-excluded. We have therefore used a statistical criterion, and consider respondents excluded if their index score exceeds the mean value across all countries, plus one standard deviation. To test the plausibility of this procedure, we have crossed a dummy variable for the summary scale (0 = not excluded, 1 = excluded according to the statistical threshold value) with the number of deprived items in the dataset. Most of the 'non-excluded' (83%) were deprived on 3 or fewer items, out of a total of 21. Of the group with an index score above one standard deviation from the across-country mean (the 'excluded'), 77% were deprived on at least 6 items.

Applying this rule of thumb, 14% of the European adult population suffer from material exclusion (dimension 1), 10% have inadequate access to social rights (dimension 2), 15% are excluded in terms of social participation (dimension 3) and 13% experience economic–structural exclusion (summary scale over the first two dimensions).

## 5. Empirical results

In this section the results of the empirical analyses are presented, which seek to answer four research questions:[13]

1) To what degree does social exclusion among the elderly vary among countries (section 5.1)?
2) To what degree do elderly cohorts differ from younger ones in terms of social exclusion within countries (section 5.2)?
3) Which risk factors determine the degree of social exclusion among the elderly (section 5.3)?
4) Which country characteristics determine social exclusion among the elderly (section 5.4)?

### *5.1 Country differences*

In this section, the first research question is answered, for each of the three dimensions of social exclusion separately and for the overall indices. The country abbreviations and clusters used in the various figures are listed in Table 2.

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[11] Because the number of respondents differs among countries, in principle the results could be dominated by countries where the number of respondents is highest. This has been checked through a sensitivity analysis, which leads us to conclude that there is no or little such bias (cf. Annex C).

[12] The transformation was made by applying the following formula: $t = ((99/r * v) + 1) – (m * (99/r))$,
where t = transformed respondent's score;
v = original respondent's score;
m = minimum score in dataset; and
r = difference between minimum and maximum score in dataset.

[13] Some preliminary empirical results have already been presented in Vrooman (2008).

*Table 2. Country abbreviations and clusters*

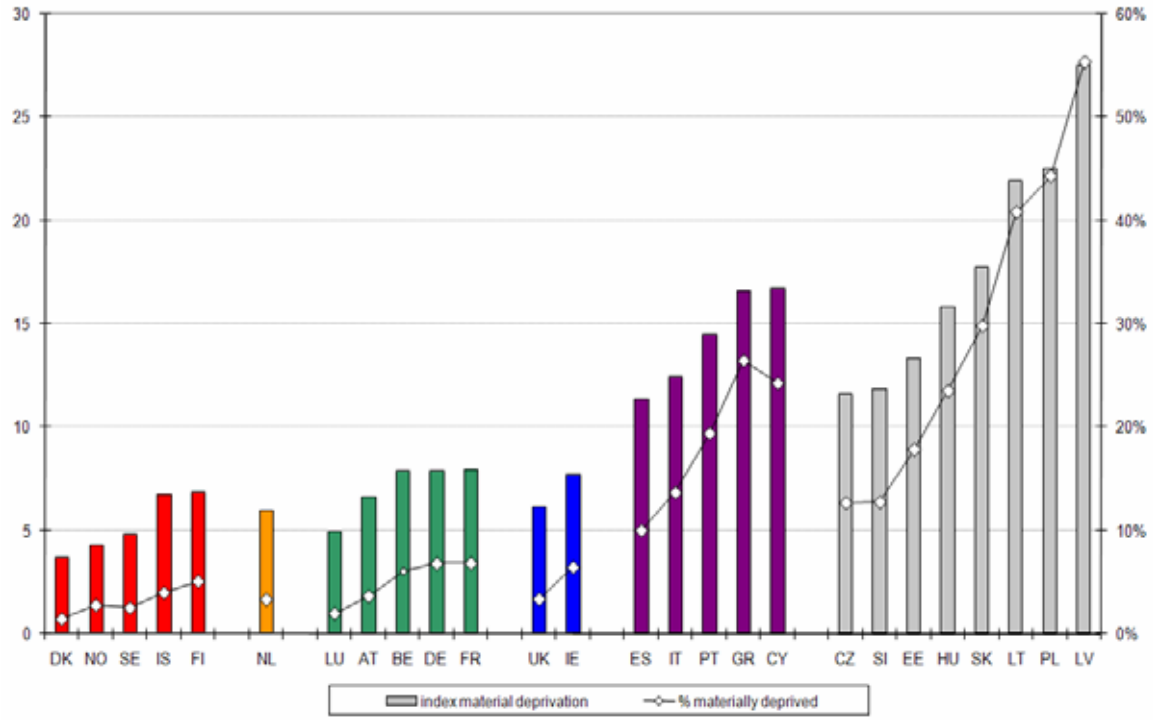
| **Nordic** | | **Continental Europe** | | **Mediterranean** | | **Eastern Europe** | |
|---|---|---|---|---|---|---|---|
| DK | Denmark | AT | Austria | CY | Cyprus | CZ | Czech Republic |
| FI | Finland | BE | Belgium | ES | Spain | EE | Estonia |
| IS | Iceland | DE | Germany | GR | Greece | HU | Hungary |
| NO | Norway | FR | France | IT | Italy | LT | Lithuania |
| SE | Sweden | LU | Luxembourg | PT | Portugal | LV | Latvia |
| **Hybrid** | | **Anglo-Saxon** | | | | PL | Poland |
| NL | The Netherlands | IE | Ireland | | | SI | Slovenia |
| | | UK | United Kingdom | | | SK | Slovakia |

*Source*: Authors' compilation.

### 5.1.1 Material deprivation of the elderly among countries

Figure 4 shows the average country scores on the index of material deprivation in terms of the more or less 'geographical' categorisation of the mixed general/pension typology. This form of social exclusion is low in the five Nordic countries, especially in Denmark, Sweden and Norway (with an average score of below 5 on a scale of 1-100, left axis).

*Figure 4. Social exclusion in EU member states:[†] **Material deprivation** among the 55+ age group, 2005 (left vertical axis/bars = average country score (1-100); right vertical axis/lines = % materially deprived[††])*




[†] EU member states (2005) excluding Malta, plus Norway and Iceland

[††] Materially deprived = respondents' index score > average score across countries + one standard deviation

*Source*: EU-SILC (2005) (SCP treatment).

Still, the 'hybrid' Netherlands, the five corporatist countries in Western Europe and the two representatives of the liberal Anglo-Saxon models attain a score that is only slightly worse. Especially the relatively limited degree of material deprivation in the UK and Ireland is somewhat unexpected, given the low level of first tier and mandatory second-tier pensions (cf. Soede & Vrooman 2008b). This may be an effect of the rather high general wealth in these countries; it could also be that the elderly have considerable additional income sources there, which were not included in the pension typology (non-mandatory/private pensions, savings and real estate).

The Mediterranean countries generally have the most favourable pensions, in combination with rather limited social security in general (see Figure 2). In spite of the elaborate pension system, the elderly attain higher scores in terms of material deprivation than the Western European and Nordic groups.

Material deprivation among the elderly is highest in Eastern Europe, however, which is more or less in line with the expectations based on the typology (the hypothesis suggested a position slightly above the liberal group, which was supposed to generate the highest material deprivation). In most of these countries, the average index scores are well above 15. In Latvia, elderly persons are the worst off: over half of the age group over 55 can be regarded as materially deprived (right axis in Figure 4). Poland (44%) and Lithuania (41%) do only slightly better. The Czech Republic, Slovenia and Estonia are the exceptions, having rather average scores that are about the same as those of Spain and Italy, the best-performing Mediterranean countries.

The relatively high material deprivation in the Mediterranean countries requires some further qualification. Our hypothesis was that the picture could be rather divergent, with those elderly persons who participate in the pension schemes attaining a rather favourable position, while the ineligible 'outsiders' who rely on the rather limited social assistance or insurance would experience a lot of material deprivation. Thus, it could be that the high average degree of material deprivation is the result of a large group of persons who are not entitled to the generous pension schemes or who have not accrued sufficient rights. If this were the case, one would expect a great deal of variation in the individual material deprivation scores in these countries. But it turns out that the variation coefficient is actually lower in the Mediterranean and Eastern European countries than elsewhere (see Annex D). This outcome would suggest that the high average degree of material deprivation here cannot be explained by a large proportion of 'outliers' who have a low income because they cannot make full use of the extensive pension schemes.

### *5.1.2 Access to social rights of the elderly among countries*

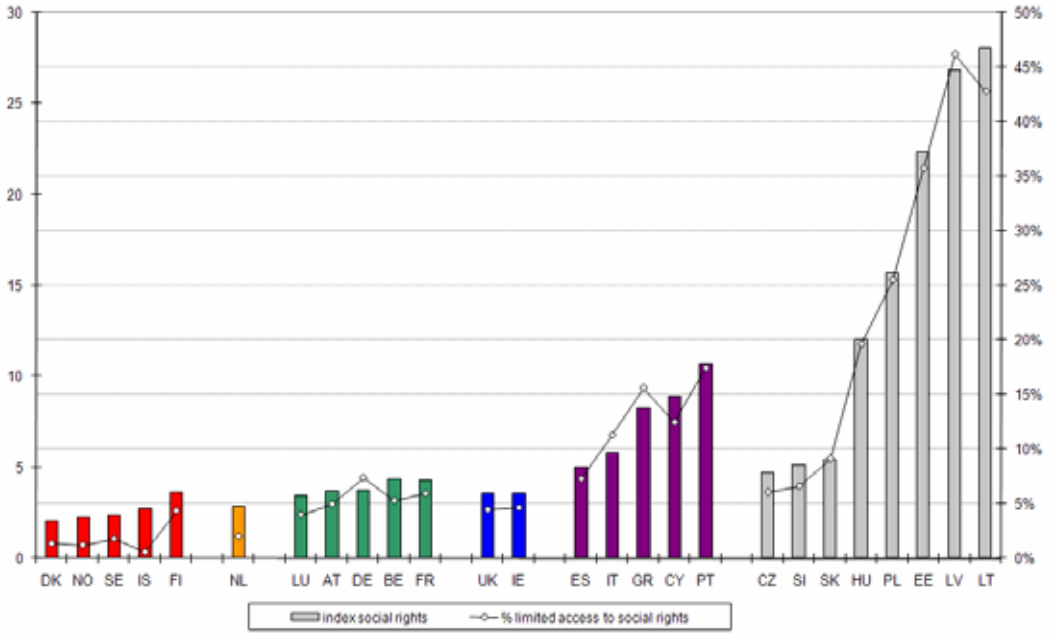
The pattern on the dimension of access to social rights (Figure 5) is rather similar, but the differences between the country clusters are larger. This feature concerns both aspects of the rather limited operationalisation of the concept that was possible here, housing and medical/dental services (see Annex A). Once again, the Nordic countries (except Finland) and the Netherlands attain the lowest average scores (below 6): according to this pan-European measure, only 1-2% of the elderly can be regarded as excluded in terms of social rights. The Continental and Anglo-Saxon countries follow close behind, with Luxembourg, Austria and the UK being around the Dutch level. About 4-7% of the elderly in these country groups attain a score that indicates social exclusion.

In the Mediterranean group, the access to social rights in Spain and Italy is slightly lower, while Greece, Cyprus and Portugal lag further behind. The three Baltic States have the highest scores: 40-45% of the elderly experience exclusion from social rights as measured here. Estonia's high score on this dimension is quite remarkable, since it did much better than Latvia and Lithuania

in terms of material deprivation. Once more, within the Eastern European group the Czech Republic, Slovenia and Slovakia score rather favourably – similar to Spain and considerably lower than other Mediterranean countries.

The position of the country clusters corresponds with the expectations based on the typologies of welfare and care regimes, with relatively favourable scores in the Nordic and Continental clusters, and comparatively bad ones occurring in the Mediterranean and Eastern European groups.

*Figure 5. Social exclusion in EU member states:*[†] ***Limited access to social rights*** *among the 55+ age group, 2005 (left vertical axis/bars = average country score (1-100); right vertical axis/lines = % with limited access to social rights*[††]*)*




[†] EU member states (2005) excluding Malta, plus Norway and Iceland

[††] Limited access to social rights = respondents' index score > average score across countries + one standard deviation

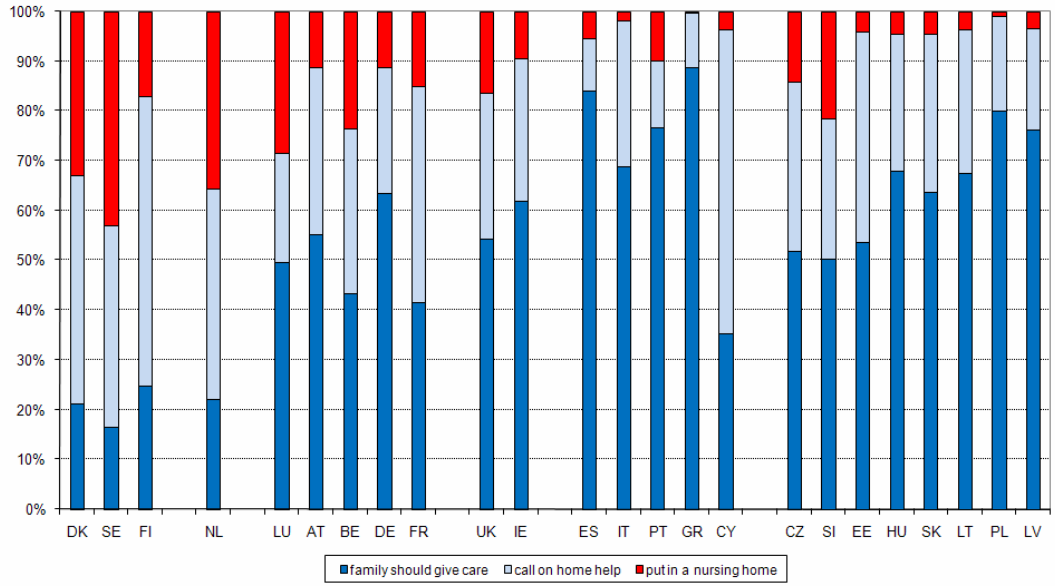
*Source*: EU-SILC (2005) (SCP treatment).

Ageing often implies increasing health problems and thus we pay some extra attention to *the access to care* for the elderly. From the typology of care models it follows that care may be delivered in different ways, depending on institutional arrangements and cultural expectations in the various countries. These options are reflected in what children consider the right kind of care in case their elderly parents cannot manage to live on their own anymore: Should the family care for them, should the problem be resolved through calling on home help or should the parents go to live in a nursing home? (See Figure 6, based on Eurobarometer, 2002.)

In the Nordic countries and the Netherlands, the preference for giving care by the family themselves is relatively low (around 20%). In the Continental and Anglo-Saxon countries as in some of the Eastern European countries (the Czech Republic, Slovenia and Estonia), more people support this: 40-60%. The highest preference for caring by the family, however, is found in the Mediterranean countries (excluding Cyprus), with percentages higher than 80% for Spain and Greece. In these countries it is considered almost unthinkable for children to refer their parents to formal nursing-home care (less than 5%), while this situation is preferred by a

considerable share of the children (35-40%) in Denmark, Sweden and the Netherlands. These findings are rather in line with the actual institutional care arrangements, as described in the previously discussed typology by Pommer et al. (2007).

*Figure 6. Preferred type of care for own parents if they could not longer manage to live on their own*



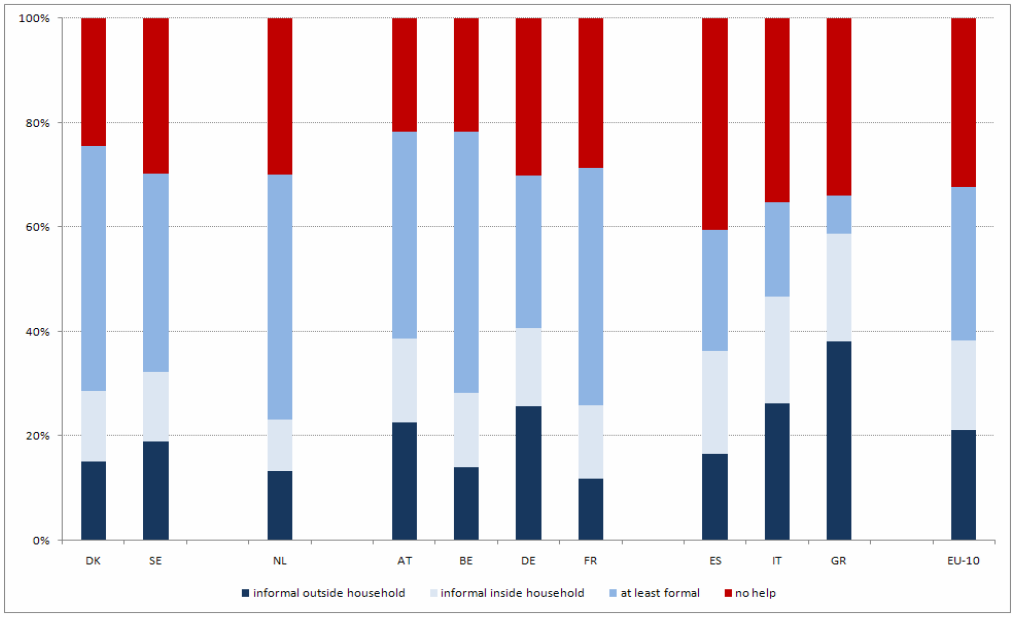

*Sources*: Eurobarometer (2002), (EIRO, 2004).

Figure 7 shows what type of care is actually given to the elderly (aged 50+) with moderate and severe health problems, based on the SHARE survey (which implies that Eastern European countries and the elderly living in institutions are not included). In the three Mediterranean countries, a relatively low share receives formal help at home, as could be expected. Yet, in Spain and Italy, this is not offset by a correspondingly larger share of informal help. Such an offset only occurs in Greece, where the percentage receiving formal care is very low. As a result, the share of the elderly needing but not receiving any care (either formal or informal) is highest in the three Mediterranean countries: around 40%, whereas it is between 20% and 30% in the Nordic/corporatist groups and in the Netherlands.

Thus, in the Mediterranean countries, children would prefer giving informal care to their parents, but actually provide this only slightly more frequently than elsewhere. Because formal help is less widespread, the share of the elderly who end up without any help is higher than in the countries of Western and northern Europe. This discrepancy may be explained by diverging social and cultural developments over the last decades. The likelihood of living in an extended family has diminished in the Mediterranean group as a result of the migration of younger persons in search of education and job prospects from rural to urban areas (leading to 'rural ageing'), increasing women's labour participation and declining fertility rates (which within the EU are lowest in the Mediterranean and Eastern European countries).[14] As Da Roit (2007) points out, this can be expected to continue in the near future. Given the traditional 'family help' values, formal help for the elderly did not take root in the Mediterranean countries in the past. This shortfall keeps the traditional family values alive, since there is no viable alternative. Yet, recent and future social developments seem to call for a change in this deadlock situation.

[14] For further information, see the European Commission's website (http//ec.europe.eu/health).

*Figure 7. Type of help for the population aged 50 and older who have moderate and severe health problems, in 10 European countries (2004)*

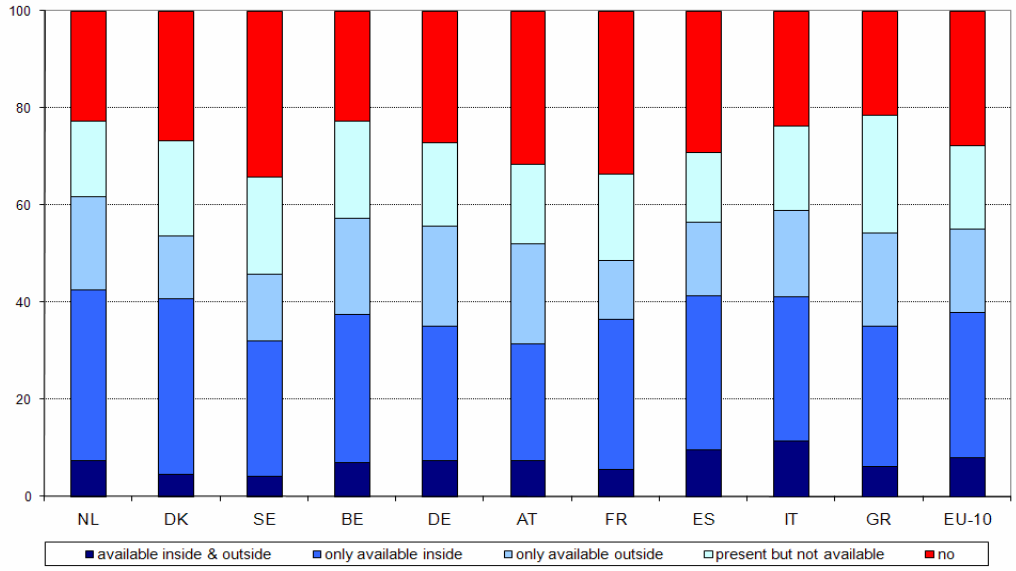



*Note:* In Austria and Germany, formal care includes care insurance payments.

*Source*: SHARE (2004) (Release 2, SCP treatment).

Figure 8 shows that in Spain and Italy about 55% of the elderly with care problems have access to an informal network (within or outside the household) able to provide help. This share is comparable to Belgium and Germany, and below the Dutch level (which is highest of all). Greece, in which about 90% of the grown children feel the family should give care to elderly parents, scores slightly below the EU-10 average. The share of the elderly having an informal network that is not able to help is highest there (24% versus 15-20% in the other countries).

*Figure 8. Access to an informal network within or outside the household of persons aged 50 and older with moderate and severe care problems, in 10 European countries (2004)*




*Source*: SHARE (2004) (Release 2, SCP treatment).

Therefore, the typology of care regimes for the elderly is reflected in the preferences, but not in the care that is actually available and received. Neither does it show in the access to formal medical health care (specialists and treatment in hospital). Table 3 indicates that the share of the elderly who abstain from any type of care because of cost considerations is small in all countries. The highest percentages are found in Germany, France and Greece (6%). Availability is not a widespread problem either, with the highest degree of unavailable care to be found in Italy (4%) and Greece (5%). Denmark, France, Sweden and Spain have relatively long waiting times for consultation with a specialist. The two latter countries also have long waiting times for inpatient and outpatient surgery. On all of these indicators, there is no clear relation with the care regime typology.

*Table 3. Access to formal health care for persons aged 50 and older, in 10 European countries, 2004 (in %)*

| | **Forgo care because of costs** | **Forgo care because not available** | **Waiting days for emergency consultation†** | **Waiting weeks for non-emergency consultation†** | **Waiting months for inpatient surgery†** | **Waiting months for outpatient surgery†** |
|---|---|---|---|---|---|---|
| Denmark | 1.7 | 2.2 | 12.7 | 5.9 | 2.2 | 2.7 |
| Sweden | 3.4 | 3.2 | 10.5 | 9.3 | 7.3 | 3.9 |
| The Netherlands | 2.5 | 0.7 | 7.5 | 3.3 | 2.6 | 1.7 |
| Austria | 3.0 | 0.8 | 3.9 | 1.8 | 2.0 | 0.6 |
| Belgium | 3.8 | 0.9 | 5.4 | 1.8 | 1.1 | 0.7 |
| Germany | 6.0 | 1.9 | 0.9 | 1.8 | 1.7 | 0.7 |
| France | 6.0 | 2.2 | 11.0 | 3.0 | 2.6 | 1.0 |
| Spain | 3.4 | 1.9 | 9.8 | 4.9 | 6.2 | 4.2 |
| Italy | 4.9 | 3.8 | 5.5 | 2.7 | 2.6 | 2.6 |
| Greece | 5.7 | 5.0 | 2.6 | 1.3 | 0.9 | 0.6 |

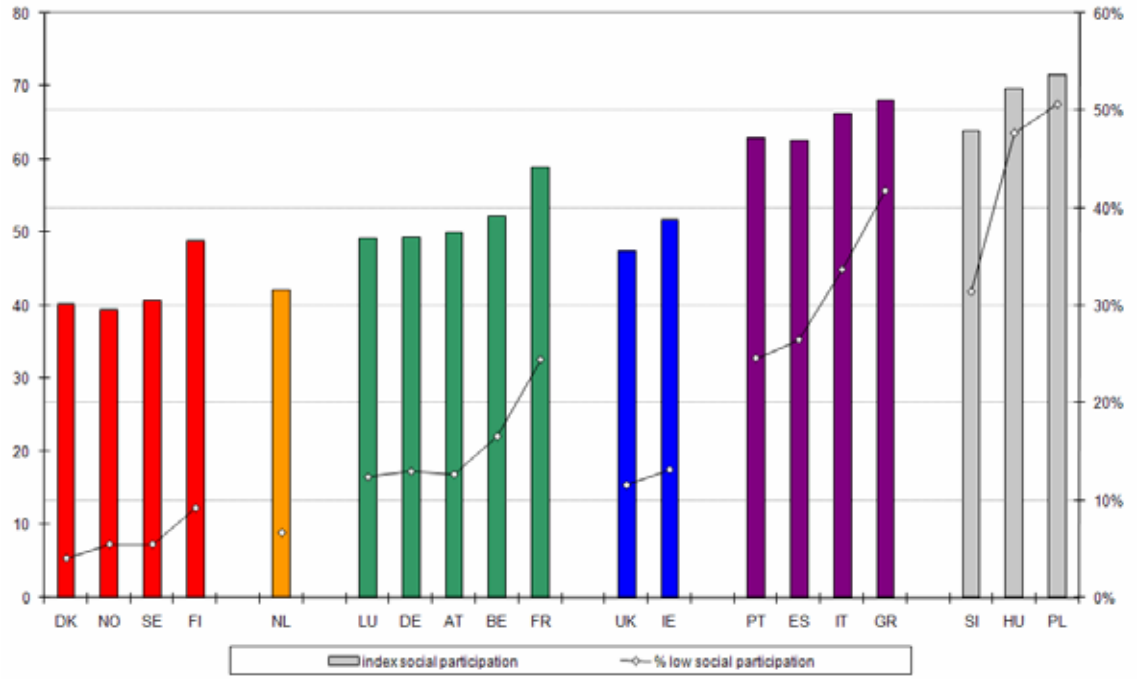
† If applicable; in most countries the number of respondents is limited (50-300)

*Source*: SHARE 2004 (Release 2, SCP treatment).

### *5.1.3 Social participation of the elderly among countries*

On the social participation dimension, the country differences are much smaller, but the general pattern remains more or less the same (Figure 9). The data relate to the more limited set of countries available in the ESS. Once more the lowest scores in terms of lacking social participation are found in the two Nordic countries involved and in the Netherlands; the Western European Continental and Anglo-Saxon groups follow close behind (with France having a somewhat higher score). In the Mediterranean group and the three Eastern European countries figuring in the data, the lack of social participation among the elderly is most prominent, but the gap with the Nordic and Western European countries is decidedly less than on the other dimensions.

*Figure 9. Social exclusion in EU member states:[†] **Low social participation** among the 55+ age group, 2002 (left vertical axis/bars = average country score (1-100); right vertical axis/lines = % with low social participation[††])*




[†] EU member states (2002) plus Norway, Slovenia, Hungary and Poland

[††] Low social participation = respondents' index score > average score across countries + one standard deviation

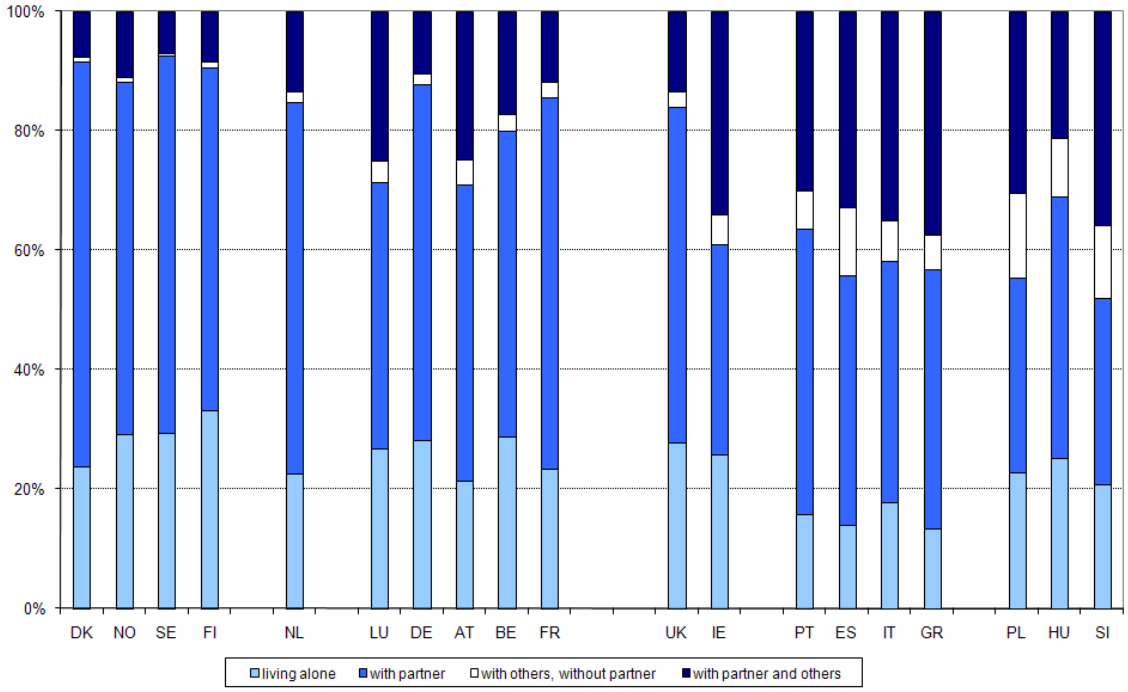
*Source*: ESS (2002) (SCP treatment).

The relatively high exclusion scores on the social participation dimension in the Mediterranean and Eastern European countries may be somewhat unexpected given that in these countries more elderly persons live in an extended family (e.g. grandparent(s) living with their children and grandchildren; see Figure 10). In Spain, Italy, Greece, Poland and Slovenia this share is more than 40% of the elderly, while it is negligibly low in the Nordic countries.

The relatively high exclusion score could be explained by the fact that the index for social participation may not fully honour the social contacts within the household. Although these contacts are not excluded in the questions measuring social participation, they certainly are not a prominent part of the index. In countries where many elderly persons live with their children and grandchildren, their social participation may thus be underestimated.

This aspect, however, requires some further qualification. Since social inclusion implies being included in society *at large*, the indicators on which the index has been based deliberately focus on forms of participation outside the household. And although the primary social network in the household theoretically may compensate for a lack of outside contacts, this does not seem to be the case here. Rather unexpectedly, the primary social network of elderly persons (in the sense of regular social meetings with family and having someone with whom to discuss personal matters) in Mediterranean and Eastern European countries is not more elaborate. In fact, most of these countries score worse than the northern European and Anglo-Saxon groups do (see Tables A10 and A11 in Annex A).

*Figure 10. Household composition of the elderly (aged 65 and older) in EU member states,† (2002)*




† EU member states (2002) plus Norway, Slovenia, Hungary and Poland

*Source*: ESS (2002).

Compared with the average index scores on the dimensions of material deprivation and access to social rights, those on social participation of the elderly are relatively high (between 40 and 70 on a scale of 1-100; left axis in Figure 9). Perhaps it should be pointed out that this does not directly stem from the higher degree of non-participation of the elderly in the formal labour market. Labour market participation is not included in the social participation index, because in the conceptual model this was not regarded as a characteristic of exclusion, but as a risk factor.

### *5.1.4 Country differences among the elderly on the general social exclusion indices*

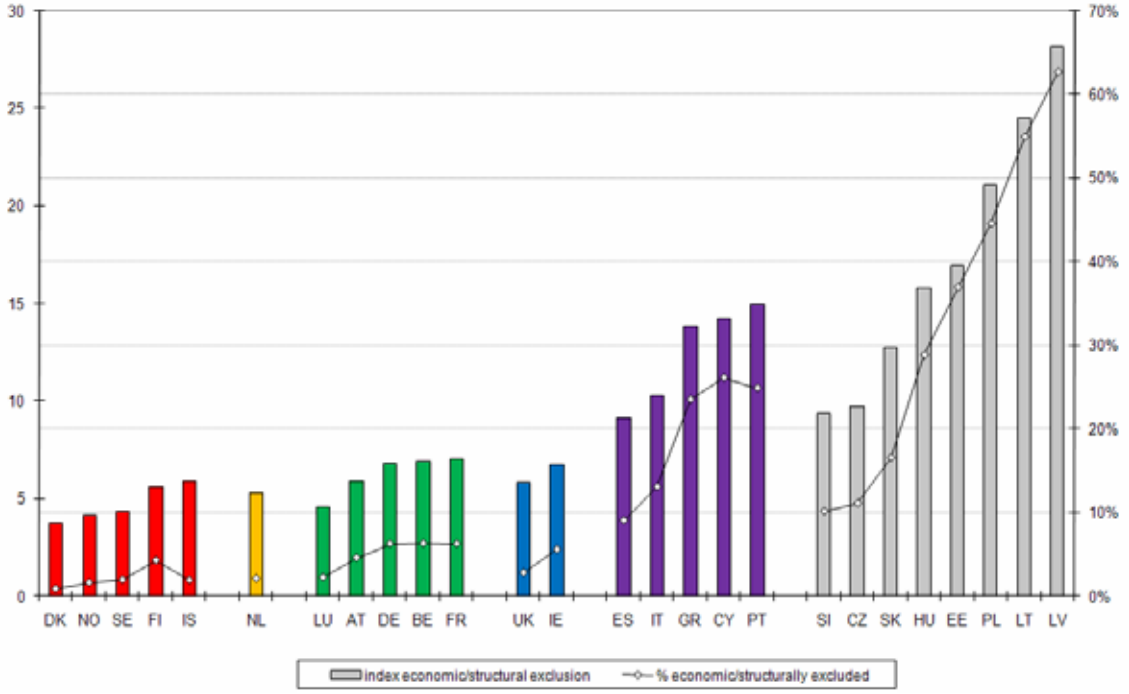
One of the objectives of this project is to construct an overall index of social exclusion for EU member states. From a policy point of view, it would be practical to monitor the degree of social exclusion in the various countries through a single figure. As previously mentioned, construction of a general index covering all three dimensions (material deprivation, access to social rights and social participation) at the micro level is not possible because the variables this requires are not available in one and the same dataset. We have solved this problem in two ways:

- Using the EU-SILC dataset we constructed a semi-general index at the micro level, based on just two of the three dimensions, i.e. material deprivation and social rights; this is called the economic–structural dimension index.
- At the country level, we have calculated the mean score for each of the three dimensions. Subsequently, these scores have been added and divided by three, which has resulted in an average country score on social exclusion, based on three dimensions.

*Two-dimension index: Economic–structural exclusion*

The score on the index of economic–structural exclusion is presented in Figure 11 (only for the 55+ age group). As expected, the pattern is the same as for the separate dimensions. The Nordic countries and the Netherlands have a relatively low score on social exclusion, as well as Ireland, Luxembourg and Austria. Belgium and France are slightly behind. The worst position is for the Eastern European countries Poland, Lithuania and Latvia. Other Eastern European countries, in particular Slovenia and the Czech Republic, have similar scores as Spain and Italy. Economic–structural exclusion of the elderly is higher in Greece, Portugal and Cyprus than in some of the Eastern European member states.

*Figure 11. Social exclusion in EU member states:[†] Economic–structural exclusion among the 55+ age group, 2005 (left vertical axis (bar) = average country score (1-100); right vertical axis (line) = % economically–structurally excluded[††])*




[†] EU member states (2005) excluding Malta, plus Norway and Iceland

[††] Economically–structurally excluded = respondents' index score > average score across countries + one standard deviation

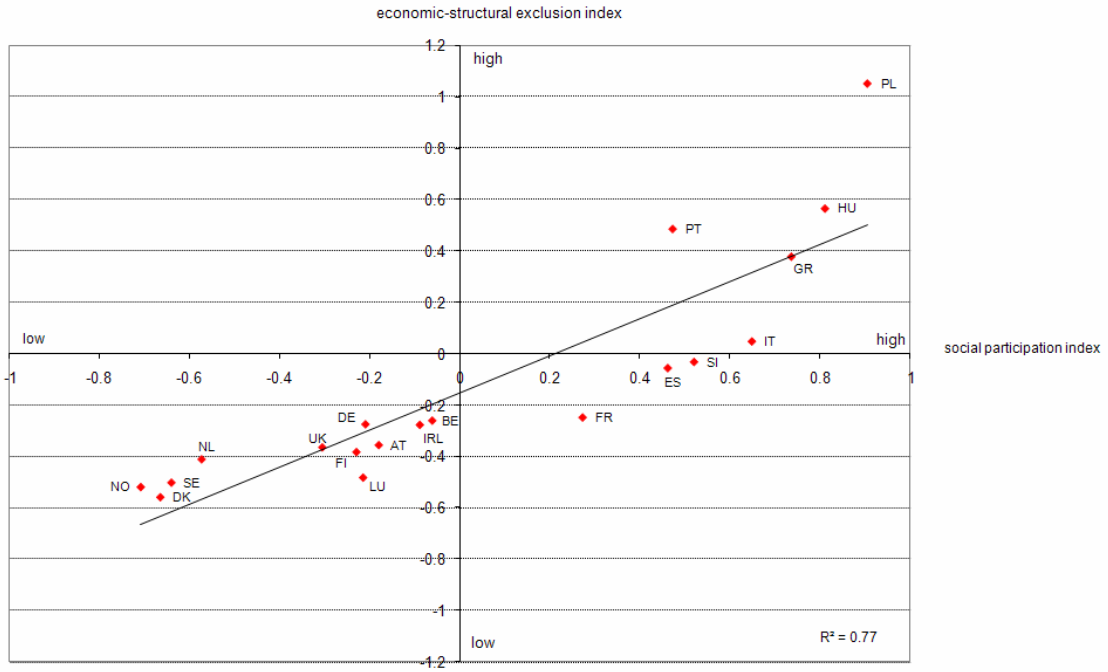
*Source*: EU-SILC (2005) (SCP treatment).

*Three-dimension index based on national averages*

Because the data needed for construction of the separate dimensions of social exclusion are spread over two datasets (the EU-SILC and ESS), it is not possible to construct a general index for social exclusion for each respondent over the three dimensions. Still, based on the average index scores for each dimension in every country, it is possible to construct an overall index. Figures 4, 5 and 9 show that the ranking of scores for each of the three dimensions is very similar among the different countries. The strong relationship between the dimensions is made visible in Figure 12. For the age group above 55 years, the average score on the economic–structural index containing the two first dimensions (material deprivation and social rights) (vertical axis) is plotted against the mean score for the index for social participation (horizontal axis). The correlation is very high (r=0.88). The figure shows two cohesive clusters in the

bottom-left part, the first one consisting of the Nordic countries and the Netherlands, with little social exclusion in terms of social participation and material deprivation plus social rights. Finland drops out of this Nordic/Dutch cluster to join a group of Anglo-Saxon and Continental countries (Germany, Austria, Belgium and Luxembourg). This group has favourable scores on both dimensions as well, but shows more exclusion in terms of low social participation than the Nordic/Dutch group. In the right (upper) quadrant, we find Eastern European and Mediterranean countries, but the pattern is much more scattered. Within this group, Poland, Hungary, Greece and Portugal show relatively high exclusion on both the economic–structural index (material deprivation plus social rights) and on the social participation dimension. Compared with these countries, Italy, Spain and Slovenia are less excluded in economic–structural terms. France, which according to the typology belongs to the Continental cluster, only fits in with this group on the economic–structural index. Concerning social participation, France inclines towards the Mediterranean/Eastern European groups.

*Figure 12. Scaling of 22 countries on dimensions of social exclusion,† for the population aged 55 and older in EU member states†† (2002 and 2005)*




† High score = high degree of exclusion

†† EU member states (2002) plus Norway, Slovenia, Hungary and Poland

*Sources*: EU-SILC (2005) and ESS (2002) (SCP treatment).

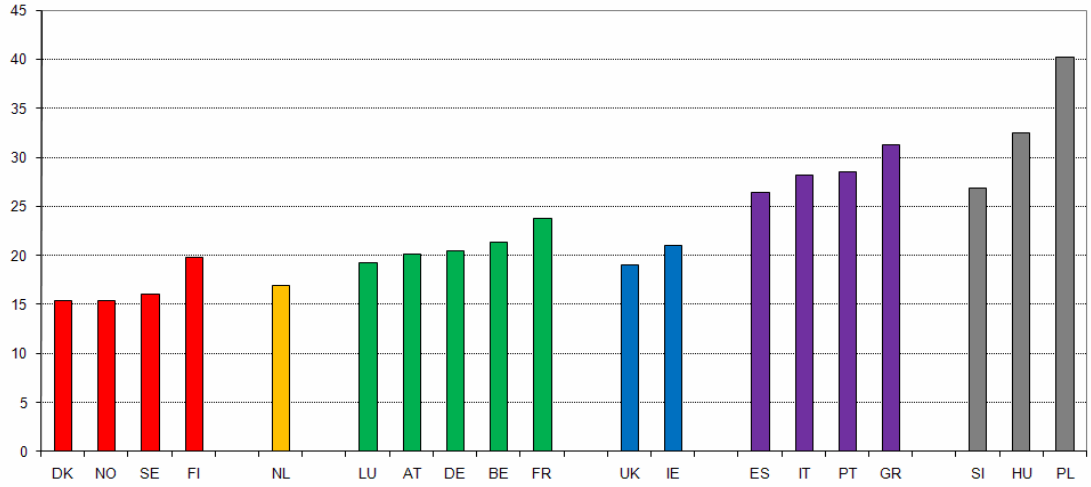
Because of the theoretical correspondence of the three dimensions and the high actual correlation at the macro level, it seems justifiable to add up the national means for the various aspects of social exclusion (material deprivation, access to social rights and social participation). This results in a mean general index score for social exclusion for each country present in both datasets (n=18, see Figure 13).

Adding the social participation dimension reduces the differences between the countries, but the ranking does not change very much. Denmark and Norway attain the lowest scores, followed at close range by Sweden and the Netherlands. The favourable social exclusion scores of these countries stem from their consistent bottom position on the dimensions of material deprivation,

access to social rights and social participation. Finland once again joins the Anglo-Saxon and Continental groups, which on the whole have rather favourable scores as well, although their scores are higher than those of the Nordic/Dutch group, especially that of France, which has a higher social exclusion score on social participation.

The Mediterranean countries attain much higher scores, but the three Eastern European member states in this dataset on average have even greater social exclusion. The variation within the last group is considerable, however: Slovenia has less social exclusion than Italy, Portugal and Greece. Poland has the highest social exclusion score, but is not necessarily the EU member state with the highest degree of social exclusion (bearing in mind Latvia and Lithuania, which are not present here but which have considerably higher scores on the material deprivation and social rights dimensions).

*Figure 13. Social exclusion in EU member states:[†] Overall index among the age group 55 and older, 2002 and 2005 (average of mean scores on the dimensions of material deprivation, access to social rights and social participation)*




[†] EU member states (2005) excluding Malta, Estonia, Latvia, Lithuania, Czech Republic, Slovakia and Cyprus plus Norway

*Sources*: ESS (2002) and EU-SILC (2005) (SCP treatment).

### 5.1.5 Differences in social exclusion among regions

The regional and local levels have become ever more important for social policy in many EU countries, where various policy issues have been relegated to this lower level in order to be able to address problems in a more direct way. According to the National Action Plans, this often includes elements of anti-poverty and social exclusion policy. It would therefore be interesting to know the extent to which EU regions differ in the degree of social exclusion among the elderly. Unfortunately, in several EU countries the NUTS 1 level is not defined, while in other cases this regional indicator has not (or not adequately) been registered in the EU-SILC dataset for sample and privacy reasons. Nevertheless, for six countries it is possible to present regional figures: Belgium, Germany (only some western regions), France, Spain, Greece and Poland.

Comparing the results of Table 4 with Figure 11 shows that the differences among regions within countries can be larger than differences among countries. In Belgium, the percentage of socially excluded among the elderly is much higher in the region of Brussels (15%) than in Flanders (4%). Wallonia has a position in between (9%). The difference between Flanders and Wallonia correspond with the socio-economic situation in these regions.

*Table 4. Social exclusion of the elderly (aged 55 and older) by NUTS 1 region (% excluded on the economic–structural dimension)*

| | % Excluded | | % Excluded |
|---|---|---|---|
| *France* | | *Belgium* | |
| FR1 Île-de-France | 5.4 | BE1 Brussels (region) | 15.2 |
| FR2 Bassin de Paris (Champagne-Ardenne, Picardie, Normandie, Bourgogne) | 4.7 | BE2 Flanders | 3.6 |
| FR3 Nord-Pas de Calais | 11.8 | BE3 Wallonia | 9.0 |
| FR4 Est (Lorraine, Alsace, Franche-Comté) | 4.9 | *Germany* | |
| FR5 Ouest (Pays de la Loire, Bretagne, Poitou-Charentes) | 5.2 | DE1 Baden-Württemberg | 6.3 |
| FR6 Sud-Ouest (Aquitaine, Midi-Pyrénées, Limousin) | 7.1 | DE2 Bayern | 7.6 |
| FR7 Centre Est (Rhône-Alpes, Auvergne) | 6.2 | DEA Nordrhein-Westfalen | 5.7 |
| FR8 Méditerranée (Languedoc-Roussillon, Provence-Alpes-Côte d'Azur) | 8.5 | DEC Saarland | 7.9 |
| *Spain* | | *Poland* | |
| ES1 Noroeste (Galicia, Asturias, Cantabria) | 10.5 | PL1 Centralny | 45.7 |
| ES2 Noreste (País Vasco, Navarra, Rioja, Aragón) | 5.7 | PL2 Poludniowy | 42.4 |
| ES3 Madrid | 5.6 | PL3 Wschodni | 52.5 |
| ES4 Centro (Castilla-León, Castilla-La Mancha, Extremadura) | 8.4 | PL4 Polnoc Zachodni | 39.4 |
| ES5 Este (Cataluña, Comunidad Valenciana, Baleares) | 8.2 | PL5 Poludniowo Zachodni | 46.2 |
| ES6 Sur (Andalucía, Murcia, Ceuta y Melilla) | 11.4 | PL6 Polnocny | 40.0 |
| ES7 Canarias | 23.4 | | |
| *Greece* | | | |
| GR 1 Voreia Ellada (Anatoliki Makedonia, Thraki, Kentriki Makedonia, Dyttiki Macedonia, Thessalia) | 21.1 | *Correlation (r) between % excluded and regional GDP per capita (in PPS)*[†] = ***0.80*** | |
| GR2 Kentriki Ellada (Ipeiros, Ionia Nisia, Dytiki Ellada, Sterea, Peloponnisos) | 27.2 | | |
| GR3 Attiki | 20.6 | | |
| GR4 Voreigo Aigaio, Notio Aigio, Kriti | 33.6 | | |

[†] Excluding Brussels; GDP per capita (in PPP) by NUTS 2 region (EU-27=100) was transformed into the NUTS 1 level by calculating the mean of the NUTS 2 regions. This is an approximation, because no account has been taken of the different number of inhabitants in NUTS 2 regions within countries.

*Sources*: Eurostat (EU-SILC, 2005); Eurostat Regional Yearbook 2007 (SCP treatment).

In Spain, however, a relatively low percentage of excluded elderly is found in the capital region of Madrid (6%), whereas the Canary Islands have a high score (23%); the south and north-west regions also score rather high (11%). In France, in the region Nord-Pas de Calais, the share of excluded elderly persons (12%) contrasts sharply with Île-de-France and Bassin de Paris (around 5%). In Greece, the region around Athens (Attiki) and the northern parts (Anatolia) have the least unfavourable position (21%), far lower than the score attained by the elderly living on the islands (34% in Crete). The western parts of Germany that were included and Poland show less regional variation. All German regions have a low percentage of socially excluded among the elderly (6-7%), while in all Polish regions the share is high (40-50%). At

the same time, there is some geographical dispersion: the least excluded region is Polnoc Zachodni (39%), close to Germany, while social exclusion is highest in Wschodni (53%), near the eastern border.

The picture emerging from Table 4 is that the elderly living in and around the capital cities generally are better off, with the exception of Brussels. Elderly persons who live in more peripheral, economically weak or tourist regions (the Greek and Spanish islands, southern Spain and the Mediterranean) are worse off. The shares of the excluded elderly correspond to a large extent with disparities in regional GDP per capita (Table 4). If Brussels is omitted as an outlier, the correlation is 0.80.

## 5.2 Age group differences within countries

Our second research question involves differences between age categories *within* countries. Of course, if the elderly of a certain country are more socially excluded than their peers elsewhere, this does not necessarily imply that they are worse off than their younger compatriots are.

In order to analyse the differences between age cohorts within countries, in each country the various index scores have been dichotomised into dummy variables, which indicate whether a respondent belongs to the 10% most excluded persons at the national level or not. These decile variables are related to the three elderly age groups (aged 55-64, 65-74 and 75 and older) and the reference group, which consists of persons below 55 years of age. For this purpose, odds ratios have been calculated (cf. Annex C) and transformed into *log odds ratios*, which accomplishes symmetric positive and negative scores.[15] Thus, if the log odds ratio is below zero, the age group in question is less excluded than the reference group, while they are more excluded if the log odds ratio is positive.

### 5.2.1 Material deprivation by age

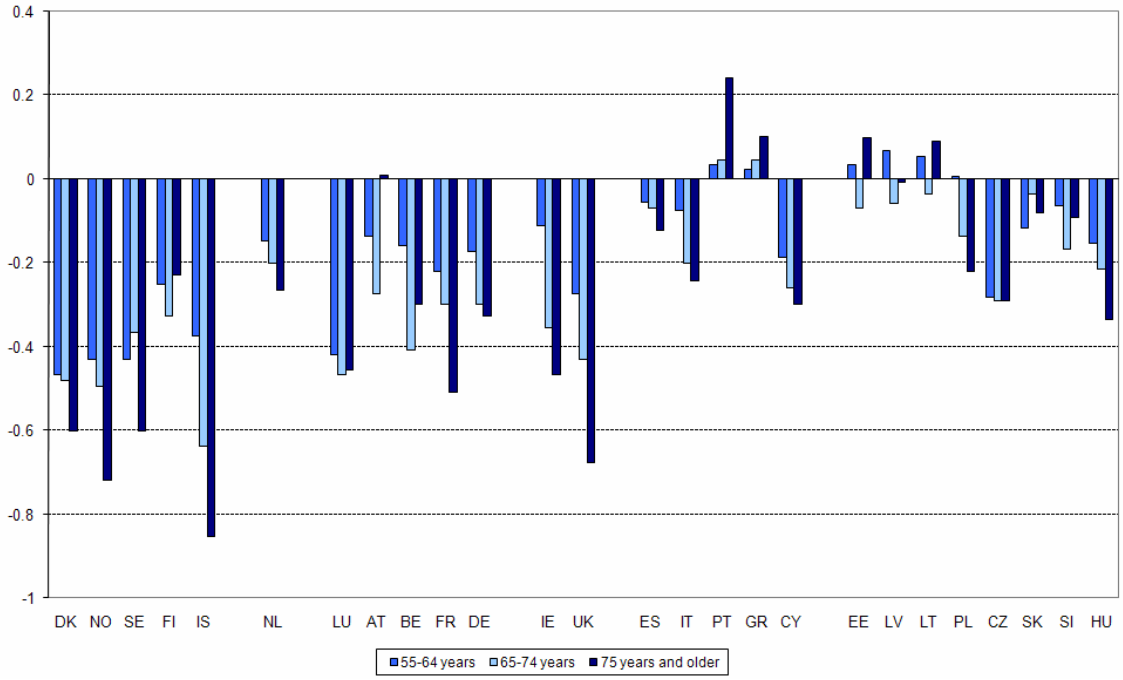
In most countries the log odds ratios for the older age groups are negative, implying that they are usually less materially deprived than the younger reference group (Figure 14). In five countries (Portugal, Greece, Estonia, Latvia and Lithuania), some or all of the elderly groups attain a low positive score, but none of the differences are statistically significant. But the negative scores of the elderly in all Nordic, Continental and Anglo-Saxon countries plus the Netherlands are significant. The same applies to the elderly in two Mediterranean (Italy and Cyprus) and two Eastern European (the Czech Republic and Hungary) countries. In the latter two country groups, the elderly generally deviate less from the reference group than elsewhere.

Material deprivation is lowest in the Nordic countries (except Finland), where especially the very old age group (75+) has a much lower score. In these countries, the elderly not only have a relatively good position compared with their peers in other European countries (cf. Figure 4), but also vis-à-vis their fellow countrymen in the below-55 age group. The Netherlands shows a somewhat different pattern. Here the differences in material deprivation between the elderly and the younger reference group are much smaller than in the Nordic group (and in the Continental

[15] If the odds ratio is between 0 and 1, an age category is less excluded than the reference group; if it is higher than 1 it is more excluded. An odds ratio of 0.5 refers to a similar difference as an odds ratio of 2, since the former is twice as low, and the latter twice as high as the reference group. After taking the logarithm of the odds ratio, the reference group obtains a zero score (log[1]=0) and equal strength effects are symmetric deviations from zero (as log[0.5]=-0.30 and log[2.0]=0.30).

and Anglo-Saxon countries as well). This implies that the Dutch elderly are less materially deprived in comparison with persons just as old living elsewhere (cf. Figure 4), but in this respect they are not much better off than younger persons in the Netherlands.

*Figure 14. Material deprivation: Differences between the elderly (aged 55-64, 65-74 and ≥ 75) and the reference group (aged < 55) in EU member states,† 2005 (log odds ratios)††*




† EU member states (2005) excluding Malta, plus Norway and Iceland

†† Not significantly different from the reference group: all elderly age groups in GR, EE, LV; age groups 55-64 and 65-74 in ES and PT; age groups 55-64 and 75+ in SI; age groups 65-74 and 75+ in SK; 55-64 in PL; 75+ in AT.

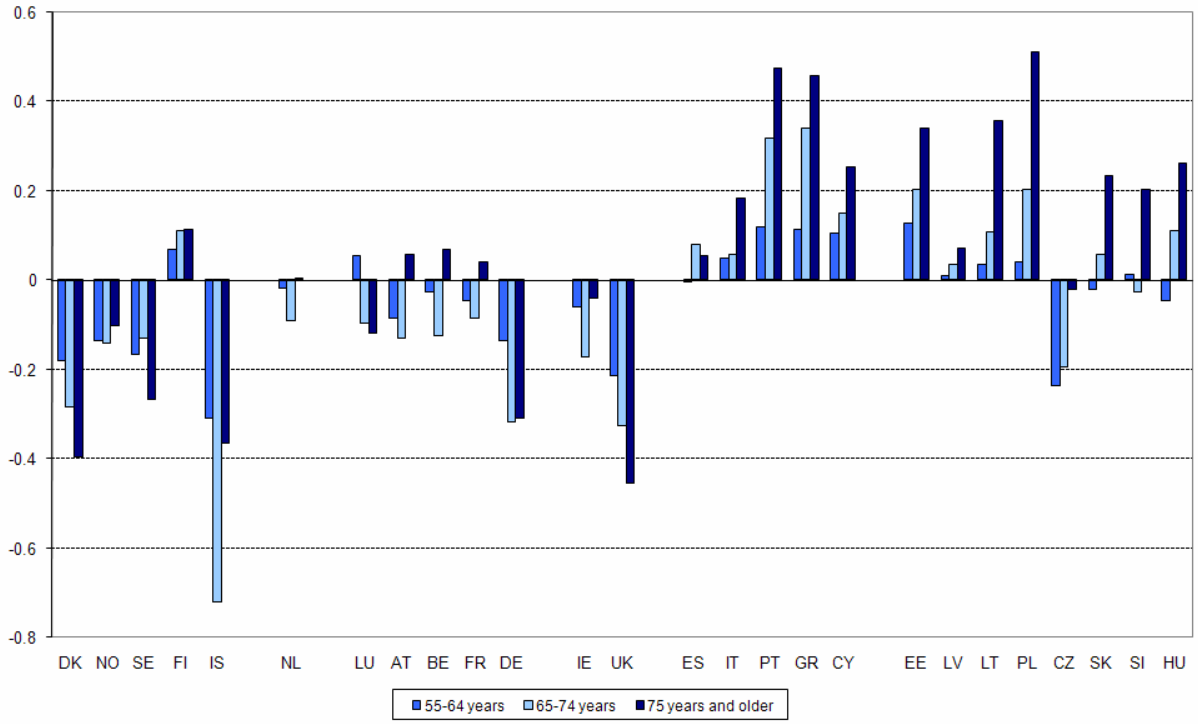
*Source*: EU-SILC (2005) (SCP treatment).

### *5.2.2 Access to social rights by age*

Figure 15 presents the results for the dimension on access to social rights, which in this study is limited to housing and medical/dental care. There are marked distinctions between country groups here. In the Nordic countries (except Finland) Germany and the UK, the elderly have significantly better access to these social rights than their younger countrymen do. In the other countries in the Continental/Anglo-Saxon clusters, the age group differences are similar, but not statistically significant. The same applies to the Netherlands: once again, the Dutch elderly do not differ much from their younger counterparts.

The Mediterranean and Eastern European clusters generally show the reverse pattern: the elderly, especially those aged 75 or older, are more excluded in terms of access to social rights than the age group under 55. The Czech Republic is the exception here, because the 55-64 and 65-74 age categories attain a significantly lower score than the reference group, rather comparable to Sweden and Denmark.

*Figure 15. Access to social rights: Differences between the elderly (aged 55-64, 65-74 and ≥ 75) and the reference group (aged < 55) in EU member states,† 2005 (log odds ratios)††*




† EU member states (2005) excluding Malta, plus Norway and Iceland

†† Not significantly different from the reference group: all elderly age groups in NL, LU, FR and LV; age groups 55-64 and 65-74 in LT, SK and SI; age groups 55-64 and 75+ in FI, AT, BE, IE and ES; 55-64 in PL and HU; 75+ in NO and CZ

*Source*: Eurostat EU-SILC (2005) (SCP treatment).

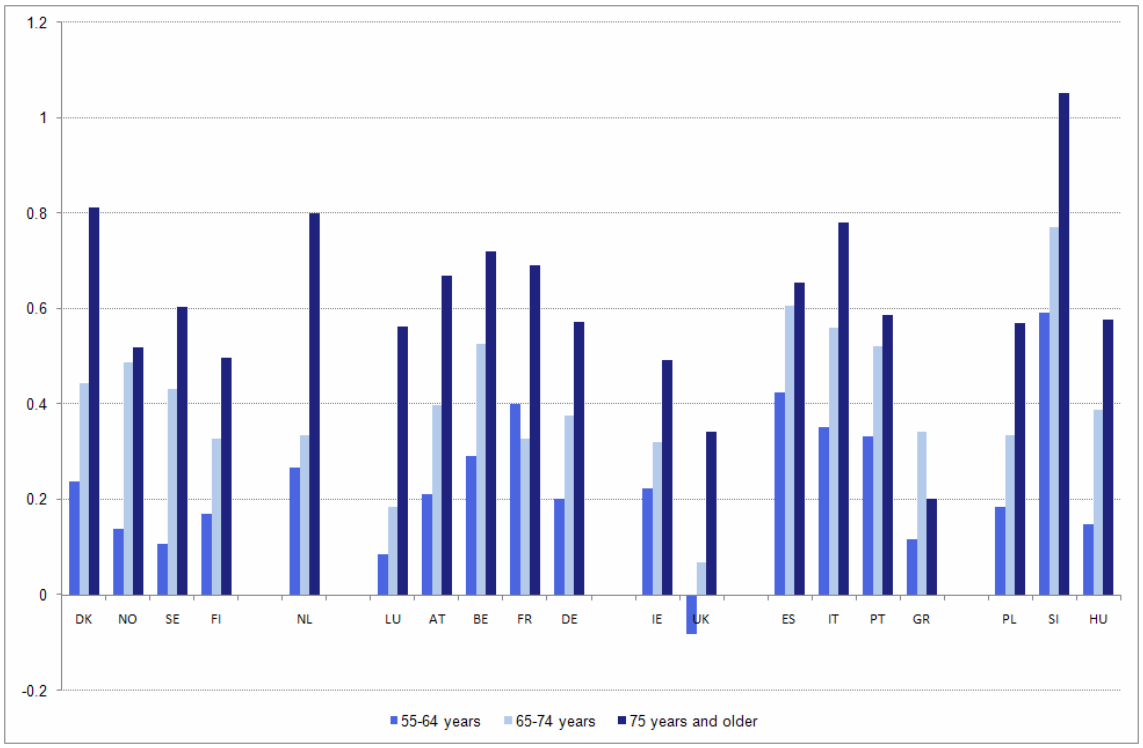
### *5.2.3 Social participation by age*

On the social participation dimension, a very different pattern emerges for the results by age group (Figure 16). In all countries, the elderly are more socially excluded in this respect than the group below 55 years of age. Virtually all log odds ratios are positive and in most countries (Greece being the exception) the differences increase with age. In all elderly age groups, Slovakia attains the highest degree of social exclusion in this respect.

The oldest age group (75+) is usually the most excluded one in terms of social participation. This pattern can theoretically be explained by various factors. Because it often has been more than a decade since this oldest age group stopped working, their professional network gradually may disappear. Their children probably have left home and sometimes live in other parts of the country. Their spouse, friends and relatives may have deceased, and they may have health problems that limit their social activities. In their "disengagement theory", Cummings & Henry (1961) stressed that the diminishing social participation of the elderly as age increases is a natural and inevitable process of the 'closing' phase of life (by which they meant very high age, not the 55-64 age group). It may be questioned whether this tenet still holds, especially in the more prosperous countries, were the general trend would be that ever more elderly persons lead a socially active life. Nonetheless, the high odds ratios in the 75+ group seem to suggest that

some form of disengagement actually occurs in all countries. Among the elderly in the 55-64 age bracket the pattern is less pronounced, with many differences not being statistically significant.

*Figure 16. Social participation: Differences between the elderly (aged 55-64, 65-74 and ≥ 75) and the reference group (aged < 55) in EU member states,† 2002 (log odds ratios)††*




† EU member states (2002) plus Norway, Slovenia, Hungary and Poland

†† Not significantly different from the reference group: age group 55-64 in NO, SE, FI, LU, UK, GR, HU; age group 65-74 in LU and UK

*Source*: ESS (2002) (SCP treatment).

## 5.3 Risk factors at the micro level

We now turn to the third research question: What risk factors determine whether elderly persons are socially excluded? At the micro level of individual households, the answer to this is pursued by two types of analyses:

a) a country-specific inspection of the bivariate correlations between risk factors and the various dimensions of social exclusion; and

b) logistic regression models on the social exclusion dimensions in each country, in order to assess the unique effects of risk factors at the micro level.

For the current analyses, we have constructed similar, dependent dichotomous variables as in the previous section, but we have confined ourselves to the 55+ age group. Thus, we try to ascertain the extent to which the individual and household characteristics of an old person explain whether (s)he belongs to the 10% most excluded among the elderly in their own country.

### 5.3.1 Correlational analysis of risk factors and social exclusion

A first relevant issue is whether specific groups of elderly persons are more excluded than others are. If it were possible to identify such 'risk groups', policies for combating social exclusion could be focused on them. For instance, a key policy assumption is that elderly women are in a more vulnerable position in this respect (see European Commission, 2006a and 2006b).

An inspection of the bivariate correlations with the social exclusion dimensions reveals that in many countries elderly women (aged ≥ 55) indeed attain a higher score on the index for material deprivation than elderly men (cf. Annex E). Yet, gender matters far less with respect to the dimensions of social rights and social participation. In none of the northern European countries and in only some of the others is the correlation significant. The composition of the household also seems a relevant factor: in (nearly) all EU countries, the elderly living alone experience more material deprivation and have less access to social rights (i.e. adequate housing and health care) than non-singles. In many countries (excluding Denmark, France, the UK, Italy and Slovenia), this group is also more excluded with respect to social participation.

Some other characteristics are relevant as well. Individuals who are aged 55 and older more often belong to the most excluded group if their educational level is lower, their health poorer or their income lower. This finding holds for all three social exclusion dimensions. It is hardly surprising that income has the strongest impact on the material deprivation dimension.

This bivariate analysis is somewhat problematic because many of the risk factors that correlate with social exclusion are interrelated, which makes it difficult to assess their actual impact. For example, elderly women are more often single and on average unhealthier than elderly men, because of their higher life expectancy. Elderly women usually are less educated than men are, and those with low levels of education have lower incomes. Given such interdependencies, the 'pure' impact of risk factors on social exclusion is hard to ascertain. Is being a woman a decisive factor in bringing about different forms of social exclusion or is the latter mainly a consequence of being alone or in bad health? To gain a clearer understanding of this, a multivariate approach is required.

### 5.3.2 Country-specific logistic regression models

Table 5 contains the results of the logistic regressions on the social participation dimension among the elderly in the various countries. In almost all countries, *health* has a significant effect: if health deteriorates, *ceteris paribus* social participation declines. The other factors in the model are less powerful in explaining this kind of social exclusion. The coefficients for the level of education have the expected sign: a higher level comes with more social participation (thus less exclusion), other things being equal. Only in Norway, Luxembourg and Austria is the effect statistically significant, however.

As Figure 16 makes clear, in all countries social participation correlates strongly with *age*, with exclusion on this dimension being lowest in the 55-64 age bracket and highest in the oldest age group (75+). Even so, after controlling for the impact of the other model factors, the age effect disappears in nearly all countries. This result implies that it is not age as such that leads to a low degree of social participation, but especially a worsening health condition, which is usually associated with increasing age. Only in France and Greece is age itself a significant factor, albeit in different ways. In France, the pattern is curvilinear: from age 55 onwards, social exclusion in terms of social participation first decreases (possibly in relation to massive early retirement), but it rises again at higher ages. The same pattern appears in the other Continental countries (except Germany) plus Denmark, the Netherlands and Slovenia, but the age effect is not significant there.

Greece shows the reverse curvilinear relationship: social participation is on the rise among the 'youngest elderly' and diminishes as age advances. This pattern also occurs in the other Mediterranean countries, plus Norway, Finland and the UK, but these effects are not statistically significant.

In all countries, *gender* and *household type* hardly have any influence on the degree of social participation. Only in Italy are elderly singles – *ceteris paribus* – significantly more excluded than others are. The *income level* is not very important for social participation either. In most countries, the effect is not significant, but in Denmark, France, Ireland and Italy a higher income implies less social exclusion.

*Table 5. Logistic regression analyses on social participation (dummy variable: 10% most excluded versus the rest among the population aged 55+; unstandardised coefficients)*[†]

| | | Age | Age² x 100 | Single | Gender | Education level | Health | Income in 12 cat. | Constant | $R^2$ |
|---|---|---|---|---|---|---|---|---|---|---|
| Nordic | DK | -.16 | .14 | -.27 | .67 | -.04 | **.70** | ***-.24*** | 1.66 | .13 |
| | NO | .13 | -.08 | .16 | -.05 | **-.57** | **.63** | -.10 | -6.36 | .11 |
| | SE | -.05 | .05 | .22 | .03 | -.14 | **.41** | -.25 | -.76 | .10 |
| | FI | .22 | -.10 | .03 | .37 | -.12 | **.62** | -.22 | -10.96 | .09 |
| | NL | -.27 | .21 | -.20 | -.18 | ***-.31*** | **.78** | .04 | 4.65 | .10 |
| Continental | LU | -.07 | .10 | .22 | .71 | ***-.98*** | **.74** | -.14 | -1.79 | .24 |
| | AT | -.30 | .23 | .25 | .06 | **-.60** | **.71** | -.18 | 7.55 | .17 |
| | BE | -.11 | .09 | -.21 | .02 | -.12 | **.71** | -.24 | .77 | .09 |
| | FR | ***-.52*** | ***.36*** | -.65 | -.66 | -.13 | .12 | **-.47** | ***17.74*** | .11 |
| | DE | .37 | -.22 | .17 | -.04 | -.14 | **.82** | -.11 | ***-18.32*** | .14 |
| Anglo-Saxon | IE | -.01 | .03 | -.81 | **-.99** | -.15 | **.76** | ***-.29*** | -2.54 | .15 |
| | UK | .32 | -.19 | -.28 | .24 | -.34 | .21 | -.08 | -14.28 | .06 |
| Southern Europe | ES | .13 | -.07 | ***-.81*** | -.30 | -.21 | **.71** | .04 | -10.10 | .13 |
| | IT | .25 | -.16 | ***-1.72*** | -.75 | -.35 | .67 | **-.53** | -10.29 | .23 |
| | PT | .30 | -.17 | -.00 | .28 | -.38 | ***.89*** | -.03 | -17.58 | .15 |
| | GR | ***.57*** | ***-.43*** | .55 | .14 | -.21 | **.49** | .05 | ***-23.03*** | .06 |
| Eastern Europe | PL | .13 | -.08 | ***.86*** | -.48 | -.16 | **.87** | -.24 | -9.60 | .16 |
| | SL | -.29 | .21 | -.02 | .02 | -.36 | .34 | -.29 | 8.96 | .07 |
| | HU | -.01 | .01 | .66 | ***.91*** | -.28 | **.77** | -.09 | -5.37 | .12 |

[†] Coding of predictors:

age in years;

single – dummy variable (1=living alone (no partner, no other household members));

gender – dummy variable (1=male);

education level – 1=not completed primary education – 5=(first stage of) tertiary;

health – 1=very good – 5=very bad; and

income in 12 classes running from low to high.

*Note*: Figures in **bold** are significant at p<0.01; figures in ***bold italic*** are significant at p<0.05.

*Source*: ESS (2002).

Table 6 presents the outcomes of the logistic regressions on economic–structural exclusion (the combined index of material deprivation and access to social rights).[16] The number of influential

[16] The results of logistic regression analyses on the separate dimensions of material deprivation and access to social rights are listed in Annex F.

risk factors is greater here than in the case of social participation. In almost all countries, *health* and *income* have significant effects in the expected direction: a better health situation and a higher income generally decrease the likelihood of belonging to the 10% most excluded elderly in terms of material deprivation and social rights. Health has an almost equally strong effect in all countries, but the impact of income is substantially stronger in the Eastern European group.

*Table 6. Logistic regression analyses on economic–structural exclusion (dummy variable: 10% most/90% least excluded, population aged 55+; unstandardised coefficients)*[†]

| | | Age | Age² x 100 | Single | Gender | Education level | Health | Log income | Constant | $R^2$ |
|---|---|---|---|---|---|---|---|---|---|---|
| Nordic | DK | 0.01 | -0.05 | **0.75** | 0.07 | 0.10 | **0.42** | **-1.21** | 10.19 | 0.08 |
| | NO | -0.14 | 0.07 | **0.94** | -0.14 | **-0.41** | **0.66** | -0.45 | 8.21 | 0.12 |
| | SE | 0.29 | -0.26 | **0.46** | -0.20 | -0.03 | **0.76** | **-0.77** | 3.76 | 0.11 |
| | FI | -0.12 | 0.07 | **0.79** | 0.28 | -0.05 | **0.58** | -0.96 | 10.52 | 0.11 |
| | IS | 0.27 | - 0.24 | 0.54 | -0.19 | 0.25 | 0.20 | **-1.07** | 0.10 | 0.07 |
| | NL | 0.04 | -0.08 | **0.71** | 0.07 | **-0.28** | **0.58** | **-0.98** | 7.49 | 0.11 |
| Continental | LU | 0.15 | -0.13 | **1.01** | 0.27 | -0.20 | **0.53** | **-1.26** | 5.30 | 0.13 |
| | AT | -0.32 | 0.22 | **1.08** | -0.04 | **-0.46** | **0.60** | **-0.82** | **16.34** | 0.14 |
| | BE | -0.02 | -0.03 | **1.23** | -0.10 | -0.07 | **0.76** | **-1.72** | 14.02 | 0.19 |
| | FR | -0.22 | 0.12 | **0.84** | -0.05 | -0.15 | **0.58** | **-0.98** | **14.40** | 0.11 |
| | DE | **-0.33** | 0.21 | **0.75** | 0.13 | -0.13 | **0.54** | **-1.33** | **21.43** | 0.12 |
| Anglo-Saxon | IE | -0.45 | 0.30 | **0.83** | 0.10 | -0.19 | **0.56** | **-0.99** | **22.75** | 0.13 |
| | UK | 0.05 | -0.08 | **0.47** | 0.09 | -0.15 | **0.47** | **-0.44** | 1.51 | 0.07 |
| Southern Europe | ES | 0.17 | -0.15 | **0.40** | 0.07 | **-0.17** | **0.50** | **-0.60** | 2.71 | 0.06 |
| | IT | **-0.33** | **0.21** | **0.34** | 0.03 | **-0.32** | **0.75** | **-0.85** | **16.36** | 0.11 |
| | PT | -0.25 | 0.19 | 0.63 | -0.16 | -0.37 | **0.93** | **-0.90** | 10.57 | 0.15 |
| | GR | 0.01 | -0.00 | 0.33 | **-0.28** | **-0.48** | **0.46** | **-1.01** | 5.55 | 0.12 |
| | CY | -0.33 | 0.22 | 0.44 | 0.29 | **-0.35** | **0.58** | **-0.65** | 14.28 | 0.10 |
| Eastern Europe | EE | -0.08 | 0.04 | 0.11 | 0.21 | **-0.52** | **0.50** | **-2.23** | **18.23** | 0.19 |
| | LV | -0.33 | 0.23 | 0.14 | -0.32 | **-0.34** | **0.64** | **-1.48** | **18.71** | 0.14 |
| | LT | 0.20 | -0.17 | 0.43 | **0.37** | **-0.44** | **0.54** | **-1.96** | 5.13 | 0.20 |
| | PL | -0.08 | 0.06 | **0.77** | 0.13 | **-0.45** | **0.52** | **-1.35** | **9.87** | 0.16 |
| | CZ | -0.17 | 0.12 | 0.01 | 0.07 | **-0.45** | **0.59** | **-2.39** | **23.19** | 0.12 |
| | SK | 0.01 | -0.02 | -0.03 | 0.14 | **-0.50** | **0.52** | **-1.43** | 8.58 | 0.08 |
| | SL | -0.08 | 0.05 | **0.53** | 0.32 | **-0.32** | **0.49** | **-1.30** | 11.24 | 0.15 |
| | HU | -0.08 | 0.04 | 0.31 | 0.07 | **-0.57** | **0.61** | **-2.11** | **17.52** | 0.17 |

[†] Coding of predictors:

age in years;

single – dummy variable (1=living alone (no partner, no other household members));

gender – dummy variable (1=male);

education level – 1=(pre) primary – 5=(first stage of) tertiary;

health – 1=very good – 4=very bad; and

log income – the logarithm of the equivalised disposable household income in euros (in PPP).

*Note*: Figures in **bold** are significant at p<0.01; figures in ***bold italic*** are significant at p<0.05.

*Source*: EU-SILC (2005).

The *level of education* has a significant impact in the expected direction in the Eastern European group and in most of the Mediterranean countries. Elsewhere the effect of this factor is negligible, with the exception of Norway, the Netherlands and Austria. This result suggests that especially in the Eastern European countries material deprivation and a lack of social rights are partly determined by traditional traits of social class, such as education and income.

In most countries, within the elderly group *age* (and age squared) and *gender* do not have a significant effect. The effect of being single or not is remarkable: in northern Europe, the Continental and Anglo-Saxon countries, this factor *ceteris paribus* leads to more economic–structural exclusion, but this does not occur in most of the Mediterranean countries or in the Eastern European group.

## 5.4 Multilevel models

The final research question relates to the unique contribution of factors at the macro level in determining whether elderly persons are socially excluded. In order to shed light on this issue, we have performed a number of multilevel analyses for all EU member states in our data. We focus on economic–structural exclusion (the combined index of material deprivation and social rights) as the dependent variable.

### 5.4.1 Why multilevel analysis?

The logistic regressions of the preceding section indicate which individual traits are important in explaining social exclusion among the elderly in various countries. Still, these outcomes may not be sufficient to infer any conclusions on the causes of the different degrees of social exclusion among the elderly in the various countries. Country differences may ensue from the impact of the individual factors per se, but also from variations in the demographic composition of risk groups (more unhealthy, less well-educated, oldest elderly, etc., with the effect of such factors being equal). Moreover, and perhaps more interestingly, it may be that the country differences are primarily the result of macro factors, such as the diverging institutional frameworks (e.g. social security and pension regimes) and variations in the national wealth or in the inequality of the income distribution.

In order to shed more light on these issues a multilevel approach is required. This type of analysis takes into account that observations on the micro level (individuals) are not independent but are nested in meso and macro units (in our case households and countries). Thus, persons belonging to the same household or country probably will resemble each other more in some respects than individuals who live in different households/countries. If one were to ignore this intracluster correlation, estimates of standard errors may be biased. Multilevel analysis corrects for this and gives estimates of the impact of predictor variables at the different levels.

In practice, the estimation procedures for three-level models are rather complex and quite time-consuming. In the analyses, we have used the dedicated MLWin software package.[17] Because this requires a lot of processing time, the analyses have only been performed for economic–structural exclusion (the combined index of material deprivation and social rights) based on the EU-SILC (2005) data. Therefore, the social participation dimension is not involved here.

[17] A recently developed programme in the Stata software package (xtmelogit) could not be used due to the computing time our models required. We therefore resorted to the dedicated MLWin programme. According to Snijders & Bosker (1999, p. 219) this is less precise, with the estimates of the variance parameters having a downward bias.

### 5.4.2 Variables involved in the multilevel analyses

Tables 7 and 8 list the results of various multilevel analyses. Most models are based on 58,400 persons (level 1) and 49,700 households (level 2) living in 26 countries (level 3). In models 4-6, however, only 20 countries are involved (with 50,650 persons in 42,950 households), because some of the regime typologies used here are not available for all nations.

At level 1 (respondents), we include four variables that were relevant in the logistic regressions of the previous section: age, gender, level of education and health. Household composition and income are the causal factors at level 2 (households). These variables refer to whether individuals live alone or with others, and to the equivalised disposable household income after applying purchasing power parities.

Since the number of observations at level 3 is rather small (20-26 countries), only a limited number of predictors at this level can be included in the models. For this reason, the level 3 determinants are first introduced separately in the models. Models 3-10 successively contain the regime type (in three variants), GDP per capita, total per-capita social expenditure, income inequality and life expectancy.

The models have been analysed in a stepwise fashion, by subsequently adding variables of different levels. In model 1, only the level 1 variables are included. The level 2 variables are added to this in the second model. Models 3-10 examine the additional relevance of each of the level 3 variables separately. In models 11 and 12, the most relevant level 3 variables are analysed simultaneously, which allows for an assessment of their relative impact in explaining economic–structural exclusion.

### 5.4.3 Impact of individual and household characteristics

First, an 'empty' model has been analysed, without any explanatory variables. This *unconditional hierarchical model* (not presented in the table) allows us to estimate the variance in the dependent variable that can be attributed to level 2 (households) and level 3 (countries). In a binomial model such as this, the level 1 variance (persons) by definition is fixed at $л^2 / 3 = 3.2899$ (Snijders & Bosker, 1999). Based on the variances at the three levels, the intraclass correlations (ICCs) can be calculated. The ICC is the proportion of variance in the dependent variable that is accounted for by the various group levels. Or, to phrase it differently, in the unconditional hierarchical model, the ICC expresses the degree of resemblance between micro units belonging to the same macro unit without controlling for explanatory variables at the various levels.

The empty model over 26 countries has an ICC of 0.30 at level 3, and 0.36 at level 2. If the number of countries is reduced to 20, these ICCs are 0.19 and 0.50, respectively. This implies that in the 26-country model, about one-third of the total variance can be attributed to the country level, while it is about half in the 20-country model. Introducing predictor variables in the analysis decreases these ICCs.

In *model 1*, the predictor variables at level 1 are included. According to the z-values, health status and education are the most important determinants at the level of the individual respondent. The relationships run in the theoretically expected direction: among the elderly, economic–structural exclusion increases if individuals are less healthy and have lower education levels. Gender has a slight but significant effect, with women being more excluded than men. Among the elderly, economic–structural exclusion *ceteris paribus* diminishes with rising age.

This may seem unexpected, but it is consistent with the bivariate results regarding material deprivation[18] (cf. Figure 14).

The four level 1 predictors explain 8% of the total variance. The ICC on level 3 is reduced from 0.30 to 0.25 (-18%) and the ICC on level 2 from 0.36 to 0.31 (-14%). Thus, only a small part of the variance at the country and household levels can be attributed to differences in population composition in terms of age, gender, level of education and health.

*Model 2* introduces household type and the household income level as explanatory variables. Both variables have a significant effect: living alone increases the risk of social exclusion and a higher income generally implies less material deprivation and better access to social rights.

These level 2 predictors are far more important than the level 1 variables are. Based on the z-values, income has the strongest effect of all level 1 and 2 variables. The effects of most level 1 variables change considerably after controlling for the two household traits. The gender effect is not significant anymore, which suggests that women are more excluded because they live alone more often or have less income than men do (or both). The negative effect of age on exclusion becomes stronger. This implies that the reducing impact of old age (65+) on social exclusion of the elderly in model 1 is mitigated by their relatively low incomes. Introducing the income level in the model reduces the effects of the level of education and health status somewhat, although these remain significant. This result is plausible, because unhealthy and less well-educated persons often have lower incomes.

The explained proportion of total variance increases from 8% in model 1 to 22% in model 2. The residual ICC at level 3 is reduced considerably, to 0.08 (-72%). The residual ICC at level 2 drops to 0.23 (-36%). Apparently, country differences in economic–structural exclusion can to a great extent be explained by differences in the distribution of household income.

### *5.4.4 Impact of regime typologies*

At the level of country variables, an interesting question is the extent to which the diverging institutional arrangements of the social security and pension systems bring about or mitigate social exclusion. *Regime type I* is included in models 3 and 4, and simply consists of the geographical classification that was used in the previous graphs and tables. Here, we have used dummy variables for the Nordic, Continental, Anglo-Saxon, Mediterranean and Eastern European groups, plus the Netherlands. In model 3, all countries are included. For the sake of comparability with the other regime typologies, the analysis is repeated over 20 countries in model 4. In *model 3*, the Nordic regime type serves as the reference group. It turns out that adding the regime typology does not bring about many changes in the effects of the level 1 and 2 variables in model 2. Yet, the regime type is a relevant explaining factor at the country level. After controlling for the level 1 and 2 variables, the Nordic regime produces significantly less exclusion than do the Continental, Mediterranean and Eastern European regimes. By alternating the reference groups (not in Table 7), it can also be demonstrated that the Nordic, Anglo-Saxon and hybrid Dutch regimes do not differ appreciably in their effect on social exclusion. In a similar fashion, it turns out that the Continental group produces significantly more exclusion than the Nordic regime, and significantly less than the Mediterranean and Eastern European regimes. The effects of the latter two regime types do not differ greatly, but the elderly in these countries are notably more excluded than in all other regime types.

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[18] It should be noted that in these multilevel analyses across countries age has been included as a categorical variable, while it was a continuous one in the country-specific logistical regressions (cf. Table 6).

The regime typology boosts the explained variance substantially, from 22% in the previous model to 36%. The residual ICC at level 3 drops to 0.03 (-89%) and that of level 2 drops to 0.11 (-70%). This implies that low exclusion scores in Nordic countries and high scores in Eastern European countries cannot only be explained by differences between the countries in population and household characteristics. The regime type also seems to have an independent effect on social exclusion on its own.

In the replication for 20 countries given in *model 4*, the total variance at the country level of course decreases (from 0.30 to 0.19). The coefficients and z-values, however, remain more or less the same, but the explained total variance decreases somewhat (30% instead of 36% in model 3). This model 4 serves as a baseline for comparing the typologies in models 5 and 6.

*Model 5* contains *regime type II*, which is based on the two dimensions of Soede et al.'s (2004) mixed general/pension typology that has already been introduced in section 3. The first dimension – the general scope of social security – has a statistically significant impact in the expected direction: the more elaborated the regime, the less the social exclusion. The second 'pension' dimension has no significant effect and has a positive sign, which is unexpected from a theoretical point of view. The proportion of explained variance and the reduction of the level 3 variance is slightly lower than in model 4 (0.29 vs. 0.30) as is the reduction of the ICC at the country (0.93 vs. 0.94) and household levels (0.60 vs. 0.64).

Model 6 uses *regime type III*, the two dimensions (pension wealth and the existence of mandatory private-pension schemes) of the pension typology developed by Soede & Vrooman (2008b) in the context of the AIM project. Their empirical analysis of pension scheme traits resulted in four clusters of countries: corporatist and liberal pension regime types, a 'moderate pensions' group and a 'mandatory private' cluster. There is some overlap with Soede et al.'s (2004) typology, but only the liberal type consists of exactly the same countries. Model 6 performs worse than the previous ones.

The pension wealth dimension has a non-significant effect in the wrong direction. This is in line with the negligible effect of the second dimension of the previous model (the extent of pensions and so forth), which refers to the same institutional traits. The coefficient of the mandatory private-pension schemes – the second dimension of the pension typology – is also close to zero. The proportion of total variance explained is lower than in the two previous models (0.26 vs. 0.29-0.30). The same applies to the reduction of the ICC at the country level (0.91 vs. 0.93-0.94) and the reduction of the ICC at the household level (0.52 vs. 0.60-0.64).

These analyses suggest that the abstract institutional configuration of 'regimes' partly does matter for the degree of social exclusion among the elderly in the EU. This implication is especially apparent in the significant regime effects in models 4 and 5. The pension regime typology developed by Soede & Vrooman (2008b) may be interesting as a description of the institutional variety in European pension systems, but it lacks explanatory power where the issue of social exclusion among the elderly is concerned. Theoretically, perhaps it is not surprising that it is outperformed by the mixed general/pension typology of model 4. The second dimension of the pension typology (the existence of mandatory private schemes) may not be very relevant for social exclusion: in principle, the same degree of social protection can be attained through non-mandatory or public pension schemes. The first dimension of the pension typology refers to more or less the same phenomena as the second one of the mixed typology. But the latter one adds the general scope of social security, which in principle is also relevant for social exclusion among the elderly. Social assistance for the elderly, widower's pensions and so forth, especially seem important for the economic–structural aspects of social exclusion to which the limited index analysed in Table 7 refers.

*Table 7. Multilevel models 1-6 for economic–structural exclusion (index material deprivation + social rights), 2005[a] (dummy variable: 10% most/90% least excluded, population aged 55+; unstandardised coefficients and z-values)*

| Model | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Level 1 | | Level 1 + 2 | | Level 1 + 2 +… | | | | | | | |
| | | | | | Regime type I (all countries) | | Regime type I (20 countries) | | Regime type II | | Regime type III | |
| | β | z-value | β | z-value | β | z-value | B | z-value | β | z-value | β | z-value |
| Intercept | -2.33 | 9.9** | 6.80 | 22.3** | 6.07 | 17.4** | 5.41 | 14.11** | 5.81 | 18.3** | 5.91 | 17.8** |
| **Level 3 variables** | | | | | | | | | | | | |
| Regime type I (dummy variables): | | | | | | | | | | | | |
| Nordic | – | – | – | – | ref=0 | – | ref=0 | – | – | – | – | – |
| Continental | – | – | – | – | 0.70 | 2.3** | 0.50 | 1.9* | – | – | – | – |
| Anglo-Saxon | – | – | – | – | 0.33 | 0.9 | 0.29 | 0.9 | – | – | – | – |
| Mediterranean | – | – | – | – | 1.40 | 4.7** | 0.89 | 3.2** | – | – | – | – |
| Eastern Europe | – | – | – | – | 1.45 | 5.3** | 0.52 | 1.8* | – | – | – | – |
| The Netherlands | – | – | – | – | -0.11 | -0.2 | -0.12 | -0.3 | – | – | – | – |
| Regime type II (dimensions, mixed typology) | | | | | | | | | | | | |
| 1. General scope of social security | – | – | – | – | – | – | – | – | -0.22 | -2.5* | – | – |
| 2. Extent of pensions and so forth | – | – | – | – | – | – | – | – | 0.14 | 1.2 | – | – |
| Regime type III (dimensions, pension typology) | | | | | | | | | | | | |
| 1. Pension level/wealth | – | – | – | – | – | – | – | – | – | – | 0.18 | 1.6 |
| 2. Mandatory/private schemes | – | – | – | – | – | – | – | – | – | – | -0.07 | -0.6 |
| **Level 2 variables** | | | | | | | | | | | | |
| Living alone (1=yes; 0=no) | – | – | 0.39 | 12.2** | 0.41 | 13.5** | 0,49 | 13.4** | 0.49 | 13.2** | 0.49 | 12.8** |
| Household income in PPP (log) | – | – | -1.06 | -36.4** | -1.08 | -38.7** | -1.01 | -30.8** | -1.01 | -30.6** | -1.02 | -29.9** |
| **Level 1 variables** | | | | | | | | | | | | |
| Age 55-64 | ref=0 | – | ref=0 | – | ref=0 | – | ref=0 | – | ref=0 | – | ref=0 | – |
| Age 65-74 | -0.15 | 5.2** | -0.24 | 7.2** | -0.25 | 8.0** | -0.31 | -8.3** | -0.31 | -8.2** | -0.31 | -8.0** |
| Age 75+ | -0.22 | 7.0** | -0.38 | 10.3** | -0.41 | 11.5** | -0.51 | -12.1** | -0.51 | -11.8** | -0.51 | -11.6** |
| Gender (1=male; 0=female) | -0.07 | 2.8** | 0.03 | 0.9 | 0.03 | 1.2 | 0.04 | 1.3 | 0.04 | 1.2 | 0.04 | 1.2 |
| Level of education (1–4) | -0.35 | 23.6** | -0.27 | 26.7** | -0.29 | 17.7** | -0.28 | -14.7** | -0.28 | -14.5** | -0.28 | -13.9** |
| Health status (1=very good – 4=(very bad) | 0.49 | 30.9** | 0.48 | 25.0** | 0.49 | 27.5** | 0.55 | 25.4** | 0.55 | 24.8** | 0.54 | 24.7** |
| **Fit indicators** | | | | | | | | | | | | |
| Intraclass correlation[b] level 3 | | 0.30 | | 0.30 | | 0.30 | | 0.19 | | 0.19 | | 0.19 |
| Intraclass correlation [b] level 2 | | 0.36 | | 0.36 | | 0.36 | | 0.50 | | 0.50 | | 0.50 |
| Residual ICC [c] level 3 | | 0.25 | | 0.08 | | 0.03 | | 0.02 | | 0.02 | | 0.03 |
| Residual ICC [c] level 2 | | 0.31 | | 0.23 | | 0.11 | | 0.18 | | 0.20 | | 0.24 |
| Proportion reduction ICC [d] level 3 | | 0.18 | | 0.72 | | 0.89 | | 0.94 | | 0.93 | | 0.91 |
| Proportion reduction ICC [d] level 2 | | 0.14 | | 0.36 | | 0.70 | | 0.64 | | 0.60 | | 0.52 |
| Proportion of total variance explained | | 0.08 | | 0.22 | | 0.36 | | 0.30 | | 0.29 | | 0.26 |
| **No. of cases** | | | | | | | | | | | | |
| Level 1 (respondents) | | 58,397 | | 58,397 | | 58,397 | | 50,652 | | 50,652 | | 50,652 |
| Level 2 (households) | | 49,754 | | 49,754 | | 49,754 | | 42,950 | | 42,950 | | 42,950 |
| Level 3 (countries) | | 26 | | 26 | | 26 | | 20 | | 20 | | 20 |

[a] EU member states (2005) excluding Malta, plus Norway and Iceland

[b] Proportion of variance accounted for by the group levels, without controlling for independent variables (unconditional hierarchical model)

[c] ICC after controlling for independent variables

[d] 1-(Residual ICC/ICC)

*) Significant at $p < 0.05$ ($z > 1.96$)

**) Significant at $p < 0.01$ ($z > 2.58$)

*Source*: EU-SILC (2005).

*Table 8. Multilevel models 7-12 for economic–structural exclusion (index material deprivation + social rights), 2005[a] (dummy variable: 10% most/90% least excluded, population aged 55+; unstandardised coefficients and z-values)*

| Model | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Level 1 + 2 + … | | | | | | | | | | | |
| | GDP | | Social protection expenditure | | Income inequality | | Life expectancy | | GDP + Income ineq.+ Life expectancy | | Income inequality + Regime type I | |
| | β | z-value | β | z-value | β | z-value | β | z-value | β | z-value | β | z-value |
| Intercept | 8.00 | 20.3** | 8.10 | 24.0** | 5.12 | 9.4** | 11.21 | 9.0** | 5.98 | 4.4** | 5.62 | 11.7** |
| **Level 3 variables** | | | | | | | | | | | | |
| GDP (per capita; EU-27 mean=100; x 10) | -0.09 | -3.0** | – | – | – | – | – | – | -0.02 | 0.7 | – | – |
| Social protection expenditure (per capita, x €1,000) | – | – | -0.18 | -4.9** | – | – | – | – | – | – | – | – |
| Income inequality (20/80) | – | – | – | – | 0.40 | 4.2** | – | – | 0.24 | 2.5* | 0.23 | 2.5* |
| Life expectancy (in years, males 60+) | – | – | – | – | – | – | -0.21 | -3.4** | 0.00 | 0.0 | – | – |
| Regime type I (dummy variables): | | | | | | | | | | | | |
| Nordic | – | – | – | – | – | – | – | – | – | – | ref=0 | |
| Continental | – | – | – | – | – | – | – | – | – | – | 0.38 | 1.4 |
| Anglo-Saxon | – | – | – | – | – | – | – | – | – | – | -0.17 | 0.4 |
| Mediterranean | – | – | – | – | – | – | – | – | – | – | 0.57 | 1.7* |
| Eastern Europe | – | – | – | – | – | – | – | – | – | – | 0.22 | 0.8 |
| The Netherlands | – | – | – | – | – | – | – | – | – | – | -0.45 | 0.9 |
| **Level 2 variables** | | | | | | | | | | | | |
| Living alone (1=yes; 0=no) | 0.41 | 12.9** | 0.42 | 13.0** | 0.42 | 13.1** | 0.42 | 12.5** | 0.43 | 13.2** | 0.43 | 13.3** |
| Household income in PPP (log) | -1.09 | 37.4** | -1.09 | -37.1** | -1.08 | 38.6** | -1.09 | -35.4** | -1.09 | -37.3** | -1.09 | 38.9** |
| **Level 1 variables** | | | | | | | | | | | | |
| Age 55-64 | ref=0 | – | ref=0 | – | ref=0 | – | ref=0 | – | ref=0 | – | ref=0 | – |
| Age 65-74 | -0.25 | -7.8** | -0.26 | -7.8** | -0.25 | 7.84** | -0.26 | -7.5** | -0.26 | -7.9** | -0.26 | 8.0** |
| Age 75+ | -0.41 | -11.0** | -0.41 | -11.2** | -0.41 | 11.3** | -0.41 | -10.6** | -0.42 | -11.3** | -0.42 | 11.5** |
| Gender (1=male; 0=female) | 0.03 | 1.1 | 0.03 | 1.2 | 0.03 | 1.1 | 0.03 | 1.1 | 0.03 | 1.2 | 0.03 | 1.2 |
| Level of education (1–4) | -0.29 | -16.9** | -0.29 | -17.3** | -0.29 | 17.3** | -0.29 | -16.6** | -0.30 | -17.6** | -0.30 | 17.5** |
| Health status (1=very good – 4=(very) bad) | 0.49 | 27.3** | 0.49 | -26.6** | 0.49 | 27.4** | 0.49 | 25.1** | 0.50 | -26.7** | 0.50 | 27.7** |
| **Fit indicators** | | | | | | | | | | | | |
| Intraclass correlation [b] level 3 | | 0.30 | | 0.30 | | 0.30 | | 0.30 | | 0.30 | | 0.30 |
| Intraclass correlation [b] level 2 | | 0.36 | | 0.36 | | 0.36 | | 0.36 | | 0.36 | | 0.36 |
| Residual ICC [c] level 3 | | 0.05 | | 0.04 | | 0.05 | | 0.06 | | 0.04 | | 0.02 |
| Residual ICC [c] level 2 | | 0.17 | | 0.16 | | 0.16 | | 0.23 | | 0.16 | | 0.12 |
| Proportion reduction ICC [d] level 3 | | 0.82 | | 0.87 | | 0.83 | | 0.80 | | 0.88 | | 0.92 |
| Proportion reduction ICC [d] level 2 | | 0.53 | | 0.56 | | 0.56 | | 0.37 | | 0.57 | | 0.67 |
| Proportion of total variance explained | | 0.30 | | 0.34 | | 0.33 | | 0.29 | | 0.36 | | 0.37 |
| **No. of cases** | | | | | | | | | | | | |
| Level 1 (respondents) | | 58,397 | | 58,397 | | 58,397 | | 58,397 | | 58,397 | | 58,397 |
| Level 2 (households) | | 49,754 | | 49,754 | | 49,754 | | 49,754 | | 49,754 | | 49,754 |
| Level 3 (countries) | | 26 | | 26 | | 26 | | 26 | | 26 | | 26 |

[a] EU member states (2005) excluding Malta, plus Norway and Iceland

[b] Proportion of variance accounted for by the group levels, without controlling for independent variables (unconditional hierarchical model)

[c] ICC after controlling for independent variables

[d] 1-(Residual ICC/ICC)

*) Significant at $p < 0.05$ ($z > 1.96$)

**) Significant at $p < 0.01$ ($z > 2.58$)

*Source*: EU-SILC (2005).

That the combination of 'general scope' and 'pension scope' has more predictive value than pension scope in itself is not very remarkable. What is striking, though, is that in both models the setup of the pension systems as such does not affect the degree of social exclusion in a significant way.[19] This may be attributable to the fact that the analysis involves persons aged 55 and older. Because most countries have a higher effective retirement age, this implies that for a substantial share of the respondents the pension level does not yet affect their personal situation. An alternative explanation for the limited explanatory power of the pension dimension might be that the indicators used by Soede et al. (2004) and Soede & Vrooman (2008b) in its construction in some countries show the situation of future cohorts, after recent changes in the pension system have been fully implemented. Of course, the impact of future pension systems cannot be revealed through data pertaining to 2005. A further reason could be that the ranking of countries in terms of their pension scope is mostly based on the situation of the average pensioner; while for explaining social exclusion the pension institutions 'at the bottom' (aimed at low-income groups and those with broken careers, a history of part-time employment or residence abroad) may be more important. Sorting out these alternative hypotheses requires an additional research effort that is beyond the scope of the current project.

### *5.4.5 The impact of other country traits*

In *models 7-10* (cf. Table 8), some other level 3 variables are introduced successively: GDP, social protection expenditure, income inequality and life expectancy. The latter two variables belong to the EU's set of Laeken indicators,[20] which intend to monitor social exclusion in the member states. A description of all country traits is given in Annex G.

All of these level 3 variables have significant effects on economic–structural exclusion, which run in the direction one theoretically would expect. *Ceteris paribus*, elderly persons are less excluded in countries with a higher GDP, higher expenditure on social protection, less income inequality and a higher life expectancy. The effects of the personal and household characteristics (level 1 and 2 variables) are very constant, no matter which level 3 variable is used. Comparing models 7-10 with model 3, which includes the geographical classification of regimes (type 1) as the only level 3 variable, it may be concluded that the regime type has more explanatory power (0.36) than do the other country predictors considered separately. The proportion of explained variance is highest in the model containing expenditure on social protection (0.34), followed by the models with income inequality (0.33), GDP (0.30) and life expectancy (0.29). The fact that social protection expenditure performs best in these 'single level 3 variable' models is not very remarkable, since this factor is related rather closely to the general scope of social security, which has already proved to be a significant explaining variable in model 5.

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[19] One could assume that the effect of pension wealth is absent owing to the inclusion of household income in the analysis. If, however, household income is omitted from the models, the effect of pension wealth is not statistically significant (cf. Vrooman, 2008).

[20] The share of the population attaining the upper secondary level of education is another Laeken indicator. A multilevel analysis with this level 3 variable was performed as well, but the results are not presented in Table 8. It turned out that it has no additional impact in explaining economic–structural exclusion among the elderly. Thus, the role education plays in bringing about differences in social exclusion is related to individual differences in education, not in differences among the average national levels. The substantial impact of education at level 1 suggests that a policy that reduces educational differences is potentially useful in tackling social exclusion among the elderly – although for this group it will probably require a long-term effort, since cohort replacement could be the dominant mechanism here.

Of course, since the level 3 variables in models 7-10 are correlated (cf. Annex G) their effects on social exclusion cannot be added up. Assessing their unique impact requires a simultaneous estimate of the effects of all of these factors in one multilevel model. Yet, as previously mentioned, the limited number of level 3 observations (26 countries) necessitates a sparse model with not too many level 3 variables included. Because GDP and social protection expenditure are very highly correlated (r=0.91), including both would introduce multicollinearity in the model. As social protection expenditure correlates more strongly with the other macro variables than with GDP, we decided to drop this from the simultaneous analysis of the impact of level 3 factors.

*Model 11* contains GDP, as well as income inequality and life expectancy. Total explained variance increases to 0.36, which is equal to model 3 (regime typology I). Even so, income inequality is the only level 3 variable having a significant impact on economic–structural exclusion. The effect of GDP runs in the expected direction, but is not statistically significant anymore, and life expectancy even has a zero impact. Thus, the effects of national differences in general wealth (as measured by GDP per capita) and the population's health (as indicated by life expectancy) largely disappear after controlling for differences in income inequality.

Since income inequality emerged in model 11 as the main 'non-institutional' level 3 factor, the next logical step would be to combine this factor with the regime typology, which also had a significant effect. *Model 12*, which includes both these level 3 predictors, shows that income inequality takes over much of the effect of regime type. Compared with model 11, the effect of income inequality hardly changes, while the coefficients for the regime dummies are considerably lower than in model 3. Most regime types do not differ significantly from the Nordic countries' regime anymore. Only in the Mediterranean group is economic–structural exclusion still substantially higher than in the reference category (at $p<0.05$), but this coefficient drops quite a lot as well (from 1.40 to 0.57). Not surprisingly, this model has the best fit of all. The proportion of total variance explained rises to 0.37. At the country level, the model variables reduce the ICC by 92% and at the household level this amounts to 67%.

Thus, the outcomes suggest that differences in economic–structural exclusion among the elderly at the macro level are mainly related to the diverging national income disparities: countries with much income inequality have greater social exclusion in terms of material deprivation and access to social rights. This finding does not necessarily imply that the institutional setup does not matter, because regime types often are constructed with explicit income redistribution goals. According to Esping-Andersen (1990), the degree of stratification and 'decommodification' that regimes strive for are key elements that theoretically set the types apart. Our results suggest that, except for their effects through income inequality, and with relevant person and household traits kept constant, regime types as such do not add much to economic–structural exclusion among the EU's elderly. Moreover, if we look at the single effect of various typologies, it turns out that the setup of specific pension institutions is a less relevant factor in explaining social exclusion among the elderly than the social security regime in general, or a simple geographical classification of EU member states.

At the country level, economic–structural exclusion among the elderly may therefore be tackled best by reducing income differentials. Nevertheless, one should bear in mind that the impact of several factors at the individual and household levels is much greater, as the z-values in model 12 indicate. Improving the health situation of the elderly, increasing the household incomes at the bottom, raising the level of education and specific attention for the single elderly could be the more effective strategies in combating social exclusion among the elderly.

## 6. Conclusions

In line with the conceptualisation and the measuring instrument developed in a Dutch case study (Jehoel-Gijsbers, 2004; Jehoel-Gijsbers & Vrooman, 2007), social exclusion has been defined as a multidimensional concept here. Two dimensions of social exclusion (material deprivation and social rights) are of a structural nature, which is stressed in the Anglo-Saxon approach. Two others – social participation and normative integration – are embedded in the French tradition, and they refer to social settings and subcultural factors. These dimensions theoretically relate to the same latent, underlying social-exclusion variable (cf. Figure 3).

In this study, the methodology developed for the Netherlands has been extended to the EU member states by performing secondary analyses of various international surveys. Data from the ESS (2002), SHARE (2004) and EU-SILC (2005) have been used to operationalise three of the four theoretical dimensions (see section 4.2): material deprivation, access to social rights (limited to adequate housing and health care here) and social participation. For each of the separate dimensions indices at the EU level have been constructed, which has allowed us to analyse the degree of these forms of social exclusion in each country. An index covering economic–structural exclusion (material deprivation plus access to social rights) has been calculated at the micro level as well. Also, a general index covering all dimensions has been constructed, through adding up the average country scores. The data usually pertain to 19-26 countries: the EU-25 (minus Malta), in so far as these are available in the surveys, and Norway plus Iceland, as exponents of the 'Nordic model'.

Using these indices, answers to the following research questions have been pursued here:

1) To what degree does social exclusion among the elderly vary among countries?
2) To what degree do elderly cohorts differ from younger ones in terms of social exclusion within countries?
3) Which risk factors determine the degree of social exclusion among the elderly?
4) Which country characteristics determine social exclusion among the elderly?

*Comparative analyses*

More or less the same pattern emerges on both the separate dimensions of social exclusion and the two general indices. In the EU's Nordic countries and the Netherlands, the elderly (defined as the age groups 55 and older) are the least excluded. The Continental and Anglo-Saxon groups generate a greater degree of social exclusion among the elderly, but not as much as the Mediterranean countries. Social exclusion is generally highest in the EU's new member states in Eastern Europe, especially in the Baltic States and Poland. The Czech Republic and Slovenia usually attain index scores similar to those of Spain and Italy.

Social exclusion among the elderly is generally much higher in terms of social participation than in terms of the two other dimensions. Concerning the latter, however – material deprivation and limited access to social rights – the differences among the country clusters are more pronounced. The results for these dimensions correspond to some extent with a typology of countries based on long-term care regimes (cf. Pommer et al., 2007) and with the general mixed/pension regimes typology given by Soede et al. (2004). Nevertheless, the two exponents of the Anglo-Saxon type analysed here, the UK and Ireland, perform better than theoretically could be expected: although their collective pension provisions do not belong to the best, the level of material deprivation among the elderly is rather low, and they have reasonable access to social rights. This outcome may be owing to other sources of income (non-mandatory/private

pensions, savings and real estate), which supplement the rather limited state pensions. The elaborate national health systems of these countries may also explain the favourable score on the social rights dimension.

The Mediterranean countries do not fully fit in with the typology either, but in an opposite way: they usually show more social exclusion than their institutional arrangements would suggest. Especially the comparatively low degree of social participation of the Mediterranean elderly is remarkable. This result is most likely not because of an underestimation of the impact of (extended) family relations in the indicator for social participation – the available data indicate that the elderly in the Mediterranean and Eastern European countries do not have a more developed primary social network that compensates for a lack of participation in society at large. A more likely explanation is that traditional family norms that prescribe providing help to older relatives still persist, but cannot be realised owing to various aspects of modernisation (rural ageing, rising women's labour-market participation, low fertility rates, the decline of the extended family, increasing life expectancy, etc.). In combination with the lack of formal care, this implies that in the Mediterranean countries more elderly do not receive the help they need, a situation that could become more serious if the current social trends persist in the future.

*Differences among age groups within countries*

The answer to the second research question depends on the dimension of social exclusion one takes into account. In terms of social participation, ageing is an important risk factor in all countries. In all EU member states, this form of social exclusion increases as individuals grow older.

Yet, if one looks at the material deprivation dimension the opposite occurs: almost everywhere this form of exclusion decreases with age. The effect is strongest in the Nordic, Continental and Anglo-Saxon groups, but in none of the countries analysed here do the elderly experience significantly more material deprivation than the under-55 age group.

With respect to the access to social rights (here limited to adequate housing and health care) the picture is less straightforward. In nearly all Mediterranean and Eastern European countries, the elderly are more excluded in this respect than the reference group. Apart from the Czech Republic, this occurs especially among the very old (aged ≥75) of these countries. In a number of other countries, however, access to social rights improves significantly with rising age. This finding concerns the Nordic group (except Finland), Germany and the UK.

*Risk factors*

Looking at individual risk factors for social exclusion among the elderly, a person's health status turns out to be crucial. On all dimensions and in each country, the elderly are more excluded the poorer their health is. Household income only has a strong effect on the dimensions of material deprivation and access to social rights: the lower their income, the more people are socially excluded. The income effect is largest in the Eastern European group of countries. There, the level of education is also an important determining factor. It seems that 'class characteristics' (income and education) are very relevant in the Eastern European countries in explaining social exclusion among the elderly, whereas such traits are of little importance in the Nordic group.

Although age and gender in some countries correlate with the various dimensions of social exclusion, after controlling for the impact of other variables these effects disappear.

*Country characteristics*

Several multilevel analyses have been performed in order to assess whether specific country traits are instrumental in explaining the varying degree of social exclusion among the elderly in EU member states. We have looked at the economic–structural exclusion here, the combined index of material deprivation and access to social rights.

A large share of the total variance at the country level in economic–structural exclusion (92%) can be explained by the variables that have been included in the models. For the most part, this consists of composition effects at the level of individuals (age, gender, health and education) and households (household composition and income). Specific country traits explain – depending on the model – up to a fifth of the variance among countries.

After controlling for the impact of variables at the level of individual respondents and households, elderly persons turn out to be less excluded in countries with a higher level of wealth (GDP), a higher expenditure on social protection, less income inequality and higher life expectancy. If these 'macro variables' are introduced into the model simultaneously, income inequality emerges as the dominant factor; the effects of the other country traits are no longer statistically significant.

In another set of multilevel models, the effects of diverging institutional arrangements have been analysed. A simple 'geographical' classification of EU countries into Nordic, Continental, Anglo-Saxon, Mediterranean and Eastern European types (plus the Netherlands as a hybrid) has the highest explanatory power, once again after the impact of individual and household variables has been taken into account. The mixed general/pension typology (based on the scope of social security and the extent of pensions) developed by Soede et al. (2004) performs slightly worse, but the scope dimension does have a significant effect. Generally speaking, the Eastern European and Mediterranean regimes generate more economic–structural exclusion among the elderly than the other regime types. Also, the Continental regime type produces more exclusion than the Nordic type. The differences between the Nordic, Anglo-Saxon and Dutch types are not statistically significant.

In a final model, the impact of income inequality and the geographical classification of regime types have been analysed simultaneously. The regime effect disappears almost entirely: only the Mediterranean countries have significantly more economic–structural exclusion. This result suggests that regimes mainly work through their impact on income inequality, which Esping-Andersen considers one of their defining characteristics. Apart from that, they do not add much in explaining social exclusion.

*Some policy observations*

The European Commission (2006a, 2006b) has called for specific attention to issues of poverty and social exclusion among the EU's elderly. If we consider our results, one may wonder if this is necessary in all respects, at least as far as the dimensions of social exclusion we have analysed here are concerned. For one thing, in none of the EU countries do elderly persons experience more material deprivation than do the younger age groups and in many countries, they do so less. Of course, this does not imply that the EU's materially deprived elderly do not have to cope with any financial problems – they probably do, but it is not specifically related to their being old.

Still, the situation could deteriorate in the near future. Over the next decades, in most countries the population ageing process will endanger the financial sustainability of pension schemes; if this is solved in a manner that reduces pension adequacy (lower initial pension benefits, limited indexation), a specific form of material deprivation could emerge among the EU's elderly. This

consequence could apply especially to some of the new member states, where the currently rather favourable income position of the elderly is expected to worsen over the years.[21]

A specific social exclusion problem among the elderly does seem to exist in relation to the other two dimensions we analysed here. In all EU countries, the group aged 55+ shows less social participation than that of their younger counterparts. In the Mediterranean and Eastern European member states, this also applies to access to social rights (in the rather limited way in which we have been able to operationalise the concept here). In this respect, a specific policy aimed a combating social exclusion of the elderly could be justifiable, especially because these dimensions are not addressed at great length in many of the EU member states' National Action Plans on Social Inclusion. In some countries, a rather urgent problem seems to be looming on the horizon: where informal (family) care for the elderly is dwindling and not replaced by sufficient access to formal care, the social isolation of the elderly could be on the rise in the near future.

From a policy point of view, at the country level reducing the national income disparities may be a good way to combat economic–structural exclusion among the elderly. But since our analyses show that several factors at the individual and household levels have greater impact, it could be more efficient to focus on improving the health situation, the lowest household incomes, the level of education and the position of the single elderly.

Finally, it is worth mentioning that any kind of social exclusion policy is in need of an adequate monitoring instrument. In our view, this requires that social exclusion be measured directly (both as a general concept and on separate subdimensions) and that the actual impact of potential risk factors be assessed. For this purpose, the measurement model that has been elaborated for the EU countries here – albeit limited in some of its operational aspects – could prove to be a suitable starting point.

[21] See also the results of Work Package 8.2 of the AIM project.

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# Annex A. Variables used in the construction of indices

## I. Variables involved in the index of material deprivation

*Table A1. Arrears on mortgage/rent payments, utility bills and loans, by age group (% yes)*

| | Total | <55 yrs | 55-65 yrs | 65-74 yrs | ≥75 yrs |
|---|---|---|---|---|---|
| Austria | 3 | 3 | 2 | 1 | <1 |
| Belgium | 6 | 8 | 4 | 2 | 1 |
| Cyprus | 20 | 24 | 15 | 8 | 6 |
| Czech Republic | 10 | 12 | 6 | 5 | 4 |
| Germany | 5 | 6 | 2 | 2 | 2 |
| Denmark | 6 | 9 | 3 | 1 | <1 |
| Estonia | 10 | 13 | 6 | 4 | 3 |
| Spain | 6 | 7 | 4 | 2 | 2 |
| Finland | 10 | 13 | 5 | 2 | 2 |
| France | 9 | 12 | 6 | 3 | 1 |
| Greece | 33 | 33 | 31 | 33 | 33 |
| Hungary | 15 | 19 | 10 | 7 | 4 |
| Ireland | 7 | 9 | 5 | 3 | 2 |
| Iceland | 14 | 18 | 7 | 4 | 2 |
| Italy | 11 | 14 | 9 | 7 | 5 |
| Lithuania | 20 | 23 | 18 | 11 | 10 |
| Luxembourg | 3 | 4 | 2 | 4 | 2 |
| Latvia | 23 | 28 | 16 | 13 | 12 |
| The Netherlands | 5 | 7 | 2 | 2 | <1 |
| Norway | 10 | 13 | 4 | 3 | 2 |
| Poland | 25 | 29 | 21 | 14 | 12 |
| Portugal | 6 | 7 | 6 | 5 | 4 |
| Sweden | 8 | 11 | 4 | 3 | 1 |
| Slovenia | 14 | 18 | 10 | 7 | 5 |
| Slovakia | 11 | 12 | 8 | 7 | 8 |
| UK | 6 | 8 | 2 | 1 | <1 |

*Source*: EU-SILC (2005).

*Table A2. Housing costs as a heavy burden, by age group (% yes)*

| | **Total** | **<55 yrs** | **55-65 yrs** | **65-74 yrs** | **≥75 yrs** |
|---|---|---|---|---|---|
| Austria | 13 | 14 | 12 | 11 | 12 |
| Belgium | 30 | 31 | 27 | 27 | 30 |
| Cyprus | 61 | 63 | 57 | 58 | 59 |
| Czech Republic | 24 | 24 | 22 | 22 | 25 |
| Germany | 22 | 26 | 19 | 16 | 15 |
| Denmark | 6 | 7 | 3 | 2 | 2 |
| Estonia | 26 | 24 | 28 | 33 | 33 |
| Spain | 46 | 45 | 46 | 48 | 45 |
| Finland | 18 | 21 | 14 | 12 | 12 |
| France | 20 | 21 | 18 | 20 | 18 |
| Greece | 24 | 24 | 20 | 24 | 26 |
| Hungary | 24 | 25 | 24 | 21 | 23 |
| Ireland | 21 | 23 | 18 | 14 | 12 |
| Iceland | 10 | 11 | 5 | 12 | 9 |
| Italy | 51 | 52 | 48 | 52 | 50 |
| Lithuania | 38 | 36 | 40 | 41 | 37 |
| Luxembourg | 27 | 30 | 22 | 16 | 19 |
| Latvia | 34 | 30 | 37 | 44 | 44 |
| The Netherlands | 17 | 17 | 16 | 18 | 14 |
| Norway | 6 | 7 | 4 | 3 | 4 |
| Poland | 46 | 46 | 49 | 48 | 42 |
| Portugal | 22 | 23 | 19 | 21 | 25 |
| Sweden | 12 | 14 | 8 | 10 | 10 |
| Slovenia | 32 | 32 | 33 | 31 | 31 |
| Slovakia | 40 | 41 | 38 | 38 | 31 |
| UK | 23 | 28 | 18 | 15 | 10 |

*Source*: EU-SILC (2005).

*Table A3. Repayment of debts is a heavy burden (% of all persons), by age group (% yes)*

| | **Total** | **<55 yrs** | **55-65 yrs** | **65-74 yrs** | **≥75 yrs** |
|---|---|---|---|---|---|
| Austria | 3 | 4 | 2 | 1 | 1 |
| Belgium | 7 | 10 | 4 | 2 | <1 |
| Cyprus | 34 | 40 | 27 | 12 | 7 |
| Czech Republic | 8 | 11 | 4 | 2 | 2 |
| Germany | 6 | 8 | 4 | 1 | 2 |
| Denmark | 2 | 3 | 1 | <1 | 0 |
| Estonia | 5 | 6 | 3 | <1 | <1 |
| Spain | 13 | 15 | 11 | 6 | 5 |
| Finland | 6 | 7 | 3 | 2 | 1 |
| France | 8 | 11 | 6 | 3 | <1 |
| Greece | 8 | 9 | 7 | 4 | 2 |
| Hungary | 7 | 9 | 5 | 2 | 2 |
| Ireland | 11 | 13 | 9 | 3 | 3 |
| Iceland | 9 | 11 | 6 | 4 | 1 |
| Italy | 9 | 12 | 6 | 4 | 2 |
| Lithuania | 5 | 7 | 3 | 2 | <1 |
| Luxembourg | 10 | 13 | 5 | 3 | 3 |
| Latvia | 7 | 8 | 6 | 4 | 4 |
| The Netherlands | 3 | 4 | 3 | <1 | <1 |
| Norway | 3 | 4 | 2 | 1 | <1 |
| Poland | 14 | 16 | 14 | 9 | 5 |
| Portugal | 4 | 6 | 3 | 2 | <1 |
| Sweden | 6 | 9 | 4 | 2 | <1 |
| Slovenia | 13 | 16 | 12 | 7 | 4 |
| Slovakia | 14 | 17 | 10 | 4 | 6 |
| UK | 9 | 13 | 6 | 2 | <1 |

*Source*: EU-SILC (2005).

*Table A4. Cannot afford all consumer durables[†] by age group (% cannot afford)*

| | **Total** | **<55 yrs** | **55-65 yrs** | **65-74 yrs** | **≥75 yrs** |
|---|---|---|---|---|---|
| Austria | 5 | 5 | 5 | 4 | 6 |
| Belgium | 8 | 8 | 9 | 7 | 8 |
| Cyprus | 12 | 13 | 10 | 7 | 7 |
| Czech Republic | 15 | 16 | 12 | 13 | 15 |
| Germany | 8 | 5 | 9 | 14 | 16 |
| Denmark | 4 | 5 | 3 | 3 | 3 |
| Estonia | 29 | 26 | 34 | 37 | 33 |
| Spain | 11 | 12 | 9 | 7 | 7 |
| Finland | 10 | 8 | 8 | 15 | 14 |
| France | 10 | 12 | 8 | 6 | 4 |
| Greece | 20 | 22 | 16 | 14 | 16 |
| Hungary | 18 | 18 | 19 | 19 | 18 |
| Ireland | 12 | 13 | 12 | 8 | 9 |
| Iceland | 4 | 4 | 3 | 7 | 4 |
| Italy | 9 | 10 | 7 | 7 | 7 |
| Lithuania | 37 | 37 | 36 | 35 | 35 |
| Luxembourg | 4 | 4 | 2 | 3 | 1 |
| Latvia | 42 | 40 | 44 | 48 | 46 |
| The Netherlands | 3 | 2 | 3 | 5 | 5 |
| Norway | 5 | 6 | 3 | 4 | 3 |
| Poland | 33 | 32 | 35 | 33 | 32 |
| Portugal | 21 | 23 | 18 | 18 | 22 |
| Sweden | 3 | 4 | 2 | 2 | 2 |
| Slovenia | 8 | 7 | 9 | 10 | 12 |
| Slovakia | 28 | 27 | 30 | 28 | 21 |
| UK | 6 | 7 | 5 | 6 | 4 |

[†] The following goods are involved: a telephone, colour TV, computer and washing machine.

*Source*: EU-SILC (2005).

*Table A5. Cannot afford all basic needs,[†] by age group (% cannot afford)*

| | Total | <55 yrs | 55-65 yrs | 65-74 yrs | ≥75 yrs |
|---|---|---|---|---|---|
| Austria | 11 | 10 | 11 | 11 | 15 |
| Belgium | 16 | 17 | 17 | 14 | 14 |
| Cyprus | 40 | 37 | 39 | 49 | 52 |
| Czech Republic | 23 | 22 | 22 | 28 | 29 |
| Germany | 19 | 20 | 17 | 16 | 19 |
| Denmark | 12 | 14 | 6 | 7 | 10 |
| Estonia | 24 | 22 | 29 | 24 | 28 |
| Spain | 13 | 12 | 14 | 16 | 15 |
| Finland | 8 | 7 | 8 | 9 | 11 |
| France | 12 | 12 | 12 | 13 | 11 |
| Greece | 22 | 19 | 23 | 30 | 34 |
| Hungary | 41 | 40 | 44 | 45 | 46 |
| Ireland | 7 | 8 | 6 | 4 | 4 |
| Iceland | 15 | 18 | 9 | 9 | 6 |
| Italy | 18 | 18 | 19 | 18 | 20 |
| Lithuania | 52 | 48 | 59 | 62 | 62 |
| Luxembourg | 3 | 4 | 1 | 2 | 2 |
| Latvia | 57 | 52 | 63 | 67 | 69 |
| The Netherlands | 6 | 6 | 5 | 6 | 7 |
| Norway | 7 | 9 | 4 | 4 | 4 |
| Poland | 50 | 49 | 53 | 56 | 55 |
| Portugal | 46 | 43 | 48 | 54 | 61 |
| Sweden | 8 | 9 | 5 | 7 | 5 |
| Slovenia | 11 | 9 | 12 | 15 | 19 |
| Slovakia | 45 | 44 | 46 | 52 | 49 |
| UK | 9 | 10 | 9 | 7 | 7 |

[†] The following basic needs are involved: heating the house, every second day a meal with meat/fish/chicken/vegetarian options, medical and dental treatment (only if one cannot afford these).

*Source*: EU-SILC (2005).

*Table A6. It is (very) difficult to make ends meet, by age group (% yes)*

| | **Total** | **<55 yrs** | **55-65 yrs** | **65-74 yrs** | **≥75 yrs** |
|---|---|---|---|---|---|
| Austria | 8 | 9 | 7 | 5 | 9 |
| Belgium | 16 | 16 | 15 | 16 | 17 |
| Cyprus | 42 | 42 | 37 | 43 | 49 |
| Czech Republic | 28 | 31 | 23 | 24 | 27 |
| Germany | 10 | 13 | 8 | 4 | 5 |
| Denmark | 6 | 8 | 4 | 3 | 3 |
| Estonia | 12 | 11 | 12 | 15 | 17 |
| Spain | 26 | 26 | 26 | 28 | 26 |
| Finland | 8 | 9 | 6 | 4 | 8 |
| France | 15 | 17 | 13 | 11 | 9 |
| Greece | 51 | 50 | 51 | 55 | 56 |
| Hungary | 34 | 35 | 33 | 33 | 33 |
| Ireland | 22 | 23 | 21 | 19 | 16 |
| Iceland | 13 | 14 | 9 | 13 | 9 |
| Italy | 34 | 34 | 30 | 34 | 34 |
| Lithuania | 31 | 29 | 35 | 36 | 40 |
| Luxembourg | 6 | 6 | 4 | 4 | 5 |
| Latvia | 53 | 49 | 58 | 61 | 64 |
| The Netherlands | 16 | 17 | 15 | 14 | 10 |
| Norway | 8 | 10 | 5 | 4 | 3 |
| Poland | 51 | 51 | 53 | 54 | 51 |
| Portugal | 36 | 35 | 34 | 39 | 45 |
| Sweden | 8 | 9 | 5 | 5 | 5 |
| Slovenia | 27 | 27 | 26 | 25 | 32 |
| Slovakia | 31 | 29 | 30 | 35 | 42 |
| UK | 12 | 14 | 9 | 8 | 5 |

*Source*: EU-SILC (2005).

*Table A7. Household cannot face unexpected expenses, by age group (% cannot)*

| | **Total** | **<55 yrs** | **55-65 yrs** | **65-74 yrs** | **≥75 yrs** |
|---|---|---|---|---|---|
| Austria | 24 | 25 | 19 | 18 | 28 |
| Belgium | 21 | 23 | 17 | 16 | 18 |
| Cyprus | 44 | 41 | 42 | 54 | 68 |
| Czech Republic | 42 | 42 | 37 | 41 | 49 |
| Germany | 21 | 25 | 16 | 14 | 15 |
| Denmark | 23 | 28 | 14 | 17 | 18 |
| Estonia | 35 | 32 | 35 | 43 | 50 |
| Spain | 33 | 30 | 34 | 42 | 42 |
| Finland | 32 | 35 | 23 | 24 | 30 |
| France | 34 | 38 | 26 | 28 | 27 |
| Greece | 40 | 37 | 39 | 15 | 52 |
| Hungary | 56 | 56 | 55 | 58 | 55 |
| Ireland | 20 | 20 | 18 | 20 | 19 |
| Iceland | 34 | 37 | 23 | 32 | 27 |
| Italy | 27 | 27 | 23 | 28 | 32 |
| Lithuania | 66 | 63 | 69 | 75 | 76 |
| Luxembourg | 20 | 23 | 12 | 13 | 9 |
| Latvia | 72 | 67 | 75 | 83 | 84 |
| The Netherlands | 25 | 27 | 20 | 24 | 24 |
| Norway | 28 | 33 | 18 | 20 | 18 |
| Poland | 63 | 62 | 64 | 66 | 66 |
| Portugal | 18 | 16 | 18 | 22 | 29 |
| Sweden | 14 | 15 | 9 | 12 | 18 |
| Slovenia | 43 | 42 | 40 | 46 | 50 |
| Slovakia | 57 | 56 | 56 | 65 | 64 |
| UK | 28 | 33 | 21 | 20 | 21 |

*Source:* EU-SILC (2005).

## II. Variables involved in the index of access to social rights

*Table A8. Inadequacy of housing, by age group (% yes (at least one problem))*[†]

| | Total | <55 yrs | 55-65 yrs | 65-74 yrs | ≥75 yrs |
|---|---|---|---|---|---|
| Austria | 16 | 17 | 13 | 12 | 17 |
| Belgium | 21 | 22 | 20 | 17 | 23 |
| Cyprus | 39 | 37 | 40 | 44 | 49 |
| Czech Republic | 23 | 24 | 22 | 21 | 22 |
| Germany | 16 | 18 | 12 | 11 | 12 |
| Denmark | 11 | 13 | 9 | 7 | 6 |
| Estonia | 41 | 38 | 43 | 47 | 48 |
| Spain | 24 | 23 | 24 | 27 | 27 |
| Finland | 10 | 10 | 10 | 9 | 9 |
| France | 18 | 19 | 16 | 14 | 18 |
| Greece | 26 | 24 | 26 | 32 | 36 |
| Hungary | 38 | 38 | 38 | 40 | 45 |
| Ireland | 15 | 16 | 14 | 14 | 19 |
| Iceland | 20 | 22 | 15 | 17 | 13 |
| Italy | 26 | 26 | 25 | 27 | 31 |
| Lithuania | 50 | 48 | 50 | 57 | 61 |
| Luxembourg | 17 | 17 | 18 | 16 | 11 |
| Latvia | 52 | 52 | 50 | 53 | 54 |
| The Netherlands | 21 | 23 | 19 | 16 | 14 |
| Norway | 11 | 12 | 9 | 8 | 9 |
| Poland | 48 | 47 | 46 | 49 | 57 |
| Portugal | 33 | 31 | 31 | 41 | 45 |
| Sweden | 8 | 9 | 7 | 7 | 5 |
| Slovenia | 23 | 23 | 25 | 22 | 25 |
| Slovakia | 12 | 11 | 10 | 14 | 21 |
| UK | 22 | 26 | 19 | 15 | 14 |

[†] The following problems are involved: a leaking roof, no bath/shower, no flushing toilet and too dark.

*Source*: EU-SILC (2005).

*Table A9. Unmet needs for medical/dental treatment, by age group (% yes)*[†]

| | **Total** | **<55 yrs** | **55-65 yrs** | **65-74 yrs** | **≥75 yrs** |
|---|---|---|---|---|---|
| Austria | 4 | 4 | 4 | 3 | 3 |
| Belgium | 3 | 3 | 3 | 4 | 4 |
| Cyprus | 16 | 17 | 18 | 14 | 11 |
| Czech Republic | 8 | 9 | 8 | 7 | 8 |
| Germany | 19 | 22 | 15 | 11 | 12 |
| Denmark | 5 | 6 | 2 | 3 | 2 |
| Estonia | 20 | 19 | 25 | 20 | 19 |
| Spain | 12 | 12 | 14 | 12 | 10 |
| Finland | 6 | 6 | 6 | 6 | 7 |
| France | 8 | 9 | 8 | 7 | 7 |
| Greece | 11 | 9 | 14 | 16 | 13 |
| Hungary | 21 | 23 | 22 | 17 | 14 |
| Ireland | 6 | 6 | 5 | 2 | 2 |
| Iceland | 10 | 12 | 7 | 4 | 3 |
| Italy | 14 | 14 | 16 | 14 | 13 |
| Lithuania | 17 | 15 | 19 | 21 | 17 |
| Luxembourg | 6 | 6 | 5 | 5 | 6 |
| Latvia | 40 | 38 | 44 | 40 | 43 |
| The Netherlands | 5 | 6 | 4 | 3 | 3 |
| Norway | 8 | 9 | 5 | 5 | 7 |
| Poland | 24 | 25 | 26 | 20 | 17 |
| Portugal | 14 | 13 | 19 | 16 | 17 |
| Sweden | 12 | 14 | 9 | 9 | 8 |
| Slovenia | <1 | <1 | <1 | <1 | <1 |
| Slovakia | 12 | 12 | 13 | 12 | 9 |
| UK | 11 | 12 | 10 | 8 | 6 |

[†] One needed a medical or dental examination or treatment during the last 12 months but did not receive this because of costs, waiting lists, no means of transportation, too far away, etc.

*Source*: EU-SILC (2005).

## III. Variables involved in the index of social participation

*Table A10. Number of social meetings with family, friends, colleagues, by age group (% maximum of one per month)*

| | Total | <55 yrs | 55-65 yrs | 65-74 yrs | ≥75 yrs |
|---|---|---|---|---|---|
| Austria | 15 | 13 | 19 | 22 | 30 |
| Belgium | 14 | 12 | 17 | 18 | 20 |
| Switzerland | 11 | 9 | 16 | 15 | 20 |
| Czech Republic | 27 | 23 | 30 | 39 | 35 |
| Germany | 17 | 12 | 21 | 29 | 27 |
| Denmark | 9 | 7 | 11 | 15 | 20 |
| Spain | 14 | 9 | 17 | 24 | 26 |
| Finland | 14 | 13 | 19 | 15 | 16 |
| France | 12 | 9 | 17 | 18 | 21 |
| Greece | 39 | 32 | 44 | 54 | 50 |
| Hungary | 50 | 44 | 57 | 52 | 76 |
| Ireland | 17 | 15 | 25 | 18 | 27 |
| Italy | 21 | 17 | 28 | 25 | 40 |
| Luxembourg | 19 | 17 | 20 | 25 | 29 |
| The Netherlands | 10 | 7 | 15 | 17 | 17 |
| Norway | 6 | 4 | 8 | 13 | 16 |
| Poland | 37 | 33 | 45 | 48 | 49 |
| Portugal | 16 | 11 | 19 | 28 | 25 |
| Sweden | 9 | 7 | 12 | 12 | 19 |
| Slovenia | 28 | 23 | 39 | 38 | 42 |
| UK | 17 | 18 | 17 | 14 | 14 |

*Source*: ESS (2002).

*Table A11. Has anyone with whom to discuss intimate and personal matters, by age group (% no)*

| | Total | <55 yrs | 55-65 yrs | 65-74 yrs | ≥75 yrs |
|---|---|---|---|---|---|
| Austria | 9 | 7 | 10 | 17 | 23 |
| Belgium | 13 | 10 | 18 | 22 | 25 |
| Switzerland | 4 | 2 | 5 | 9 | 9 |
| Czech Republic | 14 | 10 | 13 | 25 | 23 |
| Germany | 4 | 4 | 3 | 7 | 9 |
| Denmark | 7 | 4 | 8 | 17 | 19 |
| Spain | 9 | 5 | 13 | 19 | 22 |
| Finland | 9 | 7 | 13 | 13 | 17 |
| France | 12 | 8 | 16 | 23 | 34 |
| Greece | 9 | 8 | 9 | 12 | 12 |
| Hungary | 8 | 7 | 7 | 12 | 12 |
| Ireland | 8 | 6 | 10 | 15 | 19 |
| Italy | 22 | 16 | 28 | 38 | 34 |
| Luxembourg | 12 | 10 | 14 | 15 | 26 |

*Table A11. (Cont'd)*

| | | | | | |
|---|---|---|---|---|---|
| The Netherlands | 6 | 3 | 9 | 11 | 18 |
| Norway | 4 | 3 | 6 | 8 | 11 |
| Poland | 13 | 10 | 16 | 20 | 22 |
| Portugal | 10 | 7 | 11 | 13 | 24 |
| Sweden | 8 | 6 | 9 | 12 | 20 |
| Slovenia | 11 | 7 | 14 | 16 | 28 |
| UK | 8 | 5 | 10 | 12 | 19 |

*Source*: ESS (2002).

*Table A12. Takes less part in social activities compared with other persons of the same age, by age group (% no)*

| | **Total** | **<55 yrs** | **55-65 yrs** | **65-74 yrs** | **≥75 yrs** |
|---|---|---|---|---|---|
| Austria | 37 | 35 | 42 | 43 | 52 |
| Belgium | 47 | 43 | 50 | 58 | 57 |
| Switzerland | 38 | 36 | 42 | 40 | 50 |
| Czech Republic | 42 | 39 | 42 | 51 | 50 |
| Germany | 38 | 36 | 37 | 46 | 48 |
| Denmark | 30 | 24 | 37 | 43 | 48 |
| Spain | 39 | 34 | 42 | 52 | 50 |
| Finland | 40 | 37 | 41 | 47 | 52 |
| France | 26 | 24 | 30 | 28 | 41 |
| Greece | 40 | 36 | 41 | 51 | 53 |
| Hungary | 54 | 49 | 60 | 62 | 72 |
| Ireland | 35 | 33 | 36 | 40 | 47 |
| Italy | 51 | 50 | 47 | 50 | 69 |
| Luxembourg | 39 | 37 | 43 | 45 | 41 |
| The Netherlands | 35 | 33 | 35 | 38 | 51 |
| Norway | 24 | 22 | 23 | 32 | 34 |
| Poland | 47 | 43 | 50 | 53 | 68 |
| Portugal | 40 | 37 | 40 | 49 | 48 |
| Sweden | 30 | 27 | 32 | 39 | 36 |
| Slovenia | 40 | 33 | 50 | 57 | 59 |
| UK | 40 | 39 | 40 | 39 | 49 |

*Source*: ESS (2002).

*Table A13. Is a member of a sports/outdoor activity club or hobby/cultural organisation, by age group (% no)*

| | Total | <55 yrs | 55-65 yrs | 65-74 yrs | ≥75 yrs |
|---|---|---|---|---|---|
| Austria | 56 | 55 | 54 | 59 | 62 |
| Belgium | 51 | 52 | 51 | 47 | 55 |
| Germany | 56 | 56 | 52 | 53 | 73 |
| Denmark | 42 | 46 | 39 | 27 | 41 |
| Spain | 78 | 78 | 82 | 76 | 83 |
| Finland | 65 | 66 | 65 | 64 | 59 |
| France | 68 | 66 | 71 | 72 | 75 |
| Greece | 89 | 89 | 89 | 89 | 92 |
| Hungary | 89 | 88 | 92 | 86 | 88 |
| Ireland | 55 | 53 | 57 | 60 | 71 |
| Italy | 85 | 84 | 87 | 83 | 89 |
| Luxembourg | 55 | 57 | 54 | 46 | 56 |
| The Netherlands | 44 | 43 | 43 | 45 | 62 |
| Norway | 45 | 45 | 43 | 51 | 43 |
| Poland | 94 | 94 | 93 | 95 | 97 |
| Portugal | 87 | 86 | 87 | 90 | 93 |
| Sweden | 42 | 43 | 46 | 35 | 31 |
| Slovenia | 81 | 78 | 85 | 88 | 92 |
| UK | 57 | 59 | 52 | 52 | 62 |

*Source*: ESS (2002).

*Table A14. Has been a member of an organisation (political, professional, religious or association for the elderly) in the last 12 months, by age group (% no)*

| | Total | <55 yrs | 55-65 yrs | 65-74 yrs | ≥75 yrs |
|---|---|---|---|---|---|
| Austria | 33 | 31 | 31 | 47 | 52 |
| Belgium | 48 | 43 | 46 | 65 | 70 |
| Germany | 41 | 40 | 34 | 49 | 55 |
| Denmark | 15 | 10 | 9 | 33 | 47 |
| Spain | 75 | 72 | 73 | 84 | 86 |
| Finland | 30 | 23 | 30 | 47 | 50 |
| France | 72 | 69 | 73 | 78 | 91 |
| Greece | 83 | 79 | 84 | 92 | 92 |
| Hungary | 80 | 79 | 82 | 83 | 86 |
| Ireland | 45 | 43 | 44 | 52 | 61 |
| Italy | 72 | 69 | 77 | 80 | 79 |
| Luxembourg | 28 | 26 | 28 | 31 | 51 |
| The Netherlands | 29 | 30 | 24 | 28 | 45 |
| Norway | 25 | 24 | 19 | 29 | 40 |
| Poland | 86 | 84 | 88 | 94 | 88 |
| Portugal | 81 | 78 | 82 | 90 | 92 |
| Sweden | 16 | 13 | 11 | 25 | 33 |
| Slovenia | 57 | 49 | 69 | 77 | 78 |
| UK | 43 | 42 | 38 | 45 | 59 |

*Source*: ESS (2002).

*Table A15. Participation in voluntary work in the last 12 months, by age group (% no)*

| | Total | <55 yrs | 55-65 yrs | 65-74 yrs | ≥75 yrs |
|---|---|---|---|---|---|
| Austria | 85 | 84 | 87 | 90 | 87 |
| Belgium | 77 | 75 | 76 | 76 | 87 |
| Germany | 73 | 73 | 71 | 75 | 85 |
| Denmark | 72 | 70 | 72 | 76 | 84 |
| Spain | 94 | 92 | 95 | 94 | 99 |
| Finland | 87 | 88 | 83 | 87 | 93 |
| France | 81 | 80 | 80 | 83 | 94 |
| Greece | 94 | 93 | 92 | 96 | 96 |
| Hungary | 91 | 90 | 94 | 93 | 95 |
| Ireland | 84 | 84 | 80 | 85 | 94 |
| Italy | 95 | 95 | 95 | 96 | 99 |
| Luxembourg | 85 | 85 | 83 | 87 | 92 |
| The Netherlands | 70 | 71 | 65 | 68 | 84 |
| Norway | 63 | 61 | 63 | 67 | 75 |
| Poland | 95 | 95 | 95 | 94 | 97 |
| Portugal | 94 | 95 | 96 | 93 | 90 |
| Sweden | 66 | 63 | 70 | 67 | 71 |
| Slovenia | 81 | 79 | 81 | 86 | 94 |
| UK | 76 | 78 | 70 | 74 | 78 |

*Source*: ESS (2002).

*Table A16. Helping others, by age group (% never)*

| | Total | <55 yrs | 55-65 yrs | 65-74 yrs | ≥75 yrs |
|---|---|---|---|---|---|
| Austria | 6 | 5 | 6 | 9 | 15 |
| Belgium | 9 | 7 | 9 | 10 | 26 |
| Switzerland | 4 | 4 | 4 | 5 | 8 |
| Czech Republic | 12 | 9 | 9 | 16 | 31 |
| Germany | 4 | 2 | 3 | 5 | 17 |
| Denmark | 8 | 5 | 10 | 12 | 24 |
| Spain | 19 | 16 | 17 | 26 | 34 |
| Finland | 11 | 6 | 10 | 21 | 35 |
| France | 27 | 24 | 26 | 36 | 49 |
| Greece | 7 | 7 | 4 | 8 | 10 |
| Hungary | 11 | 7 | 11 | 21 | 29 |
| Ireland | 15 | 11 | 16 | 17 | 42 |
| Italy | 20 | 17 | 21 | 30 | 44 |
| Luxembourg | 13 | 12 | 15 | 17 | 22 |
| The Netherlands | 7 | 4 | 5 | 12 | 28 |
| Norway | 7 | 5 | 4 | 11 | 26 |
| Poland | 13 | 8 | 14 | 23 | 40 |
| Portugal | 7 | 5 | 7 | 13 | 14 |
| Sweden | 9 | 6 | 5 | 13 | 39 |
| Slovenia | 6 | 3 | 6 | 8 | 30 |
| UK | 19 | 16 | 15 | 25 | 38 |

*Source*: ESS (2002).

*Table A17. Trust in others, by age group (% with no/little trust)*

| | **Total** | **<55 yrs** | **55-65 yrs** | **65-74 yrs** | **≥75 yrs** |
|---|---|---|---|---|---|
| Austria | 25 | 23 | 26 | 33 | 35 |
| Belgium | 29 | 27 | 32 | 29 | 36 |
| Switzerland | 16 | 16 | 15 | 18 | 21 |
| Czech Republic | 39 | 37 | 44 | 35 | 52 |
| Germany | 31 | 28 | 35 | 32 | 47 |
| Denmark | 6 | 6 | 5 | 9 | 4 |
| Spain | 30 | 27 | 33 | 35 | 35 |
| Finland | 9 | 8 | 10 | 8 | 15 |
| France | 32 | 31 | 37 | 30 | 48 |
| Greece | 53 | 50 | 57 | 60 | 46 |
| Hungary | 41 | 38 | 39 | 50 | 52 |
| Ireland | 23 | 23 | 22 | 25 | 24 |
| Italy | 33 | 32 | 34 | 35 | 43 |
| Luxembourg | 20 | 21 | 18 | 19 | 27 |
| The Netherlands | 15 | 14 | 15 | 19 | 23 |
| Norway | 8 | 7 | 9 | 9 | 11 |
| Poland | 51 | 49 | 51 | 56 | 60 |
| Portugal | 42 | 42 | 48 | 43 | 32 |
| Sweden | 14 | 14 | 15 | 17 | 15 |
| Slovenia | 45 | 43 | 46 | 48 | 53 |
| UK | 24 | 25 | 24 | 18 | 22 |

*Source*: ESS (2002).

# Annex B. CatPCA and Overals results for national and EU populations

In section 4.3, the construction of indices for material deprivation, social rights and economic–structural exclusion is based on the data of all 26 European countries involved in the EU-SILC (2005) dataset. The construction of the index for social participation is based on the data of the 19 countries involved in the ESS (2002) dataset. Because the number of respondents differs among countries, it is possible that the results are biased towards countries where more respondents took part in the survey. To check on this, the construction of the four indices has been repeated for each country separately. Subsequently, for each country the scores on the national indices have been correlated with those on the European indices. The following tables contain these correlations; it may be concluded that almost all of the correlations are very high, implying there is no or little bias.

*Table B1. Material deprivation index (based on 15 items), CatPCA*

| | **Correlation† between the national and European index** | **Cronbach's Alpha** | **Eigenvalue** |
|---|---|---|---|
| **EU total (26 countries)** | **1** | **0.77** | **3.52** |
| Austria | 0.984 | 0.70 | 2.88 |
| Belgium | 0.993 | 0.78 | 3.66 |
| Cyprus | 0.996 | 0.71 | 3.00 |
| Czech Republic | 0.995 | 0.74 | 3.19 |
| Germany | 0.989 | 0.75 | 3.38 |
| Denmark | 0.974 | 0.70 | 2.89 |
| Estonia | 0.993 | 0.74 | 3.22 |
| Spain | 0.995 | 0.69 | 2.83 |
| Finland | 0.994 | 0.72 | 3.02 |
| France | 0.996 | 0.78 | 3.63 |
| Greece | 0.993 | 0.76 | 3.40 |
| Hungary | 0.995 | 0.74 | 3.23 |
| Ireland | 0.987 | 0.79 | 3.77 |
| Iceland | 0.989 | 0.72 | 3.06 |
| Italy | 0.996 | 0.77 | 3.52 |
| Lithuania | 0.991 | 0.73 | 3.17 |
| Luxembourg | 0.979 | 0.72 | 3.09 |
| Latvia | 0.990 | 0.80 | 3.96 |
| The Netherlands | 0.990 | 0.69 | 2.80 |
| Norway | 0.994 | 0.79 | 3.79 |
| Poland | 0.992 | 0.76 | 3.40 |
| Portugal | 0.992 | 0.73 | 3.15 |
| Sweden | 0.993 | 0.76 | 3.43 |
| Slovenia | 0.997 | 0.71 | 2.99 |
| Slovakia | 0.992 | 0.72 | 3.04 |
| UK | 0.997 | 0.71 | 2.97 |

† The correlation is calculated by the Pearson correlation.

*Source*: EU-SILC (2005).

*Table B2. Index for access to social rights (based on six items), CatPCA*

| | **Correlation† between the national and European index** | **Cronbach's Alpha** | **Eigenvalue** |
|---|---|---|---|
| **EU total (26 countries)** | **1** | **0.59** | **1.98** |
| Austria | 0.986 | 0.41 | 1.52 |
| Belgium | 0.985 | 0.44 | 1.58 |
| Cyprus | 0.880 | 0.60 | 1.98 |
| Czech Republic | 0.970 | 0.50 | 1.72 |
| Germany | 0.888 | 0.43 | 1.56 |
| Denmark | 0.853 | 0.19 | 1.18 |
| Estonia | 0.973 | 0.59 | 1.96 |
| Spain | 0.759 | 0.50 | 1.72 |
| Finland | 0.948 | 0.43 | 1.57 |
| France | 0.962 | 0.45 | 1.60 |
| Greece | 0.993 | 0.51 | 1.74 |
| Hungary | 0.992 | 0.62 | 2.05 |
| Ireland | 0.953 | 0.52 | 1.76 |
| Iceland | 0.793 | 0.37 | 1.45 |
| Italy | 0.993 | 0.44 | 1.57 |
| Lithuania | 0.989 | 0.60 | 2.02 |
| Luxembourg | 0.832 | 0.39 | 1.48 |
| Latvia | 0.979 | 0.65 | 2.19 |
| The Netherlands | 0.955 | 0.18 | 1.15 |
| Norway | 0.534 | 0.35 | 1.41 |
| Poland | 0.990 | 0.63 | 2.09 |
| Portugal | 0.991 | 0.61 | 2.02 |
| Sweden | 0.970 | 0.24 | 1.24 |
| Slovenia | 0.985 | 0.57 | 1.91 |
| Slovakia | 0.968 | 0.55 | 1.84 |
| UK | 0.840 | 0.21 | 1.21 |

† Pearson correlation

*Source*: EU-SILC (2005).

*Table B3. Social participation index (based on eight items), CatPCA*

| | Correlation† between the national and European index | Cronbach's Alpha | Eigenvalue |
|---|---|---|---|
| **EU total (19 countries)** | **1** | **0.63** | **2.21** |
| Austria | 0.966 | 0.60 | 2.09 |
| Belgium | 0.992 | 0.59 | 2.07 |
| Germany | 0.990 | 0.58 | 2.03 |
| Denmark | 0.982 | 0.53 | 1.85 |
| Spain | 0.979 | 0.55 | 1.91 |
| Finland | 0.970 | 0.52 | 1.82 |
| France | 0.997 | 0.57 | 1.99 |
| Greece | 0.974 | 0.55 | 1.94 |
| Hungary | 0.986 | 0.59 | 2.08 |
| Ireland | 0.988 | 0.54 | 1.91 |
| Italy | 0.981 | 0.50 | 1.79 |
| Luxembourg | 0.832 | 0.57 | 1.98 |
| The Netherlands | 0.989 | 0.55 | 1.94 |
| Norway | 0.991 | 0.58 | 2.04 |
| Poland | 0.961 | 0.51 | 1.81 |
| Portugal | 0.984 | 0.52 | 1.84 |
| Sweden | 0.987 | 0.52 | 1.82 |
| Slovenia | 0.988 | 0.57 | 2.00 |
| UK | 0.992 | 0.54 | 1.90 |

† Pearson correlation

*Source*: ESS (2002).

*Table B4. Economic–structural exclusion (material deprivation + social rights), Overals*

| | Correlation† between the national and European index | Eigenvalue (fit) | Correlation between the material deprivation index and economic–structural index | Correlation between the social rights index and economic–structural index |
|---|---|---|---|---|
| **EU total (26 countries)** | **1** | **0.72** | **0.83** | **0.76** |
| Austria | 0.954 | 0.65 | 0.79 | 0.71 |
| Belgium | 0.945 | 0.70 | 0.84 | 0.69 |
| Cyprus | 0.945 | 0.68 | 0.78 | 0.70 |
| Czech Republic | 0.963 | 0.65 | 0.80 | 0.69 |
| Germany | 0.969 | 0.69 | 0.83 | 0.80 |
| Denmark | 0.936 | 0.66 | 0.79 | 0.67 |
| Estonia | 0.872 | 0.71 | 0.71 | 0.80 |
| Spain | 0.948 | 0.65 | 0.77 | 0.74 |
| Finland | 0.926 | 0.64 | 0.79 | 0.62 |
| France | 0.961 | 0.67 | 0.81 | 0.68 |

*Table B4. (Cont'd)*

| | | | | |
|---|---|---|---|---|
| Greece | 0.950 | 0.71 | 0.82 | 0.74 |
| Hungary | 0.984 | 0.72 | 0.80 | 0.79 |
| Ireland | 0.931 | 0.67 | 0.81 | 0.68 |
| Iceland | 0.929 | 0.63 | 0.74 | 0.73 |
| Italy | 0.978 | 0.70 | 0.83 | 0.78 |
| Lithuania | 0.846 | 0.73 | 0.77 | 0.76 |
| Luxembourg | 0.958 | 0.66 | 0.72 | 0.79 |
| Latvia | 0.966 | 0.72 | 0.81 | 0.76 |
| The Netherlands | 0.939 | 0.59 | 0.71 | 0.77 |
| Norway | 0.946 | 0.69 | 0.85 | 0.73 |
| Poland | 0.987 | 0.72 | 0.82 | 0.78 |
| Portugal | 0.966 | 0.74 | 0.84 | 0.78 |
| Sweden | 0.930 | 0.65 | 0.77 | 0.74 |
| Slovenia | 0.923 | 0.70 | 0.76 | 0.74 |
| Slovakia | 0.909 | 0.66 | 0.85 | 0.66 |
| UK | 0.917 | 0.63 | 0.76 | 0.68 |

† Pearson correlation

*Source*: EU-SILC (2005).

# Annex C. Dimensions of social exclusion by age group

*Table C1. Social participation index: Differences between elderly age groups and the reference group (<55) (odds ratios† on a dummy variable: 10% most excluded versus the rest)*

| | | <55 years =reference group | 55-64 years | | 65-74 years | | 75 years and older | |
|---|---|---|---|---|---|---|---|---|
| | | | Odds ratio | | Odds ratio | | Odds ratio | |
| Northern Europe | DK | | 1.73 | * | 2.78 | ** | 6.51 | ** |
| | NO | | 1.38 | | 3.08 | ** | 3.3 | ** |
| | SE | | 1.28 | | 2.7 | ** | 4.02 | ** |
| | FI | | 1.48 | | 2.13 | ** | 3.15 | ** |
| | NL | | 1.85 | ** | 2.16 | ** | 6.31 | ** |
| Continental | LU | | 1.22 | | 1.53 | | 3.65 | ** |
| | AT | | 1.63 | * | 2.5 | ** | 4.66 | ** |
| | BE | | 1.96 | ** | 3.36 | ** | 5.26 | ** |
| | FR | | 2.51 | ** | 2.13 | ** | 4.91 | ** |
| | DE | | 1.59 | * | 2.38 | ** | 3.74 | ** |
| Anglo-Saxon | IE | | 1.67 | * | 2.09 | ** | 3.11 | ** |
| | UK | | 0.83 | | 1.17 | | 2.2 | ** |
| Mediterranean | ES | | 2.66 | ** | 4.05 | ** | 4.53 | ** |
| | IT | | 2.25 | ** | 3.64 | ** | 6.04 | ** |
| | PT | | 2.15 | * | 3.33 | ** | 3.86 | ** |
| | GR | | 1.31 | | 2.2 | ** | 1.59 | * |
| Eastern Europe | PL | | 1.53 | | 2.17 | ** | 3.71 | ** |
| | SL | | 3.91 | ** | 5.92 | ** | 11.26 | ** |
| | HU | | 1.41 | | 2.44 | ** | 3.78 | ** |

† Odds ratio < 1: less socially excluded than the reference group (<55); odds ratio > 1: more socially excluded than the reference group (<55)

*) Significant at p< 0.05 (z> 1.96)

**) Significant at p< 0.01 (z> 2.58)

*Source*: ESS (2002).

*Table C2. Material deprivation index: Differences between elderly age groups and the reference group (<55) (odds ratios† on a dummy variable: 10% most excluded versus the rest)*

| | | <55 years =reference group | 55-64 years | | 65-74 years | | 75 years and older | |
|---|---|---|---|---|---|---|---|---|
| | | | Odds ratio | | Odds ratio | | Odds ratio | |
| Northern Europe | DK | | 0.34 | ** | 0.33 | ** | 0.25 | ** |
| | NO | | 0.37 | ** | 0.32 | ** | 0.19 | ** |
| | SE | | 0.37 | ** | 0.43 | ** | 0.25 | ** |
| | FI | | 0.56 | ** | 0.47 | ** | 0.59 | ** |
| | IS | | 0.42 | ** | 0.23 | ** | 0.14 | ** |
| | NL | | 0.71 | ** | 0.63 | ** | 0.54 | ** |
| Continental | LU | | 0.38 | ** | 0.34 | ** | 0.35 | ** |
| | AT | | 0.73 | ** | 0.53 | ** | 1.02 | |
| | BE | | 0.69 | * | 0.39 | ** | 0.5 | ** |
| | FR | | 0.6 | ** | 0.5 | ** | 0.31 | ** |
| | DE | | 0.67 | ** | 0.5 | ** | 0.47 | ** |
| Anglo-Saxon | IE | | 0.77 | * | 0.44 | ** | 0.34 | ** |
| | UK | | 0.53 | ** | 0.37 | ** | 0.21 | ** |
| Mediterranean | ES | | 0.88 | | 0.85 | | 0.75 | ** |
| | IT | | 0.84 | * | 0.63 | ** | 0.57 | ** |
| | PT | | 1.08 | | 1.11 | | 1.74 | ** |
| | GR | | 1.05 | | 1.11 | | 1.26 | |
| | CY | | 0.65 | ** | 0.55 | ** | 0.5 | ** |
| Eastern Europe | EE | | 1.08 | | 0.85 | | 1.25 | |
| | LV | | 1.17 | | 0.87 | | 0.98 | |
| | LT | | 1.13 | | 0.92 | | 1.23 | |
| | PL | | 1.01 | | 0.73 | ** | 0.6 | ** |
| | CZ | | 0.52 | ** | 0.51 | ** | 0.51 | ** |
| | SK | | 0.76 | * | 0.92 | | 0.83 | |
| | SL | | 0.86 | | 0.68 | ** | 0.81 | |
| | HU | | 0.7 | ** | 0.61 | ** | 0.46 | ** |

† Odds ratio < 1: less socially excluded than the reference group (<55); odds ratio > 1: more socially excluded than the reference group (<55)

*) Significant at p< 0.05 (z> 1.96)

**) Significant at p< 0.01 (z> 2.58)

*Source*: EU-SILC (2005).

*Table C3. Access to social rights index: Differences between elderly age groups and the reference group (<55) (odds ratios[†] on a dummy variable: 10% most excluded versus the rest)*

| | | <55 years =reference group | 55-64 years | | 65-74 years | | 75 years and older | |
|---|---|---|---|---|---|---|---|---|
| | | | Odds ratio | | Odds ratio | | Odds ratio | |
| Northern Europe | DK | | 0.66 | ** | 0.52 | ** | 0.4 | ** |
| | NO | | 0.73 | ** | 0.72 | * | 0.79 | |
| | SE | | 0.68 | ** | 0.74 | * | 0.54 | ** |
| | FI | | 1.17 | | 1.29 | * | 1.3 | |
| | IS | | 0.49 | ** | 0.19 | ** | 0.43 | * |
| | NL | | 0.96 | | 0.81 | | 1.01 | |
| Continental | LU | | 1.13 | | 0.8 | | 0.76 | |
| | AT | | 0.82 | | 0.74 | * | 1.14 | |
| | BE | | 0.94 | | 0.75 | * | 1.17 | |
| | FR | | 0.9 | | 0.82 | | 1.1 | |
| | DE | | 0.73 | ** | 0.48 | ** | 0.49 | ** |
| Anglo-Saxon | IE | | 0.87 | | 0.67 | ** | 0.91 | |
| | UK | | 0.61 | ** | 0.47 | ** | 0.35 | ** |
| Mediterranean | ES | | 0.99 | | 1.2 | * | 1.13 | |
| | IT | | 1.12 | | 1.14 | * | 1.52 | ** |
| | PT | | 1.31 | * | 2.08 | ** | 2.98 | ** |
| | GR | | 1.3 | * | 2.18 | ** | 2.86 | ** |
| | CY | | 1.27 | * | 1.41 | * | 1.79 | ** |
| Eastern Europe | EE | | 1.34 | * | 1.59 | ** | 2.18 | ** |
| | LV | | 1.02 | | 1.08 | | 1.18 | |
| | LT | | 1.08 | | 1.28 | | 2.27 | ** |
| | PL | | 1.1 | | 1.59 | ** | 3.24 | ** |
| | CZ | | 0.58 | ** | 0.64 | ** | 0.95 | |
| | SK | | 0.95 | | 1.14 | | 1.71 | ** |
| | SL | | 1.03 | | 0.94 | | 1.59 | ** |
| | HU | | 0.9 | | 1.29 | ** | 1.82 | ** |

[†] Odds ratio < 1: less socially excluded than the reference group (<55); odds ratio > 1: more socially excluded than the reference group (<55)

*) Significant at p< 0.05 (z> 1.96)

**) Significant at p< 0.01 (z> 2.58)

*Source*: EU-SILC (2005).

*Table C4. Economic–structural exclusion index:[†] Differences between the elderly age groups and the reference group (<55) (odds ratios[††] on a dummy variable: 10% most excluded versus rest)*

| | <55 years = reference group | 55-64 years | 65-74 years | 75 years and older |
|---|---|---|---|---|
| | | Odds ratio | Odds ratio | Odds ratio |
| Northern Europe | DK | 0.41 ** | 0.36 ** | 0.35 ** |
| | NO | 0.40 ** | 0.38 ** | 0.30 ** |
| | SE | 0.52 ** | 0.55 * | 0.28 ** |
| | FI | 0.79 ** | 0.72 ** | 1.21 |
| | IS | 0.32 ** | 0.54 * | 0.25 ** |
| | NL | 0.69 ** | 0.38 ** | 0.30 ** |
| Continental | LU | 0.72 | 0.76 | 0.47 * |
| | AT | 0.72 ** | 0.68 ** | 1.12 |
| | BE | 0.74 * | 0.63 ** | 0.82 |
| | FR | 0.72 ** | 0.59 ** | 0.71 ** |
| | DE | 0.60 ** | 0.52 ** | 0.53 ** |
| Anglo-Saxon | IE | 0.82 | 0.69 ** | 0.84 |
| | UK | 0.52 ** | 0.34 ** | 0.26 ** |
| Mediterranean | ES | 1.03 | 1.19 * | 1.01 |
| | IT | 0.98 | 0.87 * | 1.04 |
| | PT | 1.46 ** | 1.91 ** | 3.32 ** |
| | GR | 1.33 * | 2.17 ** | 2.76 ** |
| | CY | 1.02 | 1.32 | 1.88 ** |
| Eastern Europe | EE | 1.24 | 1.12 | 1.63 ** |
| | LV | 1.10 | 0.98 | 1.22 |
| | LT | 1.26 | 1.32 * | 2.03 ** |
| | PL | 1.07 | 1.24 ** | 1.72 ** |
| | CZ | 0.63 ** | 0.75 * | 1.06 |
| | SK | 0.91 | 1.30 * | 1.62 ** |
| | SI | 1.11 | 1.26 * | 1.63 ** |
| | HU | 0.98 | 0.95 | 1.14 |

[†] Combined index of material deprivation and access to social rights

[††] Odds ratio < 1: less socially excluded than the reference group (<55); odds ratio > 1: more socially excluded than the reference group (<55)

*) Significant at $p < 0.05$ ($z > 1.96$)

**) Significant at $p < 0.01$ ($z > 2.58$)

*Source*: EU-SILC (2005).

# Annex D. Variation coefficients for social exclusion indices by country

*Table D1. Variation coefficient (=standard deviation/mean) for the exclusion indices, by country (2002 and 2005)*

| | Material deprivation | Access to social rights | Social participation | Economic–structural exclusion |
|---|---|---|---|---|
| DK | 1.4 | 1.8 | 0.4 | 1.1 |
| NO | 1.5 | 1.8 | 0.5 | 1.1 |
| SE | 1.3 | 1.8 | 0.5 | 1.1 |
| FI | 1.1 | 2.6 | 0.4 | 1.1 |
| IS | 1.1 | 1.4 | – | 0.9 |
| NL | 1.1 | 1.4 | 0.5 | 1.0 |
| LU | 1.1 | 2.1 | 0.4 | 1.2 |
| AT | 1.0 | 2.5 | 0.4 | 1.1 |
| BE | 1.1 | 2.2 | 0.4 | 1.1 |
| FR | 1.1 | 2.3 | 0.3 | 1.0 |
| DE | 1.1 | 1.7 | 0.4 | 1.0 |
| IE | 1.1 | 2.4 | 0.4 | 1.0 |
| UK | 1.1 | 1.6 | 0.4 | 0.9 |
| ES | 0.8 | 1.5 | 0.3 | 0.8 |
| IT | 0.9 | 1.6 | 0.3 | 0.9 |
| PT | 0.8 | 1.7 | 0.3 | 0.9 |
| GR | 0.8 | 1.7 | 0.2 | 0.8 |
| CY | 0.7 | 1.7 | – | 0.7 |
| EE | 0.9 | 1.3 | – | 0.8 |
| LV | 0.6 | 1.1 | – | 0.6 |
| LT | 0.6 | 1.1 | – | 0.7 |
| PL | 0.6 | 1.5 | 0.2 | 0.7 |
| CZ | 0.8 | 2.1 | – | 0.8 |
| SK | 0.6 | 2.2 | – | 0.8 |
| SI | 0.8 | 2.3 | 0.3 | 0.9 |
| HU | 0.7 | 1.7 | 0.2 | 0.8 |

*Sources*: Eurostat (EU-SILC, 2005) and ESS (2002).

# Annex E. Correlation between exclusion indices and risk factors

*Table E1. Correlation between the index for material deprivation[†] and some risk factors[††] for the population aged 55+, by country (Pearson correlation coefficient[†††])*

| | Gender | Living alone | Education level | Health | Income |
|---|---|---|---|---|---|
| DK | -0.04 | 0.21 | -0.09 | 0.21 | -0.22 |
| NO | -0.07 | 0.22 | -0.18 | 0.26 | -0.20 |
| SE | -0.08 | 0.23 | -0.07 | 0.22 | -0.23 |
| FI | -0.04 | 0.23 | -0.13 | 0.25 | -0.28 |
| IS | ns | 0.15 | 0.10 | 0.25 | -0.27 |
| NL | -0.04 | 0.15 | -0.22 | 0.25 | -0.31 |
| LU | ns | 0.09 | -0.19 | 0.28 | -0.36 |
| AT | -0.07 | 0.18 | -0.21 | 0.23 | -0.29 |
| BE | -0.08 | 0.23 | -0.16 | 0.26 | -0.32 |
| FR | -0.06 | 0.16 | -0,10 | 0.22 | -0.32 |
| DE | -0.05 | 0.19 | -0.12 | 0.19 | -0.36 |
| IE | ns | 0.11 | -0.18 | 0.26 | -0.29 |
| UK | ns | 0.12 | -0.15 | 0.22 | -0.21 |
| ES | -0.06 | 0.05 | -0.21 | 0.24 | -0.28 |
| IT | -0.05 | 0.08 | -0.20 | 0.23 | -0.33 |
| PT | -0.10 | 0.17 | -0.30 | 0.32 | -0.44 |
| GR | -0.09 | 0.12 | -0.27 | 0.28 | -0.37 |
| CY | -0.06 | 0.06 | -0.31 | 0.31 | -0.36 |
| EE | -0.08 | 0.22 | -0.18 | 0.22 | -0.48 |
| LV | -0.12 | 0.21 | -0.21 | 0.28 | -0.47 |
| LT | -0.08 | 0.24 | -0.12 | 0.22 | -0.42 |
| PL | -0.06 | 0.13 | -0.20 | 0.21 | -0.45 |
| CZ | -0.04 | 0.14 | -0.19 | 0.22 | -0.37 |
| SK | ns | 0.05 | -0.15 | 0.23 | -0.28 |
| SI | -0.07 | 0.18 | -0.28 | 0.30 | -0.42 |
| HU | -0.09 | 0.11 | -0.23 | 0.25 | -0.40 |

[†] A higher index score means more exclusion (more material deprivation)

[††] Coding of risk factors:
single – dummy variable (1=living alone (no partner, no other household members));
gender – dummy variable (1=male);
education level – 1=(pre) primary – 5=(first stage of) tertiary;
health – 1=very good – 4=very bad; and
income– the logarithm of the equivalised disposable household income in euros (in PPP).

[†††] Coefficients significant at $p < 0.05$; ns = not significant

*Source*: EU-SILC (2005) (SCP treatment).

*Table E2. Correlation between the index for access to social rights[†] and some risk factors,[††] population aged 55+, by country (Pearson correlation coefficient[†††])*

| | Gender | Living alone | Education level | Health | Income |
|---|---|---|---|---|---|
| DK | ns | 0.10 | ns | 0.05 | -0.07 |
| NO | ns | 0.15 | -0.04 | 0.19 | -0.08 |
| SE | ns | 0.09 | ns | 0.16 | -0.06 |
| FI | ns | 0.12 | -0.06 | 0.11 | -0.14 |
| IS | ns | 0.07 | ns | ns | ns |
| NL | ns | 0.08 | ns | 0.12 | -0.07 |
| LU | ns | 0.14 | -0.09 | 0.15 | -0.19 |
| AT | -0.04 | 0.16 | -0.12 | 0.15 | -0.13 |
| BE | ns | 0.16 | -0.09 | 0.16 | -0.14 |
| FR | ns | 0.08 | -0.08 | 0.12 | -0.16 |
| DE | ns | 0.07 | -0.06 | 0.11 | -0.14 |
| IE | 0.05 | 0.14 | -0.06 | 0.09 | -0.12 |
| UK | ns | ns | 0.04 | 0.07 | -0.03 |
| ES | ns | 0.04 | -0.06 | 0.10 | -0.10 |
| IT | -0.04 | 0.08 | -0.11 | 0.17 | -0.15 |
| PT | -0.06 | 0.17 | -0.13 | 0.20 | -0.24 |
| GR | -0.05 | 0.08 | -0.18 | 0.19 | -0.24 |
| CY | -0.04 | 0.08 | -0.17 | 0.17 | -0.17 |
| EE | ns | 0.04 | -0.27 | 0.16 | -0.29 |
| LV | ns | 0.04 | -0.27 | 0.11 | -0.30 |
| LT | ns | 0.10 | -0.38 | 0.16 | -0.38 |
| PL | -0.05 | 0.14 | -0.26 | 0.16 | -0.29 |
| CZ | ns | 0.10 | -0.11 | 0.13 | -0.18 |
| SK | -0.04 | 0.11 | -0.18 | 0.12 | -0.16 |
| SI | ns | 0.10 | -0.16 | 0.12 | -0.21 |
| HU | -0.04 | 0.11 | -0.26 | 0.13 | -0.29 |

[†] A higher index score means more exclusion (=lower access to social rights)

[††] Coding of risk factors:

single – dummy variable (1=living alone (no partner, no other household members));

gender – dummy variable (1=male);

education level – 1=(pre) primary – 5=(first stage of) tertiary;

health – 1=very good – 4=very bad; and

income – the logarithm of the equivalised disposable household income in euros (in PPP).

[†††] Coefficients significant at $p < 0.05$; ns = not significant

*Source*: EU-SILC (2005) (SCP treatment).

*Table E3. Correlation between the index for social participation[†] and some risk factors,[††] population aged 55+, by country (Pearson correlation coefficient[†††])*

| | Gender | Living alone | Education level | Health | Income |
|---|---|---|---|---|---|
| DK | ns | ns | -0.20 | 0.25 | -0.17 |
| NO | ns | 0.12 | -0.24 | 0.23 | -0.25 |
| SE | ns | 0.12 | -0.20 | 0.15 | -0.22 |
| FI | ns | 0.08 | -0.24 | 0.25 | -0.17 |
| NL | -0.08 | 0.13 | -0.27 | 0.24 | -0.22 |
| LU | ns | 0.14 | -0.24 | 0.22 | -0.24 |
| AT | -0.17 | 0.17 | -0.29 | 0.34 | -0.22 |
| BE | -0.16 | 0.17 | -0.25 | 0.25 | -0.21 |
| FR | ns | ns | -0.27 | 0.21 | -0.31 |
| DE | -0.11 | 0.19 | -0.22 | 0.29 | -0.28 |
| IE | -0.11 | 0.14 | -0.34 | 0.26 | -0.36 |
| UK | ns | ns | -0.27 | 0.22 | -0.31 |
| ES | -0.08 | 0.13 | -0.26 | 0.28 | -0.11 |
| IT | -0.14 | ns | -0.28 | 0.31 | -0.32 |
| PT | -0.18 | 0.10 | -0.27 | 0.30 | -0.15 |
| GR | -0.17 | 0.10 | -0.28 | 0.32 | -0.20 |
| PL | ns | 0.13 | -0.22 | 0.31 | -0.21 |
| SI | -0.20 | ns | -0.27 | 0.23 | -0.25 |
| HU | -0.09 | 0.11 | -0.16 | 0.27 | -0.20 |

[†] A higher index score means more exclusion (=low social participation)

[††] Coding of risk factors:
single – dummy variable (1=living alone (no partner, no other household members));
gender – dummy variable (1=male);
education level – 1=not completed primary education – 5=(first stage of) tertiary;
health – 1=very good – 5=very bad; and
income in 12 classes from low to high.

[†††] Coefficients significant at $p < 0.05$; ns = not significant

*Source:* ESS (2002) (SCP treatment).

# Annex F. Logistic regression models for material deprivation and social rights

Some additional logistic regression analyses have been performed for the various countries. Table F1 presents the results regarding material deprivation, while Table F2 contains the outcomes for the dimension of access to social rights.

*Table F1. Country-specific logistic regression analyses on material deprivation (dummy variable: 10% most excluded versus the rest among the population aged 55+; unstandardised coefficients)*[†]

| | | Age | Age²x 100 | Single | Gender | Education level | Health | Log income | Constant | $R^2$ |
|---|---|---|---|---|---|---|---|---|---|---|
| Northern Europe | DK | .03 | -.08 | **.93** | .045 | -.18 | **.51** | **-1.72** | 15.00 | .13 |
| | NO | .13 | -.17 | **1.13** | -.40 | **-.74** | **.59** | **-.96** | 6.52 | .18 |
| | SE | .07 | -.11 | **1.15** | **-.49** | -.11 | **.57** | **-.96** | 5.86 | .13 |
| | FI | -.20 | .11 | **.82** | -.09 | .07 | **.64** | -.89 | 12.67 | .12 |
| | IS | .23 | -.22 | .26 | .10 | .22 | **.60** | **-1.55** | 5.81 | .13 |
| | NL | -.05 | -.01 | **.76** | -.00 | **-.52** | **.65** | **-1.15** | 11.82 | .14 |
| Continental | LU | -.16 | .08 | **.82** | -.04 | -.27 | **.60** | **-2.38** | 27.31 | .22 |
| | AT | -.21 | .13 | **.89** | -.11 | ***-.55*** | **.52** | **-.94** | ***14.49*** | .13 |
| | BE | -.08 | .00 | **1.16** | -.24 | -.04 | **.65** | **-1.67** | ***16.68*** | .17 |
| | FR | .26 | ***-.24*** | **1.14** | -.19 | -.05 | **.59** | **-.89** | -1.97 | .13 |
| | DE | **-.39** | **.26** | **.55** | .08 | -.13 | **.50** | **-1.43** | **24.36** | .12 |
| Anglo-Saxon | IE | -.25 | .12 | **.55** | **-.31** | **-.24** | **.71** | **-1.14** | **18.70** | .16 |
| | UK | -.01 | -.04 | **.73** | -.04 | **-.35** | **.55** | **-.46** | 3.79 | .10 |
| Southern Europe | ES | .05 | -.07 | .27 | .02 | **-.27** | **.49** | **-.66** | 2.16 | .07 |
| | IT | -.15 | .07 | **.26** | -.01 | **-.29** | **.68** | **-.87** | **11.29** | .10 |
| | PT | -.12 | .05 | ***.59*** | .00 | -.56 | **.89** | **-.92** | 7.85 | .14 |
| | GR | ***-.40*** | .27 | **.46** | -.18 | **-.36** | **.52** | **-.86** | **19.24** | .11 |
| | CY | -.21 | .11 | -.10 | .20 | -.21 | **.59** | **-.72** | 12.00 | .08 |
| Eastern Europe | EE | -.15 | .08 | ***.42*** | ***-.38*** | -.15 | **.59** | **-2.15** | **18.65** | .18 |
| | LV | -.23 | .14 | .33 | ***-.37*** | **-.20** | **.76** | **-1.32** | ***14.61*** | .13 |
| | LT | .08 | -.09 | **.60** | .06 | -.22 | **.46** | **-1.42** | 5.91 | .14 |
| | PL | -.10 | .04 | **.32** | -.12 | **-.16** | **.64** | **-1.33** | **10.90** | .13 |
| | CZ | -.31 | .21 | .19 | .04 | **-.37** | **.48** | **-2.08** | **25.88** | .10 |
| | SK | .14 | -.11 | -.12 | .12 | -.15 | **.49** | **-1.29** | 2.61 | .05 |
| | SL | -.14 | .08 | **.70** | .27 | **-.28** | **.57** | **-1.21** | 13.06 | .15 |
| | HU | .14 | -.14 | .08 | -.16 | **-.30** | **.67** | **-2.03** | 9.32 | .14 |

[†] Coding of predictors:

age in years;

single – dummy variable (1=living alone (no partner, no other household members));

gender – dummy variable (1=male);

education level – 1=(pre) primary – 5=(first stage of) tertiary;

health – 1=very good – 4=very bad; and

log income – the logarithm of the equivalised disposable household income in euros (in PPP).

*Note*: Figures in **bold** are significant at p<0.01; figures in ***bold italic*** are significant at p<0.05

*Source*: EU-SILC (2005).

*Table F2. Country-specific logistic regression analyses on access to social rights (dummy variable: 10% most excluded versus the rest among the population aged 55+; unstandardised coefficients)*[†]

| | | **Age** | **Age²x 100** | **Single** | **Gender** | **Education level** | **Health** | **Log income** | **Constant** | **$R^2$** |
|---|---|---|---|---|---|---|---|---|---|---|
| Northern Europe | DK | .08 | -.10 | **.67** | .19 | .03 | **.31** | ***-.66*** | 2.39 | .05 |
| | NO | -.03 | .01 | **.52** | .04 | -.10 | **.48** | -.16 | -.33 | .04 |
| | SE | .22 | -.19 | .10 | -.04 | .06 | **.55** | -.21 | 07.73 | .04 |
| | FI | -.01 | -.01 | ***.38*** | .04 | -.07 | **.56** | ***-.33*** | .64 | .06 |
| | IS | ***-.91*** | .64 | -.08 | -.16 | .51 | -.01 | **-.35** | ***30.99*** | .04 |
| | NL | -.25 | .17 | **.53** | -.26 | .14 | **.42** | **-.50** | 9.50 | .04 |
| Continental | LU | -.03 | -.01 | ***.69*** | .26 | **-.37** | ***.29*** | **-1.27** | 12.22 | .11 |
| | AT | -.11 | .07 | **.80** | .01 | ***-.26*** | **.48** | ***-.37*** | 4.79 | .06 |
| | BE | -.26 | .18 | **.69** | -.01 | -.01 | **.34** | **-.71** | 13.09 | .05 |
| | FR | -.00 | -.00 | ***.32*** | ***.20*** | -.02 | **.44** | **-.51** | 1.99 | .04 |
| | DE | **-.34** | ***.22*** | **.38** | **.27** | ***-.13*** | **.35** | **-.68** | **16.25** | .05 |
| Anglo-Saxon | IE | **-.46** | ***.32*** | **.73** | ***.23*** | .02 | **.33** | **-.44** | **16.80** | .05 |
| | UK | -.01 | -.00 | .05 | -.03 | .06 | **.15** | -.08 | -1.00 | .00 |
| Southern Europe | ES | -.05 | .03 | **.11** | -.09 | -.07 | **.33** | **-.32** | 1.79 | .02 |
| | IT | -.15 | .11 | **.29** | .03 | **-.14** | **.57** | **-.40** | 5.34 | .05 |
| | PT | -.41 | .33 | **.71** | .16 | ***-.54*** | **.57** | **-.46** | 12.48 | .10 |
| | GR | -.11 | .09 | .12 | -.13 | **-.68** | **.27** | **-.81** | 8.01 | .10 |
| | CY | -.28 | .19 | .09 | .17 | **-.30** | **.26** | -.32 | 10.09 | .03 |
| Eastern Europe | EE | -.07 | .05 | -.07 | ***.30*** | **-.47** | **.43** | **-1.30** | 10.20 | .11 |
| | LV | -.33 | .24 | -.12 | -.11 | **-.35** | **.41** | **-.94** | ***15.37*** | .08 |
| | LT | -.26 | .17 | .09 | .18 | **-.75** | .25 | **-1.18** | ***16.38*** | .13 |
| | PL | -.12 | .12 | **.62** | **.24** | **-.72** | **.19** | **-1.11** | **9.74** | .17 |
| | CZ | -.30 | .22 | .35 | .13 | -.20 | **.49** | **-.93** | ***14.47*** | .05 |
| | SK | -.20 | .13 | .26 | .21 | **-.64** | **.53** | **-.79** | 11.11 | .07 |
| | SL | ***-.40*** | ***.30*** | .34 | **.50** | **-.24** | **.36** | ***-.38*** | ***13.56*** | .05 |
| | HU | -.09 | .05 | **.36** | ***.22*** | **-.99** | .17 | **-1.63** | **15.53** | .16 |

[†] Coding of predictors:

age in years;

single – dummy variable (1=living alone (no partner, no other household members));

gender – dummy variable (1=male);

education level – 1=(pre) primary – 5=(first stage of) tertiary;

health – 1=very good – 4=very bad; and

log income – the logarithm of the equivalised disposable household income in euros (in PPP).

*Note*: Figures in **bold** are significant at p<0.01; figures in ***bold italic*** are significant at p<0.05

*Source*: EU-SILC (2005).

# Annex G. Additional country variables used in multilevel analyses

*Table G1. Indicators for 26 European countries (2005)*

| | GDP per capita in PPS (EU-27=100) | Income inequality[†] | Expenditure on social protection per head in PPS | Life expectancy at 60 in years (male) | Education level[††] |
|---|---|---|---|---|---|
| Austria | 129.0 | 3.8 | 8,288.3 | 20.8 | 80.6 |
| Belgium | 121.3 | 4.0 | 8,248.9 | 20.4 | 66.1 |
| Cyprus | 92.9 | 4.3 | 3,807.1 | 20.8 | 66.6 |
| Czech Republic | 76.7 | 3.7 | 3,291.8 | 17.8 | 89.9 |
| Germany | 115.3 | 3.8 | 7,529.3 | 20.7 | 83.1 |
| Denmark | 127.2 | 3.5 | 8,497.6 | 20.0 | 81.0 |
| Estonia | 63.0 | 5.9 | 1,760.8 | 15.9 | 89.1 |
| Spain | 103.1 | 5.4 | 4,775.8 | 21.1 | 48.5 |
| Finland | 115.2 | 3.6 | 6,833.4 | 20.5 | 78.8 |
| France | 112.1 | 4.0 | 8,044.0 | 21.5 | 66.4 |
| Greece | 96.5 | 5.8 | 5,139.1 | 21.0 | 60.0 |
| Hungary | 64.4 | 4.0 | 3,165.3 | 16.2 | 76.4 |
| Ireland | 144.0 | 5.0 | 5,856.5 | 20.8 | 65.2 |
| Iceland | 87.0 | 3.5 | 6,556.3 | 22.3 | 62.9 |
| Italy | 105.0 | 5.6 | 6,225.6 | 21.4 | 50.4 |
| Lithuania | 53.3 | 6.9 | 1,593.4 | 15.6 | 87.6 |
| Luxembourg | 264.7 | 3.8 | 12,946.2 | 20.4 | 65.9 |
| Latvia | 50.0 | 6.7 | 1,389.5 | 15.0 | 84.5 |
| The Netherlands | 131.3 | 4.0 | 8,305.4 | 20.4 | 71.8 |
| Norway | 180.1 | 4.1 | 9,524.0 | 21.3 | 88.2 |
| Poland | 51.3 | 6.6 | 2,236.2 | 17.5 | 84.8 |
| Portugal[†††] | 75.5 | 6.9 | 3,997.8 | 19.9 | 26.5 |
| Sweden | 123.9 | 3.3 | 8,528.9 | 21.5 | 83.6 |
| Slovenia | 87.0 | 3.4 | 4,539.4 | 18.7 | 80.3 |
| Slovakia | 60.6 | 3.9 | 2,258.4 | 20.5 | 87.9 |
| UK | 119.4 | 5.8 | 7,176.4 | 20.9 | 71.7 |

[†] Ratio of total income received by the 20% of the population with the highest income to that received by the 20% of the population with the lowest income

[††] Total population having completed at least upper secondary education (in %, aged 25-64 year)

[†††] Portuguese data on social protection expenditure and life expectancy relate to 2004

*Source*: Eurostat website (2008).