

Ageing in Europe – Supporting policies for an inclusive society

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Edited by
Axel Börsch-Supan, Thorsten Kneip, Howard Litwin,
Michał Myck and Guglielmo Weber

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1 SHARE: a European policy device for inclusive ageing societies

1.1 Social exclusion among the 50+ in Europe: capturing a complex concept in socio- economic data

Europe in a changing world – inclusive, innovative and reflective societies. This is Challenge No.6 in the European Commission's new research programme Horizon 2020. Being inclusive, innovative and reflective is particularly challenging in times of demographic change which stresses economic, political and social resources (Börsch-Supan et al. 2014). Challenge No.6 first aims to gain a greater understanding of the societal changes in Europe and, through analysis, develop social, economic and political inclusion and positive inter-cultural dynamics in the EU and international partners. The second aim is to foster the development of innovative societies and policies in Europe specifically addressing the development of new forms of innovation that can play a big role in overcoming the crisis and creating opportunities for growth. The third aim is to contribute to an understanding of Europe's intellectual basis, its history and the many European and non-European influences.

This volume provides evidence on the degree of social and economic inclusion among the ageing European populations. It is based on the fifth wave of the Survey of Health, Ageing and Retirement in Europe (SHARE). SHARE collects detailed information on European individuals aged 50+ and makes it available to researchers and policy-makers. A description of SHARE is contained in Börsch-Supan et al. (2013). The SHARE enterprise allows researchers from across Europe and elsewhere to address key questions that are relevant to the achievement of active and healthy ageing in a socially inclusive environment.

The notion of "social inclusion" has an intuitive appeal which makes it a quite popular concept in contemporary policy discussions. This holds in particular as its opposite, social and economic exclusion, is still present even in the rich countries of Europe and has many faces. Poverty has increased in the aftermath of the economic crisis, especially in Southern and Eastern Europe. The European

Union has, in fact, made a formal commitment in its Europe 2020 strategy to bring at least 20 million people out of poverty and exclusion by the year 2020. Age discrimination, while proscribed by European law, is still embedded in many national regulations and in everyday life. While references to social inclusion figure prominently in many national policy agendas, social isolation is prevalent among the oldest old in all EU member states.

Intuitive as it may be, the concept of social exclusion has been approached from a number of different directions and its measurement is far from being straightforward. Despite several important advances concerning its measurement (e.g. Chakravarty & D'Ambrosio 2006), there is still ongoing debate as to which aspects of people's lives the construct of "social inclusion" should cover and what is the best analytical approach for understanding its nature and its effects. The main unifying theme in the literature on the subject seems to be that social inclusion is a multi-dimensional phenomenon. Hence, if the objective of public policy is to advance people's quality of life, a broad and comprehensive set of measures is needed in order to take into account all the relevant aspects of their lives.

This is exactly the approach which SHARE has taken in its fifth wave. SHARE has developed a broad set of tools which capture deprivation in a number of important aspects of people's lives. We expect, therefore, to be able to contribute to the debate on social inclusion in a number of unique ways:

- Firstly, the implementation of the survey in SHARE's Wave 5 added new items that focus on aspects of deprivation that are specific to the target age group of the SHARE survey (see Myck et al. 2015).
- Secondly, the new items were designed from the start to allow international comparison and to provide the unique opportunity to examine the degree of deprivation and exclusion of persons aged 50 and older at the European level (see chapters 3 and 4).
- Thirdly, as is demonstrated in many chapters in this volume, the multidisciplinary character of SHARE and the measures of deprivation and social exclusion that were derived on the basis of the new items in Wave 5 (see chapters 5 and 6) can be combined to shed light on the relationship between social exclusion and other important aspects of people's lives, particularly health (chapters 9, 11, and 28), but also intergenerational support (chapter 14), migration background (chapter 18), and unmet need for care (chapters 17 and 30).
- Finally, SHARE is a cross-national longitudinal study, which observes the same people over time and under different and varying social and economic conditions. These rich data offer many opportunities to study specific aspects of deprivation or exclusion in the older population. While the focus on mul-

tidimensional deprivation, which is prominently featured in SHARE Wave 5, restricts many analyses presented in this book to a cross-section for the time being, others make use of the longitudinal nature of the data by concentrating on specific aspects of deprivations (e.g. the ability to make ends meet, see chapter 12).

This introduction continues by shedding light on specific conceptual aspects of social inclusion (Sections 1.2–1.4). They form the framework for the following 32 chapters in this volume which have been written by authors from almost all 21 SHARE countries and the many research fields for which SHARE data is being collected: demography, economics, epidemiology, gerontology, biology, medicine, psychology, public health, health policy and sociology. Section 1.5 summarises these chapters and puts them in the context of the many dimensions of social inclusion.

It is our hope that the evidence provided in this book will stimulate further research and can contribute to the debate concerning policies that are aimed at attaining more “inclusive” societies.

1.2 Deprivation, capability failures and social exclusion

There is much evidence that simple measures of financial resources based on current income information provide only limited insight regarding well-being at the individual level (Nolan & Whelan 1996, 2010, Adena & Myck 2014), and that a much broader perspective is necessary if we are interested in understanding “impoverished lives, and not just (...) depleted wallets” (Sen 2000, p. 3). It is argued by Sen (2000), in fact, that one should approach the concept of social exclusion from the perspective of capability deprivation. This necessarily involves a multi-dimensional perspective on poverty which accounts, as well, for the social aspects of individuals’ lives, a perspective in which high importance is given to people’s ability to interact freely with others.

The origin of the term “social exclusion” can be attributed to Rene Lenoir, Secretary of State for Social Action in the Chirac government, who in 1974 published “Les Exclus: Un Français sur dix” (Silver 1994). In the original understanding of the term, social exclusion had a strong association with the failure of the welfare state to integrate individuals into the social fabric. The socially excluded were the poor, the unemployed, disabled people, abused children, drug addicts, single parents, and other groups of persons facing misfortune. This perspective

stemmed from the French tradition with its emphasis on social bonds and the responsibility of the state for social integrity.

The French perspective on social exclusion has been contrasted with the liberal, Anglo-Saxon approach to the same concept, in which the notion of exclusion reflects discrimination and denied participation in exchange and interaction (Silver 1994). In addition to the French (“solidarity”) and the Anglo-Saxon (“specialisation”) paradigms, Silver (1994) also distinguishes the so-called “monopoly paradigm” of social exclusion, which is particularly important in Northern European countries. This view emphasises group monopolies and hierarchical power relations as sources of restrictions that result in exclusion.

While social exclusion became an issue of prominent policy focus in Britain in the late 1990s, the dominant approach to the understanding of the concept in the European Union still seems to draw more on the French tradition that is based on the “solidarity” paradigm. Thus, the main focus today is on the perception of social exclusion as a rupture of social bonds and an emphasis on the solidaristic nature of society (de Haan 2000). From the point of view of poverty analysis, such an approach – with its emphasis on the importance of social relations – relates closely to a broad perception of material conditions and to relative deprivation. Sen’s (2000) capability framework is a further extension of such a perspective given its emphasis on full membership of society as a key aspect of well-being, and its stress on the relational roots of deprivation.

1.3 Social exclusion as limited social inclusion

A slightly different perspective on social exclusion is offered by the social capital theory, which places less weight on different aspects of deprivation, and focuses more on participation and social networks. In this case social exclusion can be conceptualised as being in a state of limited embeddedness in social networks at the national, local and/or personal levels. Social networks are the interpersonal environments to which people of all ages belong and from which they derive a range of resources and supports as well as challenges (Litwin 1996). Social networks are facilitated by the social capital that is differentially available to individuals in society. The OECD defines social capital as “networks together with shared norms, values and understandings that facilitate co-operation within or among groups” (Keeley 2007, p. 103). The construct of social capital has also been seen to reflect “the array of social contacts that give access to social, emotional, and practical support” (Gray 2009, p.6).

Social capital is a multifaceted field that is built on two mutually dependent components: norms and networks. “Norms” refer to such factors as trust in

others, reciprocity, shared values and confidence in the institutions that govern daily life. In this sense, social capital can help to solve the problem of the provision of public goods. Among the various shared norms, values, and beliefs, one can note particularly locally oriented norms that have special relevance for social inclusion and/or exclusion: perceptions of the physical environment, accessibility to facilities in the area, satisfaction with one's area of residence and, conversely, fear of crime and disorder. "Networks", in turn, reflect the degrees of contact that one maintains with others, such as family, friends and neighbours, the extent of organisational participation and the availability of a wide range of support. Such networks function at the interpersonal level (micro), at the neighbourhood or community levels (meso) and at the governmental and institutional levels (macro).

Social capital bonds individuals within the micro and meso levels, facilitating local trust and reciprocity as well as fostering common identity, all factors which augment social inclusion. Social capital also functions to bridge between persons from different backgrounds and organisations, at the meso level, as a means to increase generalised trust and reciprocity, another facet that contributes to inclusion. Finally, social capital also links people from various walks of life with those who have the authority and the power to structure daily life in society and its management. In other words, social capital links citizens with functionaries from the macro level. Such linkage is necessary in order to bolster both individual and general confidence in governmental and professional institutions, which constitute yet additional key components of social inclusion.

1.4 Ageing and social exclusion

Given the developments over the life course that are associated with ageing, there are clearly a number of factors which make social exclusion, whether perceived from the point of view of multi-dimensional deprivation or from the perspective of the social capital theory, an important concept upon which to focus in the policy debate related to the demographic transition, that is, the ageing of populations.

For example, despite the progressing ageing of the European population, ageing, at the individual level, is associated with an increasing likelihood of labour market exit, retirement and old age pension receipt. This may go hand in hand with an increased risk of deprivation due to reduced household income. But retirees may also face an increased risk of social isolation due to loss of work-related social contacts – which, in turn, might result in accelerated cognitive decline (Börsch-Supan & Schuth 2013). Against this background, inclusive policies should target at keeping older workers in the workforce as long as pos-

sible. This could possibly comprise the effective abolishment of ageism – where existing – but also of incentives for early retirement and a promotion of life-long training programmes. On the other hand, old age is characterised by increasing frailty and dependence. Thus, old age material deprivation and social exclusion could particularly arise from de facto low replacement rates and an unmet need for care. Against this background, early retirement could be seen as a relief and low deduction rates as a measure to combat old age poverty.

Moreover, among older adults beyond retirement age, and especially among those in the fourth age (which is characterised by increasing frailty and dependence), the nature and the degree of social inclusion become increasingly complex issues. This is because older people are not currently considered to constitute intrinsically connected components of the structure and the function of modern society. Rather, the older adults of today are often marginalised, socially speaking, and old age itself is seen as a role-less period that largely lacks content and purpose. This perception is increasingly at odds with social reality against the background of population ageing and related demographic changes.

Thus it seems that, especially with respect to older individuals, the measurement and monitoring of “social exclusion” in a broad sense might have crucial importance from the point of view of the design of policies that are aimed to ensure improvements in the level of well-being. The extension of the SHARE survey in Wave 5 to address this critical area of enquiry facilitates a complex and comprehensive approach to the analysis of social exclusion among persons aged 50 and older. It also offers a unique opportunity to construct comparable measures of social exclusion among the populations of 15 European countries (including Israel).

1.5 Social exclusion and deprivation and their concomitants among older Europeans: an overview

1.5.1 Material deprivation and social exclusion – extending analyses using SHARE Wave 5

The first section, edited by Michał Myck, addresses conceptual and methodological aspects involved in the measurement of different dimensions of social exclusion. While social exclusion is an intuitive concept, it presents significant challenges with regard to convincing and reliable reflection of its nature in a way suitable for quantitative analysis.

The two opening chapters of this section examine the most important new items of the SHARE Wave 5 interview which are used in the subsequent analysis. Maja Adena, Michał Myck and Monika Oczkowska begin with detailed examination of the information contained in new measures of material deprivation. The analysis shows that these additional elements of the survey bring important insights to the understanding of material circumstances of SHARE respondents. The measures, which cover information on the ability to afford a number of important expenses, in a way bridge the gap between subjective assessment of material conditions expressed in questions about the “ability to make ends meet” and objective measures of income and wealth. The new items have important advantages in terms of international comparability, and are shown by the authors to provide additional information over and above the subjective measures of material conditions with regard to the relationship of material circumstances and well-being.

The second chapter in the section by Kimberly J. Stoeckel and Howard Litwin looks at another aspect of exclusion related to accessibility to important local services such as a grocery store, a pharmacy, the general practitioner and a bank. The authors find significant variation with respect to accessibility between urban and rural areas and show that only about ten per cent of older Europeans have poor accessibility to these services. There is evidence of substantial variation in accessibility within countries and differences between country averages, which seem to be due largely to the proportion of the 50+ population who live in rural areas and the socio-economic composition of the population. Accessibility correlates positively with well-being and there is evidence that this relationship is stronger among urban residents. This suggests a particularly important role of service accessibility in cities and points towards significance of urban planning policy in determining the quality of life of older individuals.

The third and fourth chapters are authored by Marco Bertoni, Danilo Cavapozzi, Martina Celidoni and Elisabetta Trevisan. The authors focus on developing aggregate measures of material deprivation, which combine affordability items discussed in the first chapter in this section with other indicators of material well-being available in SHARE into a single index. An important aspect of this analysis is the sensitivity of the developed indices to different approaches with regard to weighting every element of a particular index. This is done using three distinct types of weights in chapter three. The authors reach the conclusion that while results in absolute terms are sensitive to the specific method used in the aggregation process, the chosen approach does not affect the country rankings with regard to the level of deprivation. They thus propose to apply the so called hedonic weighting in the derivation of the measure which is subsequently used in other chapters in this volume. This method, which is based on the relationship

of specific deprivation items with life-satisfaction measures, has the advantage that it can be applied for all countries in the SHARE sample. Using this approach the authors develop a material deprivation index in the fourth chapter of this section and validate it by examining its relationship to other measures of material well-being. They find substantial cross-country variation in the values of the index with lowest levels of material deprivation in Scandinavian countries and highest in Southern Europe, Slovenia and Estonia. Material deprivation is lower for higher educated individuals and decreases with age but is higher among those in poor health, respondents living in rural areas and older people living on their own.

In the fifth chapter of this section Michał Myck, Mateusz Najsztab and Monika Oczkowska propose an index of social deprivation and analyse it jointly with the material deprivation index from the fourth chapter. The social deprivation index is built using a similar approach to that used for the aggregate material deprivation measure and combines information on such characteristics as reading and writing skills, evaluation of local neighbourhood and the accessibility items examined by Stoeckel and Litwin in the second chapter of the section. The authors show that, unlike material deprivation which seems to decline with age, social deprivation is higher among those aged 65+ compared to the younger group aged 50-64. The two dimensions of deprivation, material and social, are combined into a measure of “severe deprivation” which is treated as an indicator of risk of two-dimensional social exclusion. Estonia, Israel and Italy are found to be the countries with the highest proportion of older individuals at risk of social exclusion. The indicator of social exclusion is strongly correlated with poor health and with hearing and eyesight impairments. It is lower among those with higher education and among households with income from work or retirement pension.

In the final chapter of the section Mateusz Najsztab, Andrea Bonfatti and Dominika Duda examine the material and social deprivation indices developed in earlier chapters against a number of macroeconomic indicators. The indices are set against national income per capita, income inequality and poverty rates as well as policy related measures regarding public expenditure on healthcare and social protection. Both material and social deprivation strongly relate to national income and inequality. However, while material deprivation correlates with the official levels of poverty rates among the 65+, no such correlation is found for social deprivation. This suggests that in attempts to address the problem of social exclusion non-material aspects of deprivation ought to be given more specific consideration by policymakers, and the potential policy measures should go beyond the narrow focus on incomes and material well-being. The authors also stress the importance of policy in the areas of social protection and healthcare

– countries with higher proportion of spending in these areas to GDP show substantially lower levels of material and social deprivation.

1.5.2 Deprivation and social exclusion: sources and implications

The second section, edited by Thorsten Kneip, opens the more content-oriented part of the book. The chapters in this section reflect on various possible sources and implications of different facets of social exclusion. It already gives an outlook on the scope of the following sections, which have a more in-depth look on social cohesion, employment, and health and health care.

Marco Bertoni, Martina Celidoni, and Guglielmo Weber open the section with an analysis of the social consequences of hearing impairment, a very common sensorial deficit among older people. Their study sheds some light on the reported association between hypoacusia and conditions like depression, functional limitations, and cognitive impairment and considers the potential mediating role of social exclusion in this relationship. Based on a longitudinal analysis of data from SHARE Waves 4 and 5, they find that the onset of hearing loss is accompanied by increased feelings of social exclusion and, to a lesser extent, also to reduced actual social participation. In fact, changes in social participation appear to be restricted to the oldest old and those with initially large social networks. Including previous evidence on the adverse effect of social isolation on mental health, the reported findings support the notion of feelings of exclusion and reduced social participation acting as pathways through which hypoacusia may affect.

The following analysis by Roméo Fontaine, Maribel Pino, Marine Jean-Baptiste, Aurore Philibert, Nicolas Briant, and Marie-Eve Joël makes use of the social deprivation measure developed in chapter six of this volume and offers a look on the risk of social deprivation and on the need for social support of older adults facing cognitive or physical limitations. A special feature of the analysis is the cognitive limitations measure employed, which has been developed to serve as a predictor for dementia in the absence of a clinical diagnosis. The authors find that cognitive and physical limitations seem to be similarly predictive risk factors for social deprivation. At the same time, cognitive and physical limitations are both related to the utilisation of formal and informal help from non-co-residents. Unlike older persons with physical limitations, those cognitively impaired or demented appear to be more dependent on constant help by a co-resident and are thus found to less likely live alone.

In the next chapter, Hannes Kröger and Rasmus Hoffmann elaborate on how the interplay of individual health and contextual economic factors may unexpect-

edly affect labour market outcomes – a central component of inclusion. Specifically, they investigate how poor health and a decline in employment are related to a discrepancy between the planned and the actual exit from the labour market. Using data from all available SHARE waves, they find that a decline in employment leads women to adjust the expected start of their pension payments more strongly than men. Further, women's ability to realise their plans is found to be considerably impeded by poor health and particularly so during an employment crisis. Healthy men and women appear to be similarly affected by employment decline. However, unlike men, women in poor health are found to be particularly affected. In other words, among the older workforce, women in poor health are the first ones to drop out of the labour market in the face of an employment crisis.

Stefan Listl and Hendrik Jürges investigate social inequality patterns in oral health, as measured by number of teeth. They argue that tooth status is a relevant marker of health and a useful measure to detect pathways between socio-economic status, health, and general well-being, particularly in older adulthood. Based on the SHARE data, the authors can show that oral health decreases steadily with age and differs substantially across countries. More interestingly, oral health is found to vary across countries with respect to level of average deprivation and within countries according to household income. Furthermore, their findings suggest that inequalities in oral health are partially attributable to treatment costs and associated dental attendance patterns, to a large extent in some countries, to a lesser extent in other countries. However, no clear geographical pattern or clustering according to welfare state regime could be detected.

Fabio Franzese, in his chapter, addresses the health-poverty and looks how different concepts of poverty are related to physical and mental health. One of the findings from this study is that it makes a difference whether income poverty or a broader measure of material deprivation, like the ability to make ends meet, is chosen. Particularly mental health is found to be more strongly correlated with deprivation than with income poverty, both in a cross-sectional and a longitudinal perspective. A second central finding is that poverty or deprivation appear to affect mental health, but not physical health when effectively controlling for time-constant unobserved confounders in a longitudinal analysis. Taken together, the findings suggest that, while cross-sectional results usually yield overestimated effects of poverty on health, there seems to be an effect on mental health. On the other hand, focusing on objective income-based measures of poverty instead of broader measures of deprivation might lead to an underestimation.

The closing chapter of this section, written by Kimberly J. Stoeckel and Howard Litwin, provides a nice transition to the next section. Based on the premise that socially cohesive neighbourhood environments facilitate social inclusion whereas deprived neighbourhood environments indicate social exclu-

sion they look at the interplay of social cohesion and neighbourhood deprivation in explaining older people's well-being. According to the authors, most older Europeans, irrespective of their country of residence, live in environmentally satisfactory neighbourhoods and have socially cohesive relationships with their neighbours. However, there are within-country differences in social cohesion and residents of socially cohesive neighbourhoods are found to report greater life satisfaction. Moreover, this is particularly true for those living in otherwise deprived neighbourhoods. The findings suggest that social ties become even more important for the subjective well-being of older people when they reside in otherwise deprived neighbourhoods.

1.5.3 Inclusion and social cohesiveness

The third section, edited by Howard Litwin, considers the extent and the concomitants of social inclusion among older Europeans mainly from the social capital perspective as described above. A state of social inclusion can be said to exist if people feel valued within the society in which they live, their basic needs are met and their differences, if there are any, are respected. A more proactive version of this same concept sees social inclusion as the actual undertaking of means by which to improve the conditions and the options for participation in society among individuals who may not be fully participating due to any number of reasons. The notion of social inclusion, therefore, reflects both a sense of social solidarity and a feeling of mutual responsibility as well as an active agenda to enhance, enlarge or otherwise augment the involvement of people in their social and inter-personal environments.

The converse of social inclusion is the extent to which social disadvantage and marginalisation reigns in a given society. Exclusion is a process by which certain individuals or entire communities of people are relegated to the fringes of society, denied access to basic rights and needed services, and prevented from integrating into the larger social fabric. This process can lead to profound alienation on the part of those excluded as well as to diminished prospects of prospering, whether personally or collectively. From this point of view, social inclusion can also be conceptualised as the absence of exclusion.

Christian Deindl and Martina Brandt open this section with an analysis of exchange patterns between older parents and their adult children. The exchange of time and money across generations can be said to reflect a state of inter-generational solidarity and, consequently, inter-generational inclusion. The analysis looks specifically at the effects of social exclusion on social exchange between the generations. The investigators find that socially excluded individuals exchange

less time and money than those who are socially included. This may lead to the older generation's losing its support function and potentially becoming a burden on the children (or on the state). Moreover, they reveal that countries with more developed welfare systems and those with lower social inequality are linked to higher levels of intergenerational exchange.

In the next chapter in this section, Sharon Shiovitz-Ezra examines the extent of loneliness among Europeans aged 50 and older. Loneliness is a marker of perceived social exclusion, while its absence underscores an increased sense of inclusion. The analysis reveals that loneliness is more prevalent in Southern and Eastern Europe than in Northern and Western European countries. The researcher also finds that loneliness is related to neighbourhood quality, and particularly to the social cohesion that exists at the neighbourhood level. Moreover, although neighbourhood quality and social cohesion are important among older adults in general, Shiovitz-Ezra shows that they are most important in relation to loneliness among the old-old. These are the very individuals who are most at risk of frailty and those who are most potentially in need of support.

Melanie Wagner and Martina Brandt combine these two important topics, exchange and loneliness, in their study of the association between caregiving and social inclusion in Europe. They consider, in this regard, whether adults who serve as the caregivers of disabled or otherwise frail older people feel lonelier than do persons who are not actively engaged as caregivers. Their findings underscore that caregivers aged 50+ do indeed feel lonelier than non-caregivers of the same age. They also reveal that the loneliness gap between those who provide such informal long-term care and those who do not differs across countries. Nevertheless, such heightened loneliness among the caregivers of frail older adults is lessened by the availability of formal care services.

The topic of elder care is also addressed in the chapter by Andrej Srakar, Maša Filipovič Hrast, Valentina Hlebec and Boris Majcen. Their study adds the component of formal care to that of informal care and ponders whether social exclusion is related to the absence of both (formal and informal care), a condition that they describe as “unmet need for long-term care.” The results of their analysis provide evidence that the level of social exclusion in the respective countries is indeed related to the extent of unmet long-term care need. Moreover, the magnitude of this association differs across countries. Specifically, countries in the Eastern European welfare regime show a stronger link between social exclusion and unmet long-term care need than is the case in countries that are characterised as having continental and social democratic welfare regimes.

The next chapter is the one by Christian Hunkler, Thorsten Kneip, Gregor Sand and Morten Schuth. They report on a study that considers whether people who migrated to their present country of residence in Europe (or whose parents

did) are less socially included today compared to their native born counterparts. Among the 21 per cent of persons aged 50 and older in the SHARE countries with a migration background (i.e. either they or at least one of their parents migrated), it seems that the first generation migrants are indeed the least included, whether materially or socially. Those whose parents migrated are also somewhat less included within the social fabric of their new countries compared to the native born, but only minimally so.

The final chapter in this section, written by Liudmila Antonova, Luis Aranda, Enkelejda Havari and Noemi Pace, considers social mobility among older Europeans. Their analysis compares current difficulties in making ends meet among the SHARE respondents to the extent of social and material deprivation that they experienced in their childhood, as a means for tracing mobility over time. They find that the lowest degree of mobility of any kind is observed in Spain and Italy. In terms of material deprivation, the populations in Denmark, Sweden, the Netherlands and Luxembourg have been the most socially mobile. In relation to social deprivation, on the other hand, Denmark and Germany seem to have provided its residents with the best opportunity to advance oneself, socially.

1.5.4 Employment, social inclusion and social protection

It is not by chance that the EU Commission's DG EMPL, as this directorate general is abbreviated, carries both employment and social inclusion in its full name, and covers many aspects of social protection. Except for those who are born with a silver spoon in their mouths, employment is the essential path to social inclusion for a society. From a sociological point of view, employment has an anchoring function which integrates workers into society while unemployment is often connected with social exclusion. From an economic point of view, employment is essential to finance our social protection systems which prevent poverty due to old-age or disability.

This section, edited by Axel Börsch-Supan with a lot of support by Thorsten Kneip, exploits the richness of the SHARE data to draw connections between several aspects of work and employment on the one hand and social and economic inclusion on the other hand. The papers show how living standards, assets, education, work conditions and policy intervention are influencing the interaction between employment and social inclusion. We thus observe a complex set of interactions and associations which should be interpreted quite carefully when causal attributions are concerned.

Andrea Bonfatti, Martina Celidoni and Guglielmo Weber begin this section by investigating the role played by assets to support the living standard of the (more

affluent) older population. They exploit the longitudinal dimension of the SHARE data and the fact that SHARE covers the most important years of the Great Recession: they analyse whether and how those households who were financially distressed in Wave 4 coped with their financial problems by liquidating their assets, real and financial, between Waves 4 and 5. Social inclusion comes into play as a resource of informal support which, as the paper shows, indeed reduces the probability of falling into financial distress.

Flavia Coda Moscarola, Anna Cristina d'Addio, Elsa Fornero and Mariacristina Rossi look at the same interaction between assets and living standards from a different angle. For most households, owner-occupied housing is the largest asset. They argue that a more efficient use of this housing wealth could protect a relevant segment of the older population from the risk of low living standards. Among the instruments that could be used to convert housing equity into cash, they point out that reverse mortgages have the advantage, at least for those households whose housing wealth is considerable relative to their income, of allowing the elderly to continue to live in their home thus maintaining the familiarity, memories and affective links, which are essential elements of social inclusion.

The next three papers take a direct look at the relation between employment and social inclusion. Mauro Mastrogiacomo and Michele Belloni start with the observation that those who work in an organisation, firm or institution, are typically more socially included than those who do not. So what happens when they are dismissed? They argue that transitions into self-employment could be a good option to get back into work if these workers do not find wage employment if – and this if is the main question of this paper – they indeed end up in a satisfying business. Looking at transitions from wage to self-employment, they find that those who shift into self-employment are the more motivated individuals who actually manage to maintain social inclusion. Hence, they conclude, social exclusion is not a likely outcome of shifts into self-employment later in life.

Michele Belloni, Agar Brugiavini, Elena Meschi and Giacomo Pasini investigate whether participation in training helps keeping older workers in employment. They look at training in Wave 4 to see whether this has precipitated changes in labour market status in Wave 5. Indeed, they find that those individuals who took part in training activities in the year prior to the Wave 5 interview are significantly less likely to leave the labour market. Training older workers may therefore prevent them from being exposed to the risk of poverty and social exclusion because training reduces human capital depreciation. Going one step further, the authors conclude that this also reduces the probability of lower pensions and/or early retirement and therefore material and social deprivation in old age.

The third paper on the link between employment and social inclusion takes both methodologically and substantively a very different angle. As opposed to

most other papers in this “First Results Book”, the paper by Axel Börsch-Supan, Benedikt Alt and Tabea Bucher-Koenen is not based on international comparisons across the SHARE countries but advertises a special feature of the SHARE data in some countries which SHARE wants to expand in the future, namely record linkage to administrative data. Such data is produced by internal processes, e.g. in social insurances, especially public pension systems. In terms of substance, the paper investigates whether the new early retirement pathway introduced in Germany has reached its aim to provide less privileged workers with relief from unhealthy work. The administrative data identifies the eligibility to this new form of early retirement while the SHARE data offers data on the household context, education and very detailed health measures. Their results may surprise: beneficiaries of the reform are not the underprivileged as claimed by the government. They actually have a higher average net household income, and there is no evidence that they are more often ill than non-beneficiaries. In fact, the opposite appears to be the case.

The final paper in this section by Danilo Cavapozzi, Elisabetta Trevisan and Guglielmo Weber investigates how the use of Personal Computers at work and PC literacy interrelates with job satisfaction and the intention to take early retirement, exploiting the new variables on the use of computer at work and the self-reported PC literacy included in the Wave 5 questionnaire. Their estimates show that individuals who have high PC skills and a job that requires the use of a PC are more satisfied and less likely to desire to retire as soon as possible compared to workers with low PC skills whose job requires using a Personal Computer.

1.5.5 Health and health care

The final section, edited by Guglielmo Weber, addresses some issues that are of particular interest to economists, social scientists and policy makers: the demand for and access to health care and long-term care to the ageing population.

Access to health care is the subject of the chapter by Tur-Sinai and Litwin on the reasons why older adults forego doctor visits, and the chapter by Jürges, that investigates the role played by health insurance. Inadequate health care provision may explain social gradients in health that are documented in Croda's chapter on pain and in Bohacek et al.'s chapter on the educational gradient in mortality. Provision of – and access to – long-term care are addressed in the remaining chapters.

The chapter by Aviad Tur-Sinai and Howard Litwin reports that a small but important minority of older adults forego doctor visits due to their cost and/or because of lengthy waiting time. Forgone health care is found to be related, first and foremost, to having limited financial means.

In a related chapter, Hendrik Jürges investigates income-related inequity in access to health care along three important dimensions: Subjective unmet need, catastrophic out-of-pocket expenses for health care, and satisfaction with basic health insurance coverage or the coverage in the national health system. He finds that insufficient access and lack of insurance coverage are most prevalent in poorer countries with low health care expenditures and in countries with large income inequalities. He also reports that there is an important socio-economic gradient in health insurance coverage and access to care in almost all countries and argues that this may contribute to social inequalities in health status.

In her chapter, Enrica Croda notes that chronic pain has an important impact on peoples' lives and is a fundamental dimension of well-being. She finds that significant fractions of the 50+ population are troubled by pain – women more than men, older individuals more than younger individuals. She reports the existence of a strong association between pain and social exclusion, measured by material or social deprivation. Her findings point to the need for public policy intervention promoting pain prevention and management strategies addressing the most vulnerable groups of the population.

Radim Bohacek, Laura Crespo, Pedro Mira and Josep Pijoan-Mas investigate the extent of long-term socio-economic inequality in health outcomes by computing survival rates as a function of age, gender and educational attainment across different European countries. Education may play a direct role in an individual's ability to access health care services and avoid behavioural risks, but the authors are more interested in its role as a measure of life-time socio-economic status. They find that lower education is associated with higher mortality rate, but the mortality-education gradient varies a lot across countries. In particular, Eastern European countries have a much more pronounced gradient than Northern and Southern countries – suggesting that the social insurance provided by the state (in the north) and by the family (in the south) have been effective in promoting access to health care. The gradient is also smaller for women than for men, but not in all countries.

The remaining chapters in this section investigate the highly policy relevant topic of long-term care: in fact, the combination of increased longevity and decreased fertility raise doubts about the ability to meet the increasing demand for long-term care services in the years to come. Anne Laferrère and Karel Van den Bosch analyse the data on long-term care needs (defined on the basis of missing abilities to carry out activities of daily living, ADLs and IADLs) and find that older people needing long-term care are more likely to suffer from both social and material deprivation than those without such needs. They also find that older people in countries where the responsibility for long-term care is mainly placed upon families are more likely to have unmet needs for care than their counter-

parts where the government takes on a larger part of the responsibility. For people requiring care, unmet need is associated with material and social deprivation, but at high levels of need, the association is only with social deprivation.

Ludovico Carrino and Cristina Elisa Orso focus on public home-based programmes of long-term care for older adults. They explore the determinants of access to formal home care taking into account the institutional regulations for public LTC programmes, which allow them to label individuals as “eligible” or “non-eligible” to in-kind/in-cash benefits, according to their medical status. They investigate potential “failures” of LTC programmes, which arise when vulnerable individuals who are legally entitled to receive formal service, do not receive any or when, conversely, individuals make use of home care even though they are not eligible for it. They find that eligibility matters and differs across countries and that education plays a crucial role in determining the access to formal home care for eligible individuals.

The two final chapters of this section investigate the role of private long-term care insurance policies in meeting the demand for long-term care by older adults in Europe. Tabea Bucher-Koenen, Johanna Schütz and Martin Spindler notice that relatively few 50+ Europeans hold private long-term care insurance (LTCI) policies – only in some countries (France and Israel) policy holders are not a small minority. These large country-specific variations in LTCI coverage rates are mainly related to differences in the institutional design of long-term care provision. By using the data from countries where LTCI markets are more developed they are able to estimate the determinants of demand for this type of insurance policy. They find that education, income, widowhood, good subjective health status and chronic conditions are positively related with the demand for LTCI policies. They also find that low LTCI coverage in other countries is not explained by lack of demand, rather by factors affecting supply.

Eric Bonsang and Jérôme Schoenmaeckers investigate one such factor, which is the role played by the family in meeting the demand for long-term care by older adults. In particular, they ask whether the availability of potential caregivers substitutes for long-term care insurance. In their analysis they find that children, especially daughters, play an important role in the supply of informal care, and that the availability of potential informal caregivers decreases the probability of purchasing private voluntary long-term care insurance. They argue that since the burden of care can have adverse effects on multiple dimensions of health and labour market outcomes of the caregivers, public policies should encourage the purchase of voluntary long-term care insurance by tax incentives, or even making this type of insurance mandatory.

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SHARE is a great example how much power a research infrastructure can generate if funders and researchers develop a common vision to improve the well-being of Europe's citizens. This volume is but one of the many contributions that SHARE has made to the scientific and policy making communities since its inception, and will continue to make in ever evolving ways, offering new insights into how to address the challenges of ageing populations.

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Maja Adena, Michał Myck and Monika Oczkowska

2 Material deprivation items in SHARE Wave 5 data: a contribution to a better understanding of differences in material conditions in later life

-
- ▶ New material deprivation items (MDIs) improve the understanding of individual economic situation in later life
 - ▶ MDIs have advantages over simple subjective measures of material conditions and can prove useful in analysis of the effect of economic circumstances on well-being
 - ▶ MDIs may prove valuable when constructing complex measures of material conditions and multidimensional measures of exclusion
-

2.1 Measuring material conditions in the 50+ population

In the literature on material conditions and poverty, researchers often use current income to approximate the economic situation of individuals despite the fact that there are many arguments why income at a certain point in time might be a poor reflection of material well-being. For practical reasons, income-based indicators are favoured over those based on the level of expenditure or assets mainly because of the difficulty of collecting such data, and such indicators are favoured over subjective measures of poverty because of the perceived lack of reliability and comparability of these measures across individuals and population groups.

As suggested, among others, by Adena and Myck (2014) and Nolan and Whelan (1996), income-based measures may be particularly poor proxies of material conditions among older people. Additionally, these measures are problematic in the context of international comparisons. On the one hand, incomes are difficult to compare across countries, even with corrections for the cost of living, and, on the other hand, relative country-specific measures of income-based poverty depend strongly on the overall income distribution. On top of that, factors such as disability or health problems are not accounted for in income-based measures. And yet, at the same level of income, these factors will strongly affect financial situation and their role will be particularly important among older individuals.

When accounting for some of the above deficiencies, measures based on subjective assessment of material conditions (usually asking: “How easily can the household make ends meet”?) may be affected by culture specific response behaviour. Apart from that, since they are usually collected as categorical variables, they may provide limited information with respect to the ability to distinguish between different levels of material conditions. Furthermore, when studying the relationships between material well-being and various outcomes of interest (health, life-satisfaction, etc.), subjective measures are likely to be endogenous to the outcomes analysed.

The above arguments were the key factors behind the decision to extend the SHARE battery of questions in Wave 5 to include a number of the so-called “material deprivation items” (MDIs). Deprivation items, which aim to capture the ability of households to afford specific types of goods and services, have been used increasingly in recent decades to complement income-based measures of material conditions (Atkinson et al. 2002, Nolan & Whelan 2010), and there has been a number of other surveys that have used deprivation indicators to identify insufficient material resources. These include, for example, the UK’s *Family Resources Survey*, the EU’s *Survey on Income and Living Conditions* and *Monitoring Poverty and Social Exclusion* conducted in Northern Ireland.

In chapters 5 and 6 in this volume these items are used to generate material deprivation and social exclusion measures. In this chapter, after a brief description of the SHARE Wave 5 MDIs in section 2.2 we examine how strongly they correlate with a general subjective measure of material conditions (section 2.3), and investigate to which extent they complement these measures in the analysis of broader aspects of quality of life (section 2.4).

2.2 Material deprivation items in SHARE Wave 5

For the purposes of this chapter, we used eleven items aimed at capturing material deprivation in SHARE Wave 5 (more information on the MDIs in SHARE can be found in Myck et al. 2015). These items are listed in Table 2.1 and cover aspects of the economic circumstances of households such as the ability to afford to eat meat or fruit more often than three times per week, the affordability of a number of specific items such as groceries and holidays away from home, the necessity to limit expenses on a number of items such as shoes or heating to keep living costs down, and the inability to see a doctor because of cost.

Table 2.1: Material deprivation items: SHARE Wave 5

Material deprivation item	Question text
MDI: meat	...[you] do not eat meat, fish or chicken more often [<i>than three times per week</i>] because: <i>you cannot afford to eat it more often</i>
MDI: fruit	...[you] do not eat fruits or vegetables more often [<i>than three times per week</i>] because: <i>you cannot afford to eat it more often</i>
MDI: groceries	Can your household afford to regularly buy necessary groceries and household supplies?
MDI: holiday	Could your household afford to go for a week long holiday away from home at least once a year?
MDI: expense	Could your household afford to pay an unexpected expense of [<i>AffordExpenseAmount</i>]* without borrowing any money?
MDI: clothing	<i>In the last twelve months, to help you keep your living costs down, have you...</i> ... continued wearing clothing that was worn out because you could not afford replacement?
MDI: shoes	... continued wearing shoes that were worn out because you could not afford replacement?
MDI: heating	... put up with feeling cold to save heating costs?
MDI: glasses	... gone without or not replaced glasses you needed because you could not afford new ones?
MDI: dentist	... postponed visits to the dentist?
MDI: doctor	Was there a time in the past 12 months when you needed to see a doctor but could not because of cost?

Notes: For details on question eligibility and questionnaire design see (Myck et al. 2015).

*[*AffordExpenseAmount*] corresponds to the country-specific relative poverty line defined at the level of 60 % of median monthly equivalised household income.

Source: SHARE Wave 5 questionnaire

In our subsequent analysis, the deprivation items are used as binary variables, with 1 indicating that the person is deprived and 0 otherwise. Given that most of the material deprivation questions were asked at the household level (see Myck et al. 2015), we only use one observation per household when analysing their correlation with subjective measure of material conditions in section 2.3. However, since we analyse individual level outcomes (general health, symptoms of depres-

sion, quality of life) in section 2.4, we have imputed information on subjective material conditions and on the MDIs for the other partner in the household in the case of couples.

2.3 Making ends meet and material deprivation

We first analyse the material deprivation items in relation to a general self-assessed measure of the financial situation. Respondents in SHARE, as in many other surveys (including HRS and ELSA), were asked about how easily their household could make ends meet (further referred to as “MEM”). This is a common approach to measure general financial conditions (e.g. Saunders et al. 1994), in which individuals are asked to evaluate their circumstances with respect to their specific needs.

In SHARE the self-assessed financial situation was measured on an ordered scale with four response categories: with great difficulty, with some difficulty, fairly easily and easily. Overall in the sample in SHARE Wave 5 34.9 per cent of households state that they make ends meet easily, 29.3 per cent fairly easily, 24.6 per cent with some difficulty and 11.2 per cent with great difficulty. These shares differ significantly between countries. For example, while in Estonia 61.7 per cent of households make ends meet with some or great difficulty, in Denmark only 12.6 per cent report being in this situation.

Correlation between making ends meet and material deprivation items

To assess the quality of the new deprivation items in SHARE Wave 5 we first analyse their correlation with the overall subjective assessment of financial circumstances. If we expect these items to reflect economic circumstances and we want to use them in the measurement of material conditions, we should first of all find strong correlations between MDIs and the making-ends-meet assessments. Apart from that, we would expect the different MDIs to pick up slightly different aspects of material conditions, so that each individual MDI provides additional information on material conditions on top of the other items. In Figure 2.1 we present the breakdown of the MEM categories for all 40,287 households in SHARE Wave 5 included in our analysis, and specify the proportions of households that are deprived with respect to selected six MDIs: the inability to afford meat, groceries, holidays and an unexpected expense, as well as having

to limit spending on heating and visits to the dentist. Figure 2.1 shows first of all, that there is substantial variation in the level of deprivation for these six items, both overall and across the specific MEM categories. For example only 12.8 per cent of households who make ends meet with great difficulty cannot afford to eat meat at least three times per week. But this is the case for as many as 89.4 per cent of households for the ability to afford to go on holiday and for 82.8 per cent of households for the ability to pay an unexpected expense. It is also interesting to note that, for these two items, a high proportion of households who find it relatively easy to make ends meet is unable to afford them (5.8 % and 4.9 % respectively).

Variation in the level of deprivation and in the degree of correlation between MEM and MDIs can also be seen from Figure 2.2. The figure demonstrates the relationship between the proportion of households deprived of the same six items used in Figure 2.1, and the proportion of those who make ends meet with some or great difficulty. First of all, the scatterplots suggest strong positive relationships between MEM and MDIs. Seemingly different cross-country patterns indicate that the relationship between the subjective assessment of material conditions and the MDIs may be different in different countries. It also indicates that the latter variables may potentially contain additional information. Figure 2.2 also shows a significant degree of variation both in MEM and the level of deprivation by country. For example, over half of the 50+ households in Estonia, Slovenia and Italy state that they have some or great difficulty in making ends meet. Interestingly, while more than every third household (36.1 %) in Estonia cannot afford to buy groceries, in Slovenia and Italy only 15.9 per cent and 11.8 per cent of households respectively are deprived with respect to this item. We can also see that, while similar proportions of households in the Czech Republic, Israel, and Spain declare difficulty with making ends meet, the proportions of households deprived with respect to specific items in these countries can be substantially different.

In what follows, we analyse the correlations between MEM and MDIs in more detail using the ordered probit model. Table 2.2 shows the results of the analysis with the four ordinal categories of the MEM variable regressed on deprivation items, controlling for a number of individual characteristics (age, age squared, single dummy, single female dummy, large household) and country dummies. As is indicated in Table 2.2, the estimated cut-off points are statistically different from each other, which justifies the use of an ordered outcome model on all four categories. As we can see, all coefficients on the MDIs are statistically significant, with all but one significant at 0.1 %. This result confirms very strong correlations between the MDIs and making ends meet. Marginal effects for the highest category of MEM (making ends meet with great difficulty) are presented

in Figure 2.3. The estimates show how much being deprived with respect to a specific MDI is related to the probability of declaring great difficulty in making ends meet. Inability to afford meat, for example, increases this probability by 2.2 percentage points (pp), while the inability to afford a holiday or an unexpected expense increases the probability by 8.0 pp and 6.6 pp respectively.

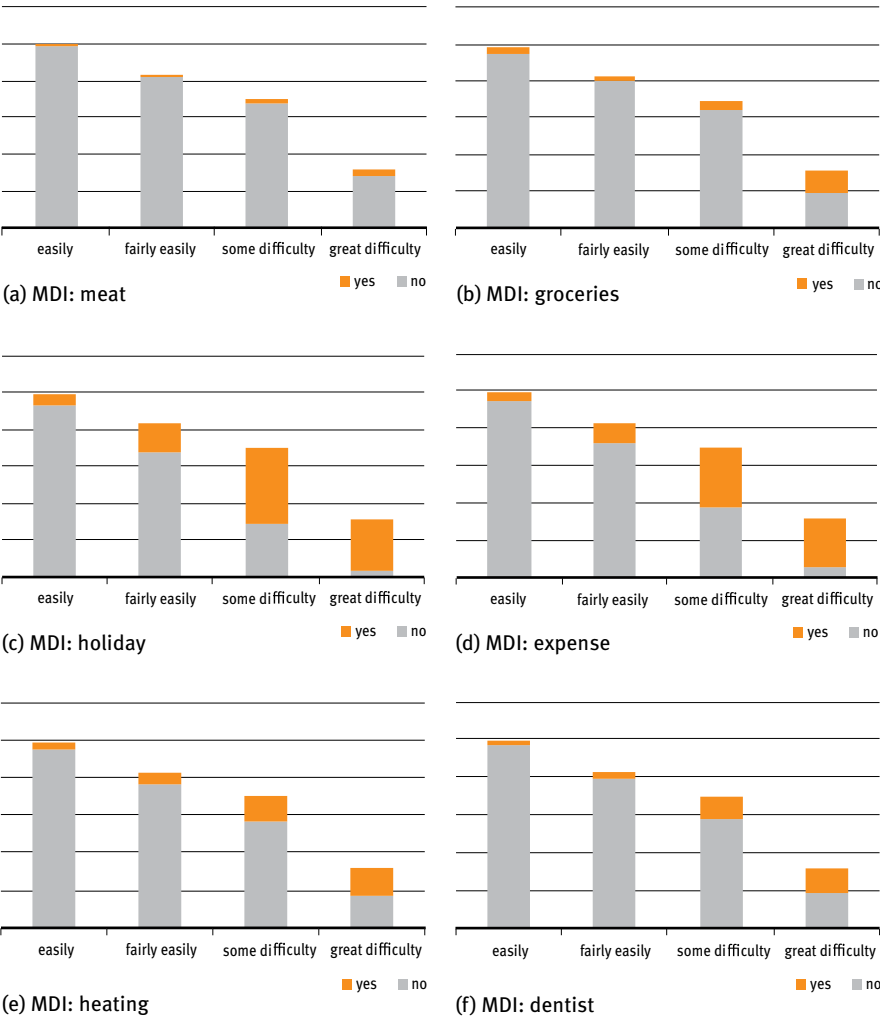


Figure 2.1: Making ends meet categories and the MDIs

Notes: Means at household level, restricted sample to sample used in the regressions, weighted with SHARE Wave 5 households weights; no. of observations: 40,287

Source: Authors' calculations using SHARE Wave 5 release 0 data

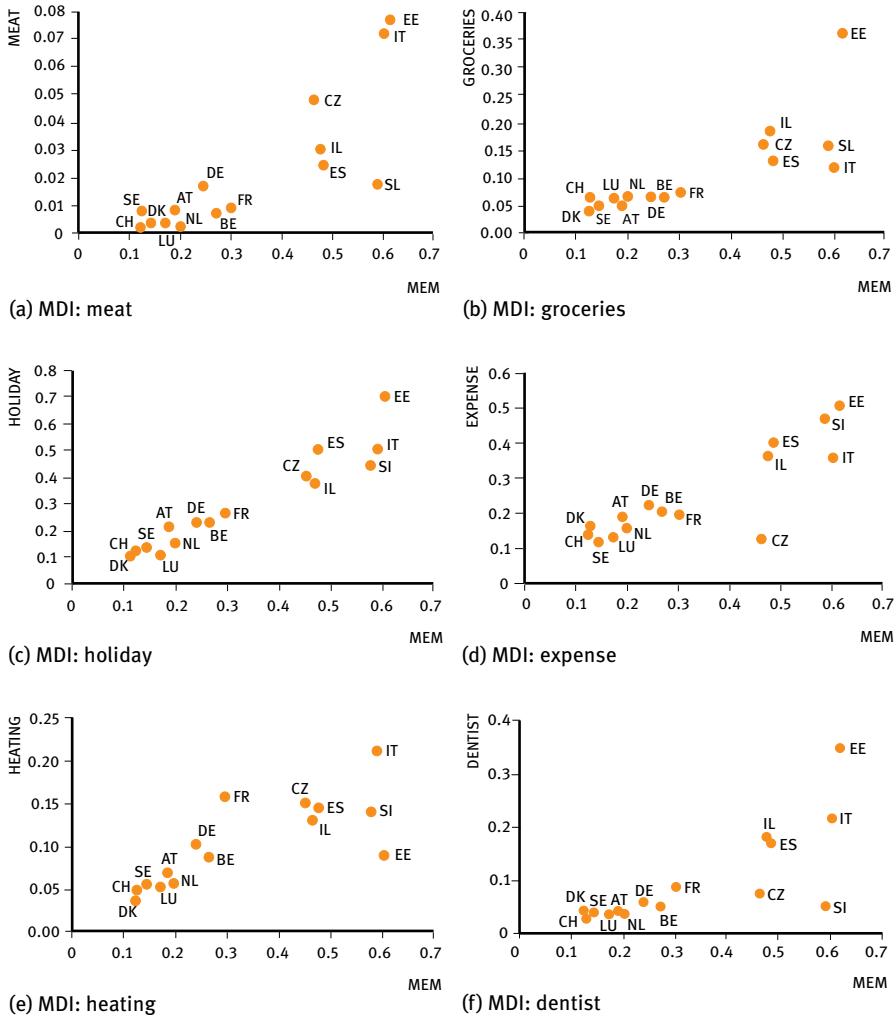


Figure 2.2: Difficulty in making ends meet and levels of deprivation for selected MDIs by country

Notes: Means at household level by country, restricted sample to sample used in regression analysis, weighted with SHARE Wave 5 households weights; no. of observations: 40,287

Source: Authors' calculations using SHARE Wave 5 release 0 data

Table 2.2: Correlation between MEM and MDIs. Ordinal probit regression results: coefficients

	Coefficients	SE/CI
MDI: meat	0.231***	(0.045)
MDI: fruit	0.221**	(0.071)
MDI: groceries	0.190***	(0.021)
MDI: holidays	0.840***	(0.016)
MDI: expense	0.696***	(0.017)
MDI: clothing	0.361***	(0.023)
MDI: shoes	0.181***	(0.025)
MDI: heating	0.311***	(0.021)
MDI: dentist	0.288***	(0.024)
MDI: glasses	0.294***	(0.025)
MDI: doctor	0.260***	(0.030)
single	0.060**	(0.021)
single female	0.081***	(0.023)
large household	0.169***	(0.015)
Country dummies	Included	
Cut-off 1	0.330	(0.285–0.375)
Cut-off 2	1.428	(1.381–1.475)
Cut-off 3	2.940	(2.886–2.994)
Observations	40,387	
Wald test of MDI (p value)	0.000	
Pseudo R2	0.243	

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. SE/CI – standard errors or confidence intervals
Source: Authors’ calculations using SHARE Wave 5 release 0 data, unweighted

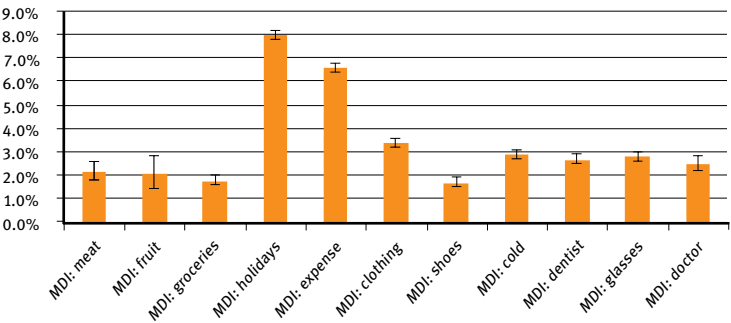


Figure 2.3: Making ends meet and MDIs: marginal effects from ordered probit regression

Notes: Marginal effects of a specific MDI on the probability of having great difficulty in making ends meet. Based on ordered probit regression in Table 2.2; in case of dummy variables marginal effects are calculated for discrete change of dummy variable from 0 to 1; no. of observations: 40,387

Source: Authors’ calculations using SHARE Wave 5 release 0 data, unweighted

2.4 MDIs in the analysis of material conditions on health and well-being

Having established a strong correlation between the subjective assessment of material conditions and the deprivation items, we now turn to the question of the degree of additional information contained in the MDIs when analysing the relationship between material conditions and such outcomes as health and well-being.

To examine the potential of the MDIs in explaining the variation in the quality of life with respect to material circumstances we run probit regressions for three outcomes and test the additional contribution of MDIs versus using only subjective assessment of material conditions by examining their (joint) statistical significance separately.

The outcomes used in the regressions are poor health (based on self-assessment of health, SAH), symptoms of depression based on the EURO-D scale and quality of life measured with an indicator based on the CASP-12 questions. All outcomes were rescaled into binary variables with “1” indicating poor health, depression or low quality of life. SAH is a subjective measure of general health status on an ordered five-level scale from excellent to poor. In our analysis we take the last two categories – fair and poor health, as implying poor health status. Around 37 per cent of individuals in the (weighted) restricted sample declare themselves to be in poor health. As far as depression is concerned, we follow the literature and consider all respondents with four or more symptoms of depression on the 12-point EURO-D scale to be classified as suffering from depression. Around 20 per cent of individuals in the (weighted) restricted sample suffer from depression. The CASP-12 items reflect respondents’ quality of life. In this case, respondents get a total score of 12 to 48 which is a sum of their specific answers to twelve questions on how often they experience certain feelings such as feeling left out of things or being full of energy. In our analysis, we set the threshold of 35 points or lower to represent low quality of life which means that 30 per cent of respondents in the (weighted) restricted sample are classified as having low quality of life. In all regressions we control for age, age squared, being single, female and for household size; we also include country dummies. Note, that this estimation is conducted at the individual and not household level with standard errors clustered at the household level.

The regression results in the form of marginal effects from a probit model estimation are presented in Table 2.3. Columns (1), (3) and (5) present the results from the specification without MDIs while columns (2), (4) and (6) present the results of specifications including the MDIs as additional explanatory variables. The information on the degree of difficulty with making ends meet is controlled

through three separate dummy variables for making ends meet “relatively easily”, with “some difficulty” and with “great difficulty”.

The first thing to note is the reflection of the correlation between MEM and deprivation items, which results in much lower values of coefficients on MEM categories in specifications after inclusion of the MDIs. The three coefficients, however, remain statistically significant. In all specifications including the MDIs most of the coefficients on MDIs are individually statistically significant, and the Wald test suggests that they are jointly significant in all three cases. In the case of the CASP, regression coefficients on all MDIs are statistically significant. Individually, across the three specifications the most significant coefficients are those on the following material deprivation items: meat, holiday, expense, clothes, glasses, and doctor. We see, for example, that at sample means, conditional on other variables, a positive answer to the question on inability to afford a holiday increases the probability of reporting poor health by almost 11 pp. Deprivation in the holiday domain increases the probability of suffering from depression symptoms by 6.2 pp and of low quality of life by 9.7 pp.

Table 2.3: Material conditions and well-being

	Poor health (SAH)		Depression (EURO-D)		CASP	
	(1)	(2)	(3)	(4)	(5)	(6)
MEM: fairly easily	0.086*** (0.006)	0.069*** (0.006)	0.045*** (0.004)	0.031*** (0.005)	0.103*** (0.005)	0.087*** (0.006)
MEM: some difficulty	0.204*** (0.006)	0.119*** (0.007)	0.120*** (0.005)	0.054*** (0.005)	0.257*** (0.005)	0.174*** (0.006)
MEM: great difficulty	0.344*** (0.008)	0.179*** (0.011)	0.223*** (0.006)	0.090*** (0.008)	0.407*** (0.007)	0.229*** (0.010)
MDI: meat		0.060*** (0.017)		0.050*** (0.011)		0.076*** (0.015)
MDI: fruit		0.042 (0.028)		0.058** (0.018)		0.097*** (0.024)
MDI: groceries		-0.005 (0.008)		0.001 (0.006)		0.029*** (0.007)
MDI: holidays		0.110*** (0.007)		0.062*** (0.005)		0.097*** (0.006)
MDI: expense		0.040*** (0.007)		0.021*** (0.005)		0.043*** (0.006)
MDI: clothing		0.033*** (0.009)		0.031*** (0.007)		0.028*** (0.008)

Table 2.3 (continued)

	Poor health (SAH)		Depression (EURO-D)		CASP	
	(1)	(2)	(3)	(4)	(5)	(6)
MDI: shoes		0.006 (0.010)		0.016* (0.007)		0.021* (0.009)
MDI: heating		0.000 (0.009)		0.021*** (0.006)		0.040*** (0.007)
MDI: dentist		0.020* (0.009)		0.008 (0.006)		0.034*** (0.008)
MDI: glasses		0.047*** (0.010)		0.041*** (0.007)		0.029*** (0.009)
MDI: doctor		0.088*** (0.012)		0.070*** (0.008)		0.089*** (0.010)
Age	-0.000 (0.003)	0.003 (0.003)	-0.024*** (0.002)	-0.023*** (0.002)	-0.027*** (0.003)	-0.027*** (0.003)
Age squared	0.000*** (0.000)	0.000** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Single	-0.002 (0.006)	-0.015* (0.006)	-0.003 (0.004)	-0.012** (0.004)	0.021*** (0.005)	0.006 (0.005)
Female	0.016*** (0.004)	0.012** (0.004)	0.087*** (0.003)	0.084*** (0.003)	0.013*** (0.004)	0.009* (0.004)
Large household	-0.014* (0.006)	-0.017** (0.006)	-0.010* (0.005)	-0.012* (0.005)	0.006 (0.006)	0.003 (0.006)
Country dummies	yes	yes	yes	yes	yes	yes
Observations	53,537	53,537	52,286	52,286	50,770	50,770
Wald test of MDI (p value)		0.000		0.000		0.000
Wald test of MEM (p value)		0.000		0.000		0.000
Pseudo R2	0.135	0.147	0.082	0.101	0.181	0.204

Notes: Marginal effects from probit model. Standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: Authors' calculations using SHARE Wave 5 release 0 data, unweighted

2.5 Conclusions

In this chapter we have analysed whether the new material deprivation items collected in SHARE Wave 5 can contribute to a better understanding of material conditions in later life. We showed that they strongly correlate with subjective assessments of material conditions (MEM) and that they contribute to the understanding of the variation in a number of broader quality of life outcomes (health, depression, CASP) over and above the information contained in MEM.

An important advantage of material deprivation items is that, while they clearly capture variations in the economic circumstances of households, in analysing outcomes such as subjective assessment of health, depression or overall life satisfaction, they are less likely to be endogenous with respect to the dependent variable. In the case of MEM, for example, it is likely that depressed people could judge their material situation less favourably compared to healthy individuals, as a result of which the established relationship between depression and material conditions could be biased. Our analysis in this chapter demonstrates that MDIs can be usefully employed in creating an index of material conditions. Examples of such indices are presented in chapters 5 and 6 and are employed in analysis in chapters 7, 9, 11, 14, 17, 18, 19, 28 and 30. The MDI variables can also be used to “objectivise” the subjective assessment of material conditions in a similar way to how subjective health assessment is “objectivised,” for example, in Kalwij and Vermeulen (2008). MDIs could be accounted for when constructing alternative poverty measures to income-based indicators and as such, they may prove useful as policy targets and instruments for monitoring the material conditions of European populations.

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3 Accessibility to neighbourhood services and well-being among older Europeans

-
- ▶ Accessibility to neighbourhood services is a measure of social inclusion
 - ▶ Most older Europeans have good accessibility but a minority (<10 %) do not
 - ▶ Residents of urban neighbourhoods have better accessibility than those in rural areas
 - ▶ We find evidence for a positive association between accessibility and well-being, which is stronger among respondents living in an urban setting
-

3.1 Neighbourhood service accessibility in later life

Access within a neighbourhood to local services is a key component of neighbourhood quality and can be perceived as an indicator of social inclusion. Not only is the ability to reach such services as grocery stores, physicians and banks essential for managing daily living tasks and for maintaining residential independence, it also fosters a sense of belonging to the neighbourhood. Moreover, neighbourhood accessibility encourages social interaction with neighbours and with service personnel. Therefore, the construct of “neighbourhood service accessibility” can serve as a latent measure of social inclusion, especially among older adults.

In later life when physical impairment and health conditions can impede abilities to handle distances, ease of access to services becomes even more important (Wahl et al. 2012). Neighbourhood services which can be easily reached and are within close geographical proximity can lessen the difficulties brought on by limited mobility that many older adults experience when they have declines in health. In addition, accessibility to local services is an important indicator of residing in an age-friendly community. In such settings, “aging in place” unfolds with greater ease and to a greater degree than in neighbourhoods having only a paucity of local services (Scharlach et al. 2014). Thus, accessibility to neighbourhood services not only facilitates independence in attaining needed goods and assistance, it also furthers the sense of living within a hospitable environment which, in turn, promotes feelings of social inclusion with those living nearby.

Accessibility of services within neighbourhood settings is usually greater in urban settings in which convenient public transportation is available (Cao et al.

2010) or services are within walking distance (Kerr et al. 2012). But even in rural settings where services are more distant, studies show that some older adults maintain the ability to reach needed services (Pucher & Renne 2005). This suggests that the notion of accessibility includes a subjective component of ease of access to services, independent of the means of access, whether by foot, car, or public transportation. Older residents of urban neighbourhoods are also found to maintain higher activity levels than their rural counterparts, as demonstrated by their greater participation in activities outside of the home (Haak et al. 2008).

Older adults who reside in communities with good service accessibility are also found to have better physical health as well as better quality of life and well-being (Kerr 2012) in comparison to those living in less accessible environments. Empirical research highlights the association between service accessibility and improvements in an array of quality of life outcomes among older persons such as fewer depression symptoms (Berke et al. 2007), higher life satisfaction (Oswald et al. 2011), and higher scores on overall quality of life assessments (Gabriel & Bowling 2004).

In the present analysis we examine the extent of local service accessibility, as perceived by the individual, using relevant items from the special set of social exclusion items that was introduced in the fifth wave of SHARE (Myck et al. 2015). The sample was restricted to household members aged 50+ who received the social exclusion questions ($n=41,784$). In the first stage of the analysis, we performed factor analysis to map the domain of neighbourhood access, based upon the four self-reported indicators. The results confirmed that the items all loaded on a single factor, allowing the construction of a single additive measure representative of perceived accessibility of neighbourhood services. Second, we explored country differences in the neighbourhood access scores to consider whether accessibility varies across nations. In the third stage, we regressed the accessibility score on a range of variables in order to examine whether urban and rural differences alter perceptions of accessibility of services. Lastly, we performed multivariate OLS regressions to consider the association between accessibility and two well-being outcomes – depressive symptoms and quality of life, controlling for sociodemographic background and health, noting especially urban–rural differences.

3.2 Neighbourhood accessibility score

Four variables rated the ease of access to services that are integral to daily life: bank (hh027), grocery store (hh028), general practitioner (hh029), and pharmacy (hh030). Answer categories for the question “How easy is it to get to...?” were

1) very easily, 2) easily, 3) difficult, 4) very difficult. Individual analysis of the distributions of each of these variables revealed, on the whole, a high degree of accessibility to the respective neighbourhood services. For each of the services, some 80–85 per cent of the sample reported having easy or very easy access. In contrast, only about five per cent of the sample indicated having a very difficult time reaching each of the neighbourhood facilities. Country differences were examined for each of the individual accessibility items. Summary statistics by country are presented in Table 3.1.

Table 3.1: Ease of access to bank, grocery store, general practitioner and pharmacy by country: percentage with easy to very easy access

Country	Bank (hh027_)		Grocery Store (hh028_)		General Practitioner (hh029_)		Pharmacy (hh030_)	
	n	%	n	%	n	%	n	%
SE	2,972	91.2	2,968	93.6	2,965	92.0	2,967	92.8
DK	2,642	84.2	2,643	92.8	2,640	88.2	2,640	88.8
DE	3,420	84.3	3,423	83.8	3,420	79.4	3,425	82.3
LU	1,166	87.4	1,168	86.1	1,167	87.1	1,168	87.1
NL	2,550	89.7	2,555	93.2	2,553	88.6	2,552	91.2
BE	3,697	84.4	3,699	86.9	3,682	85.6	3,699	91.6
FR	2,967	85.2	2,970	86.0	2,970	84.7	2,972	88.6
CH	2,056	91.8	2,057	93.1	2,056	89.3	2,056	87.5
AT	2,831	83.5	2,833	85.6	2,832	82.0	2,832	83.0
ES	3,655	82.5	3,668	86.9	3,671	83.0	3,671	87.3
IT	2,770	81.4	2,778	86.0	2,779	79.1	2,779	85.5
EE	3,686	65.2	3,687	73.1	3,685	64.8	3,688	69.5
CZ	3,002	76.2	3,091	89.5	3,094	81.6	3,091	81.4
SI	2,040	78.3	2,042	82.8	2,042	76.3	2,043	78.3
IL	1,343	75.3	1,351	87.3	1,346	71.0	1,352	72.0
Sample	40,797	82.4	40,933	86.8	40,902	82.0	40,935	84.7

Source: SHARE Wave 5 release 0

A principal component factor analysis was conducted to examine whether the four individual service access variables measured a single construct representative of neighbourhood accessibility. The factor analysis retained one factor which accounted for 82 per cent of the variance. In addition, less than 20 per cent of the variance of each individual access indicator was not associated with the retained factor. Moreover, equality of factor loadings was confirmed as each item comprising the factor contributed equally to the final neighbourhood accessibility score factor.

Testing for the internal reliability of the four items revealed a Cronbach's α of 0.93 with all items displaying a good fit. Thus, an additive score was calculated to represent an overall measure of neighbourhood accessibility (range: 4-16). The answers were reverse coded from the raw data so that higher scores represented easier access to the services.

The mean accessibility score of the sample as a whole was 12.7. One quarter of the sample attained the highest score (16), indicating that these respondents had very easy access to all four services. Another third of the sample had a score of 12 and therefore had easy but not very easy access to most of the services. Approximately ten per cent of the sample had the lowest possible scores (4-8) on the neighbourhood accessibility measure, indicating very limited accessibility of any of the essential services.

3.3 Neighbourhood accessibility: country comparisons

The second stage of the analysis considered neighbourhood service accessibility within each of the 15 countries represented in the fifth wave of SHARE. Cross country comparison of the derived accessibility score highlights differences in access to essential services as experienced by the older adults. The score for each country is displayed in Figure 3.1. The scores ranged from the least accessible (11.4) in Estonia to the most accessible (13.7) in Sweden.

Initial analysis of variance revealed significant country differences in accessibility to neighbourhood services. A one-way ANOVA yielded a moderate effect size. However, post hoc analysis using the Tukey HSD criterion indicated few homogeneous subset groupings of countries. Sweden stood alone as the country with the greatest accessibility, and Estonia was distinctive as having the least. Israel formed a second distinct sub-grouping with a low mean of 11.9. The remaining countries fell into partly overlapping groupings in-between these extremes.

The lack of major country differences on neighbourhood accessibility among the majority of the 15 SHARE countries can be partially attributed to an apparent diversity in the ease of access to local services for older adults within each of the nations included in the survey. This conclusion is substantiated by the large standard deviations of the mean accessibility score evident for each country. Thus, while certain countries have a higher or lower than average degree of accessibility to neighbourhood services, access (or lack thereof) may not be country specific and diversity on this important aspect of inclusion exists within each country.

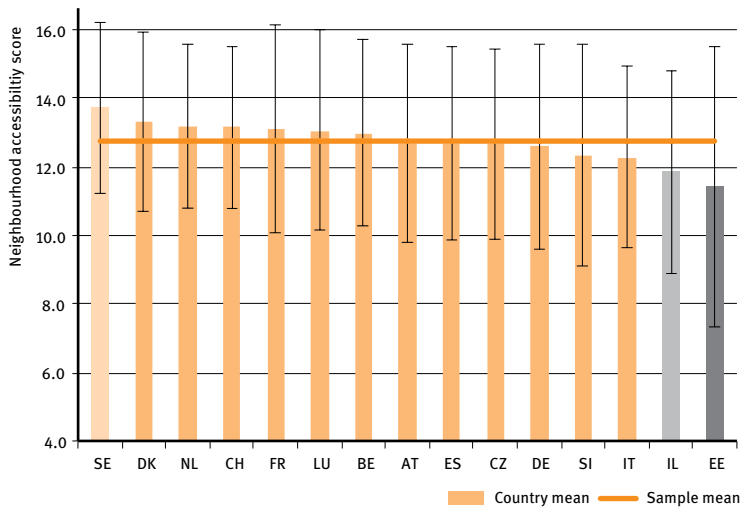


Figure 3.1: Neighbourhood service accessibility score by country
Notes: $n=40,707$, unweighted; $F(14, 40,602) = 114.27$, Cohen's $f^2 = 0.19$
Source: SHARE Wave 5 release 0

3.4 Urban and rural distinctions of perceived neighbourhood accessibility

The next stage of the inquiry examined whether perceived accessibility of neighbourhood services differs between urban and rural neighbourhoods. We classified big cities, suburbs of big cities and large towns as urban (1) and small town and rural area or village as rural (0). 43 per cent of the study sample resided in the so-defined urban areas.

The standardised regression coefficients for several key variables are presented in Figure 3.2. The results show that even after controlling for a set of possible confounders, residing in urban settings compared to rural neighbourhoods was associated with higher neighbourhood accessibility scores ($\beta = 0.16$; $p = <0.001$). Additionally, the standardised coefficients indicate that the urban or rural nature of a neighbourhood had the second strongest association with the self-reported neighbourhood accessibility score, second only to mobility limitations. The findings underscore the already well-established urban-rural distinction in relation to neighbourhood accessibility, namely that urban areas have more accessible neighbourhood services. Thus, whereas rural life is sometimes related to a range of positive features that promote social inclusion at younger

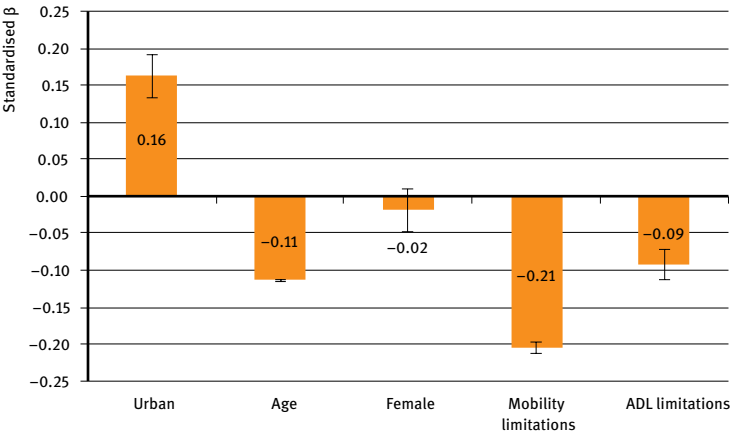


Figure 3.2: Factors associated with neighbourhood service accessibility

Notes: Standardised beta coefficients from OLS regression; $n=38,231$, unweighted; $R^2 = .19$; all shown findings significant at $<.01$; model controlled for: age, gender, marital status, number of children, perceived income adequacy, country, ADL count, mobility limitations

Source: SHARE Wave 5 release 0

adult ages, such as community involvement, volunteering and so on, the rural setting can become a risk factor for older people (Wenger 2001). This is because the lesser accessibility to needed services in rural areas can accentuate feelings of social exclusion among the oldest members of the community.

3.5 Neighbourhood accessibility and well-being

Finally, we examined the relationship between ease of access to neighbourhood services and well-being. Because the previous analysis revealed an urban and rural distinction in relation to subjective perceptions of accessibility, the concluding analysis also took into account the interaction between urban/rural setting and neighbourhood service accessibility vis-a-vis well-being. As previously stated, there is already evidence of the link between accessibility of neighbourhood services and subjective well-being in late life. However, the studies in question were limited in their small sample sizes which were drawn primarily from within small geographic areas. The introduction of neighbourhood access questions in the large, multinational SHARE survey permits empirical analysis of older adults living in an array of national contexts.

Two multivariate OLS regressions were run to examine the association between neighbourhood accessibility and two measures indicative of well-being: depressive symptoms (EURO-D; range 0–12) and quality of life (CASP; range 12–48). The average number of EURO-D symptoms among the SHARE respondents was 2.5, and the average CASP score for quality of life was 37.7. The first regression model examined the association between neighbourhood accessibility and the well-being outcomes. The second model added the interaction between neighbourhood accessibility and urban or rural setting to the analysis.

The first regression revealed that ease of access to neighbourhood services had a positive association with well-being among the respondents, even after taking into account all the control variables (these included age, gender, years of education, perceived income adequacy, country, urban/rural neighbourhood, number of children, marital status, most frequent contact with a child, number of chronic conditions, number of activities of daily living (ADL) limitations and number of mobility impairments). Easier access of neighbourhood services was found to be associated with fewer depressive symptoms ($\beta = -0.029$, $p < .001$) and higher quality of life ($\beta = 0.082$, $p < .001$). Living in urban settings was negatively associated with well-being when controlling for socioeconomic background, health, and service accessibility. Specifically, respondents living in urban settings had more depressive symptoms ($\beta = 0.021$, $p < .001$) and lower CASP quality of life scores ($\beta = -0.021$, $p < .001$) than their rural counterparts.

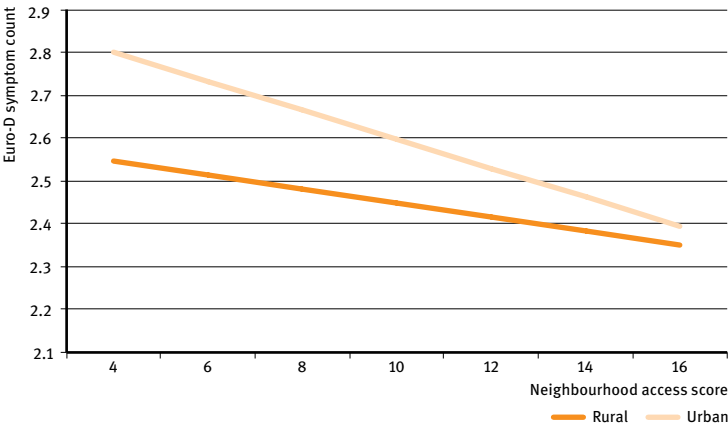


Figure 3.3: The interaction of urban/rural setting and neighbourhood service accessibility in relation to the number of Euro-D depressive symptoms
 Notes: $n=37,343$; model controlled for: age, gender, marital status, number of children, perceived income adequacy, country, ADL count, mobility limitations
 Source: SHARE Wave 5 release 0

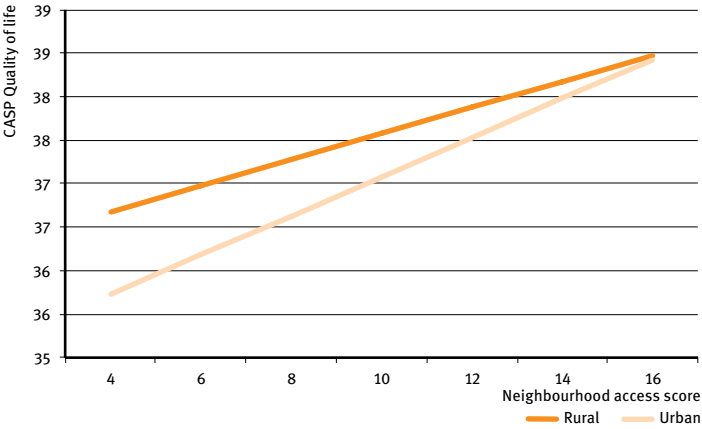


Figure 3.4: The interaction of urban/rural setting and neighbourhood service accessibility in relation to the CASP quality of life score

Notes: $n=35,860$; model controlled for: age, gender, marital status, number of children, perceived income adequacy, country, ADL count, mobility limitations

Source: SHARE Wave 5 release 0

In the second regression, an interaction term of neighbourhood accessibility and urban setting was entered into the regression model. The specific findings are portrayed in Figures 3.3 and 3.4. The results showed that both in rural and in urban settings, higher accessibility scores were significantly associated with fewer reported EURO-D symptoms and higher quality of life scores, as measured by CASP. Interestingly, the association is significantly stronger among those living in urban settings. While in the case of rural areas the estimated coefficients were: $\beta = -0.022$ ($p < .001$) and $\beta = 0.071$ ($p < .001$) for EURO-D and CASP respectively, the values of the coefficients for urban areas were: $\beta = -0.053$ ($p < .05$) and $\beta = 0.081$ ($p < .001$). In other words, while, on average, depressive symptoms are more frequent and quality of life is somewhat lower in an urban setting, this difference disappears under conditions of good access to neighbourhood services (see Figures 3.3 and 3.4).

Among the control variables, the associations with the different well-being outcomes were as expected. Being married or having a partner, being older, having higher income and more years of education were all associated with better well-being, both in terms of lower depression and higher quality of life. Likewise, worse functionality was negatively associated with well-being among older adults.

3.6 Neighbourhood accessibility and social inclusion

We find that the four questions on individual social exclusion pertaining to the accessibility of essential neighbourhood services can be combined into one additive score representative of an overall ease of access to necessary facilities. The descriptive overview revealed that, in general, older Europeans live in neighbourhoods with easy to reach services. However, a small but notable proportion of respondents live in neighbourhoods with services that are perceived as difficult to access.

The ease of access to neighbourhood services was highlighted in the country comparison of the accessibility score, which largely showed little cross-country variation. At the same time, however, large country specific standard deviations for the accessibility score suggest that within each country, the accessibility of essential services varies greatly among older citizens. This suggests that the construct may vary by neighbourhood sensitive facets such as socioeconomic composition or rural versus urban distinctions.

Our findings confirmed that urban settings are indeed perceived to be more accessible, in terms of services, than their rural counterparts. It seems, therefore, that rural settings have a greater risk for the exclusion of its oldest residents, at least in terms of service accessibility.

The analysis also lends empirical support for the positive association that exists between neighbourhood accessibility and subjective well-being in later life. Our findings show that among older Europeans, better access to services is associated with fewer depressive symptoms and overall better quality of life in both urban and rural neighbourhoods. Because access to neighbourhood services constitutes an indicator of social inclusion, these findings suggest that the feelings of social inclusion, which are a by-product of continued independence with life's responsibilities, contribute to better subjective well-being in later life.

What is particularly striking is that these associations are stronger in urban than in rural settings, suggesting that urban residents may be at greater risk of social exclusion in this respect. Planners and service providers to older adults should be aware of this variability in the ease of access to services in order to better facilitate older people in reaching essential services in their communities and to promote age-friendly neighbourhood environments. Moreover, as the results of this analysis show, neighbourhood service accessibility in the later part of life is independently associated with well-being among older Europeans. Ease of access to services enables a continuation of independence in meeting life needs among older adults even when facing the many physical and mental chal-

lenges of aging. It also furthers a hospitable social climate within which to age-in-place and continue to maintain social interactions. In sum, access to services constitutes an essential aspect of social inclusion that, in turn, is associated with better well-being in late life.

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4 Assessing the material deprivation of older Europeans

-
- ▶ An aggregate measure of material deprivation is defined by summarising in a single index the failures in the affordability of basic needs and the experience of financial difficulties
 - ▶ Aggregation is carried out under alternative approaches
 - ▶ Our results consistently show that material deprivation of older Europeans is lowest in Scandinavian countries and highest in Southern Europe, Slovenia and Estonia
-

4.1 How to aggregate different aspects of material deprivation

A growing literature in recent years has focused on the assessment and analysis of material deprivation as a measure of material conditions. Material deprivation is usually defined as the extent of functioning failures in the dimension of material well-being. Material deprivation is expressed as households' inability to afford desired goods or services because of lack of economic resources. It is often considered a pathway to social exclusion.

Several contributions assess deprivation by considering the functioning failures of households with respect to a battery of items (see Bellani 2013 or Bossert et al. 2013). All these studies rely on the recognition that deprivation is a multifaceted state that can be properly described by taking into account several aspects of individuals' quality of life, including but not limited to financial outcomes.

Our chapter contributes to this literature by exploiting new information collected in the fifth wave of SHARE to provide a snapshot of the material deprivation among older people in Europe at the time the countries continue to struggle with the consequences of the economic crisis. Using data from SHARE Wave 2, Angelini et al. (2009) show that even before the economic crisis a substantial proportion of older European individuals experienced financial difficulties. In this chapter we extend the approach to the measurement of material conditions and document the level of deprivation across Europe and its variation among SHARE countries after the crisis.

Aggregating household functioning failures across a number of deprivation items into a single index requires a weighting scheme that sets the relevance of

each item in the index computation. It has been demonstrated that alternative weighting schemes can affect the predictions of the analysis (see Cavapozzi et al. forthcoming) and generate a different pattern of deprivation across different countries and groups of the population. For this reason, we examine three alternative weighting approaches to test the sensitivity of the derived indices to the choice of weights. This allows us to recommend a weighting approach that is used in the following chapters with respect to material and social deprivation. The three weighting schemes we use in this chapter are equal, hedonic and stated preferences. First, we adopt equal weighting by assigning to each item the same weight. Second, we derive a set of hedonic weights that assigns to each item a weight proportional to its correlation with life satisfaction. Third, we take advantage of the design of the SHARE questionnaire, which makes it possible to match each item considered in our exercise with the assessment about its importance to attain decent living conditions provided by the Eurobarometer survey. We draw data from Eurobarometer to derive a set of stated preference weights according to which each item will receive a weight proportional to the percentage of individuals who consider it as absolutely necessary to attain a decent standard of living.

We will make use of the so-defined three aggregate indices to analyse cross-country differentials in the material deprivation of older Europeans and to assess to what extent the results of our analysis are sensible to the weighting scheme adopted.

4.2 Material deprivation items

Our material deprivation assessment is based on a set of eleven items that refer to two broad domains: failure in the affordability of basic needs and financial difficulties.

The failures with respect to each item are defined according to binary indicators that allow classifying households as deprived or not deprived. If households fail to reach a minimum target with respect to a given item, they are classified as “deprived” with respect to that item, otherwise they are classified as “not deprived”. Our analysis is based on a sample consisting of almost 40,000 households.

As for basic needs, we look at the households’ failures in the affordability of a minimal quantity of meat, fish, chicken, fruits and vegetables in their diet (at most twice a week) and in the affordability of heating costs to avoid feeling cold at home, the replacement of worn out clothes and shoes, the purchase of new needed glasses, visits to the dentist and visits to the doctor (MDI: meat, MDI: fruit, MDI: heating, MDI: clothing, MDI: shoes, MDI: glasses, MDI: dentist, MDI: doctor). For a full list of items and their description see Table 2.1 in chapter 2 in this volume).

Figure 4.1 shows the number of deprivations in this domain by country. We notice that the proportion of households who do not experience deprivation is lowest in Estonia (less than 40 %). With the exception of Spain, Italy, Estonia and Slovenia, at least 60 per cent of households in all countries do not experience any deprivation with respect to the affordability of basic needs. Denmark, Sweden and Switzerland are the countries that combine the highest proportion of not deprived households (about 90 %) with a fairly low presence of households deprived of four or more items. The highest level of deprivation with respect to four or more items is found in Estonia and Italy.

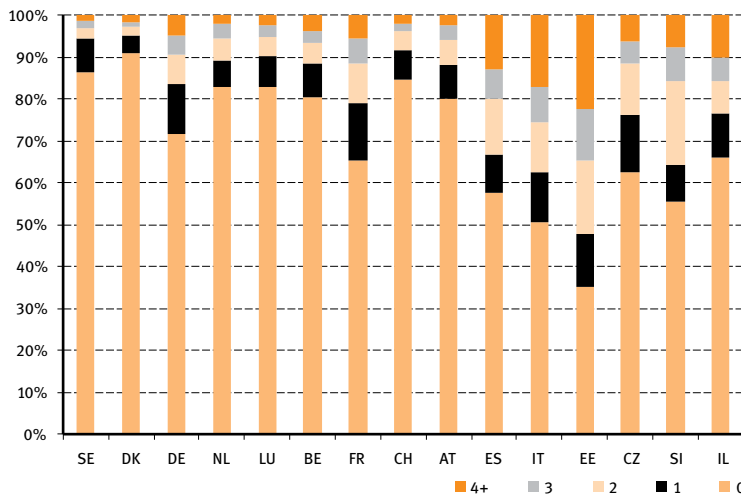


Figure 4.1: Number of deprivation in basic needs

Notes: $n = 39,574$. Calibrated cross-sectional household weights are used

Source: SHARE Wave 5 release 0

Within the financial difficulties domain, we consider the following three items. The first item refers to being in arrears with the payment of rents, the repayment of mortgages or loans on dwelling or having overdue bills (MDI: arrears). The second and the third items refer to failures in the affordability of a week long holiday away from home once a year and the affordability of paying an unexpected expense without borrowing any money (MDI: holiday, MDI: expense). Figure 4.2 shows the distribution of the number of deprivation in this domain. While Estonia is again the country with the lowest number of not deprived households (slightly more than 20 %), this proportion is highest for Scandinavian countries, the Netherlands, Luxembourg and Switzerland.

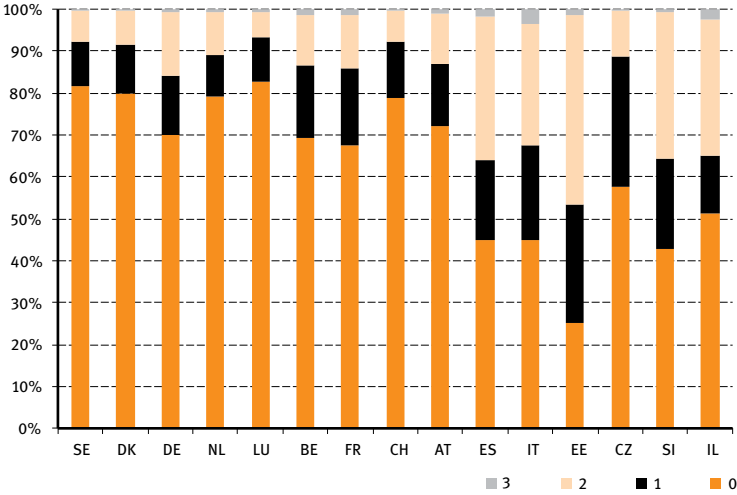


Figure 4.2: Number of deprivations in financial difficulties
Notes: n = 39,574. Calibrated cross-sectional household weights are used
Source: SHARE Wave 5 release 0

4.3 Alternative weighting schemes

Our material deprivation index is computed as the weighted sum of the households' failures with respect to the set of the considered items. Following the classification discussed in Decancq and Lugo (2013), we will use three alternative weighting schemes: equal weighting, hedonic weighting and stated preference weighting.

Equal weighting depends on the value judgments of the analysts about the trade-offs between items. This scheme assigns the same weight to each item-specific indicator and implicitly assumes that all indicators are equally important for everyone.

Hedonic weighting reflects the correlation between the set of material deprivation items and self-assessed life satisfaction provided by respondents. More specifically, we derive hedonic weights by running an ordered probit regression of life satisfaction (measured on the scale from 0-10) on the set of material deprivation items considered and a full set of country dummies. The hedonic weight of each item is based on the corresponding estimated coefficient in the ordered probit equation.

Stated preference weights are based on the evaluations of a representative sample of individuals drawn from Eurobarometer data. In our analysis we use the Special Eurobarometer 279 on poverty and social exclusion conducted in

2007, which asked respondents to determine the needs of the society in attaining decent living conditions. As in Bellani (2013) and Fusco et al. (2013), each item is assigned a weight with reference to the proportion of Eurobarometer respondents who deem being not deprived with respect to this item as absolutely necessary to attain a decent standard of living. Stated preference weights are calculated separately by country. In our exercise we restrict the Eurobarometer sample to individuals aged 50 or over living in the SHARE countries in order to preserve the comparability with the SHARE target population. Hedonic and stated preference weights have been standardised to sum up to one. Equal weights are standardised by definition. Stated preference weights are not available for Switzerland and Israel since these countries are not included in the Eurobarometer sample.

Figure 4.3 shows the weights attached to each item according to the three alternative weighting schemes. The figure clearly shows how the approach used to define weights affects the computation of the material deprivation index. For instance, the overall weight estimated for the financial difficulties domain is 39.90 per cent according to the hedonic weighting approach, it amounts to 27.27 per cent with equal weighting and it is just 20.97 per cent according to the stated preference weight based on Eurobarometer. This means that deprivation in all financial difficulties domain items will contribute less under the stated preference weighting scheme in defining the score of the material deprivation index. The reverse pattern is found if we look at the weights related to the affordability of new needed glasses, visits to the dentist or to the doctor. Whereas these items have an overall weight equal to about 40 per cent under the stated preference scheme, their weight according to the hedonic scheme approximately halves.

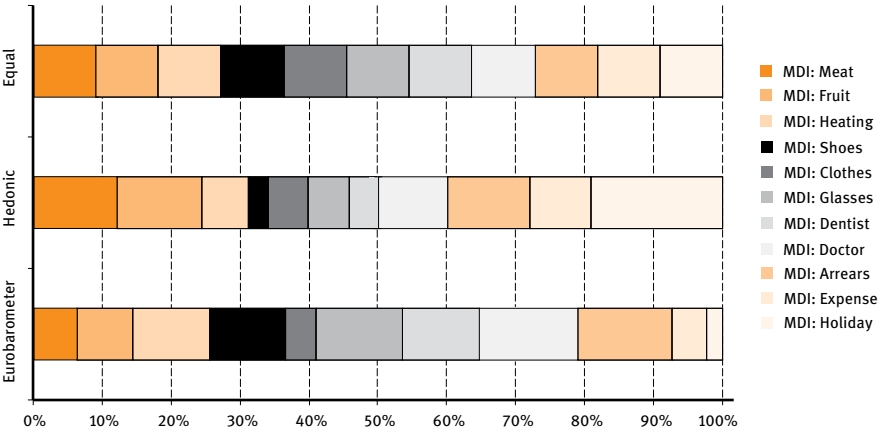


Figure 4.3: Weights assigned to specific deprivation items under different weighting schemes
Source: SHARE Wave 5 release 0, Special Eurobarometer 279

4.4 Material deprivation score

The previous sections of this chapter presented the key ingredients of our empirical exercise: items and weights. Our index of material deprivation is computed as the weighted sum of household failures with respect to the set of items considered. The index of material deprivation is a score that lies between 0 and 1 since deprivation in each item is described by dummy variables taking on value 1 when deprivation occurs and 0 otherwise and weights are standardised to sum up to one.

Figure 4.4 shows the country averages of the material deprivation scores according to the three weighting schemes considered. As expected, different weighting schemes are associated with different levels of material deprivation. On the one hand, for each country the material deprivation score based on equal and hedonic weighting do not differ significantly on average. On the other hand, stated preference weighting is always associated with lower averages of deprivation in all countries. This pattern might be due to the fact that, under stated preference weighting, items with a relatively lower prevalence of deprivation might be associated with higher weights and vice versa. As an example, deprivation with respect to the affordability of holidays has the highest prevalence (it is reported by 32% of the sample). The weight assigned to this item is high under the hedonic scheme but almost negligible under the stated preference scheme (see Figure 4.3). On the contrary, deprivation with respect to the affordability of new needed glasses has a much lower prevalence (10%) but its relevance under the stated preference scheme is higher than in the hedonic case.

Despite the differences in the value of the weights applied, the overall ranking of the countries with respect to material deprivation is unaffected by the weighting scheme adopted. The only exception is the switch between France and the Czech Republic when moving between hedonic and stated preference weighting. This discrepancy appears to be minor, however, since the differences between the two countries are minimal even under hedonic weighting. Additionally, we carried out a formal Spearman rank correlation test, whose results support the hypothesis that the differences in the rankings emerging from the different weighting schemes considered are not statistically significant.

Regardless of the weighting scheme considered, Figure 4.4 shows the presence of a clear geographical gradient in material deprivation. Consistently with the evidence emerging when looking at the extent of deprivation by domain (Figures 4.1 and 4.2), Estonia and Italy are always the countries with the highest level of material deprivation, whereas Denmark and Sweden are those where material deprivation is lowest. The other Northern and Central European coun-

tries experiment material deprivation levels more similar to those of the Scandinavian countries. On the other hand, Slovenia and Israel show levels of material deprivation close to those in Spain.

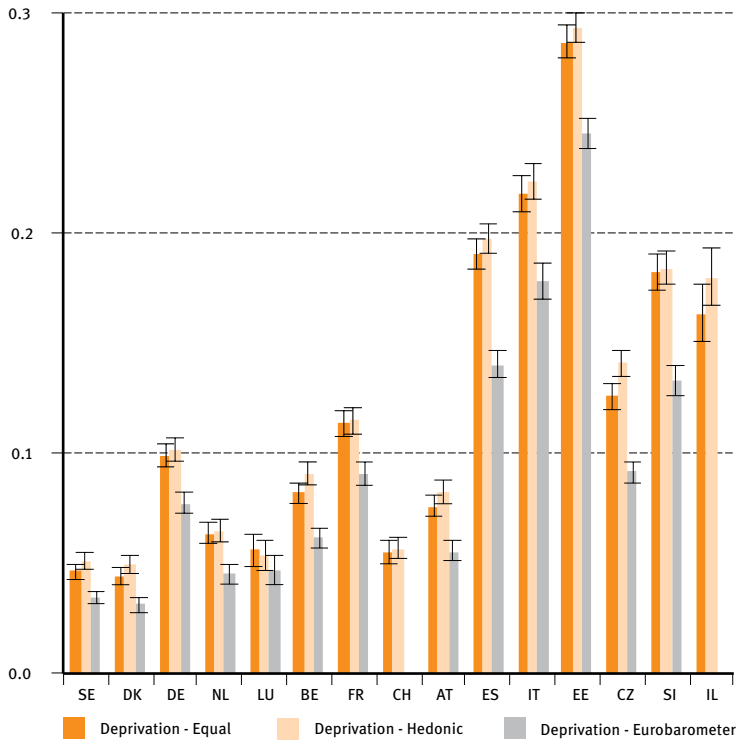


Figure 4.4: Material deprivation by country

Notes: $n = 39,574$. Calibrated cross-sectional household weights are used

Source: SHARE Wave 5 release 0

4.5 Material deprivation in Europe

We measured material deprivation of older individuals in Europe by developing aggregate measures of material conditions using a set of eleven items related to the affordability of basic needs and the experience of financial difficulties. The aggregation has been carried out using three alternative weighting schemes.

Our analysis documents the presence of a clear geographical gradient in material deprivation of older Europeans. Scandinavian countries are those experiencing the lowest levels of deprivation. Higher levels are found for Southern

countries, Slovenia and Estonia. These rankings are confirmed regardless of the weighting scheme adopted.

Our findings suggest that in some countries the prevalence of material deprivation might be a pervasive reason of social exclusion among older individuals. Deprivation and exclusion are multifaceted conditions. Eradicating them requires coordinated policies intervening jointly on multiple aspects of older individuals' socioeconomic status. The framework used to derive the aggregate measures of material deprivation discussed in this chapter can serve as the basis of a proper evaluation of such policies.

Moreover, we demonstrated that in our exercise the country rankings of material deprivation are robust to the alternative methods of weighting the deprivation items. Given this conclusion, in the following chapter we derive a measure of material deprivation using an extended number of deprivation items and the hedonic approach to weighting. This approach on the one hand, is free from the need for additional evaluation of the importance of specific items (which is the case in stated preference weighting), and on the other, avoids assigning the same weights to items which may importantly differ with respect to their effect on welfare.

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5 Development and validation of a material deprivation index

-
- ▶ We develop and validate an index of material deprivation among the European 50+ population
 - ▶ The index is strongly associated with difficulties in making ends meet and the amount of money needed to easily make ends meet
 - ▶ Material deprivation is negatively associated with age and education, and correlates positively with poor health and living in rural areas
-

5.1 Material deprivation and social exclusion among the older Europeans

Public policy in the European Union has for a long time given high priority to policies aiming at reducing poverty and social exclusion. The European Union 2020 targets explicitly set the ambitious goal of reducing the risk of poverty and social exclusion by 20 million people. Designing policies to enhance social inclusion of individuals has been identified as crucial from the point of view of promoting their well-being and development of comprehensive measures of material deprivation should lay the foundation for further research in this area for the design of effective policies at the national and European level. Indeed, the long-standing notion that unidimensional indicators based on current income could reliably reflect material conditions of households has in the recent decades received a lot of criticism (Atkinson et al. 2002, Jenkins & Cappellari 2007, Bellani & D'Amborsio 2011, Bossert et al. 2013).

We contribute to the discussion on material deprivation by extending the index of deprivation developed in chapter 4 in this volume. In this chapter we use the new information collected in the fifth wave of the SHARE survey and extend the number of items included in our deprivation measure relative to the indices presented in chapter 4. Moreover, we develop an index of material deprivation which can be used for all countries in SHARE Wave 5. Examples of the use of this index are presented in chapters 7, 11, 18, 19, 28 and 30 in this volume.

We detect substantial cross-country variation in deprivation, with Scandinavian countries being the least materially deprived, and countries like Italy and

Estonia with highest levels of material deprivation. We find that the distribution of material deprivation is strongly aligned with other measures of material conditions, in particular those that relate to a broad subjective assessment of these conditions. Most of the variance in deprivation is across countries rather than age groups within countries. Finally, a simple multivariate regression of deprivation on key socio-economic and demographic variables shows that material deprivation is negatively associated with age and education, and positively correlated with living in a rural area and with poor health.

The chapter is structured as follows. Our index is described in section 5.2 and we compare it to other measures of material conditions in section 5.3. Descriptive evidence about the correlates of material deprivation is presented in section 5.4. Conclusions follow.

5.2 A comprehensive measure of material deprivation

As in chapter 4 in this volume, we assess material deprivation on the basis of a set of 13 items which refer to two broad domains of material well-being: failure in the affordability of basic needs and experience of financial difficulties. The items used in the development of the material deprivation index combine some information regularly collected in SHARE with additional items that were especially introduced into the survey in Wave 5.

As for basic needs domain, we look at the affordability of a minimal quantity of meat, fish, chicken, fruits and vegetables in respondents' diet (if they can afford to eat these at least three times a week), at the affordability of heating costs to avoid feeling cold at home, the replacement of worn out clothes and shoes, the purchase of new needed glasses, visits to the dentist and visits to the doctor (these items are described in chapter 2 in this volume and we label them accordingly: MDI: meat, MDI: fruit, MDI: heating, MDI: clothing, MDI: shoes, MDI: glasses, MDI: dentist, MDI: doctor). Within the financial difficulties domain we use the following items: being in arrears with the payment of rents, the repayment of mortgages or loans on dwelling or having overdue bills; being unable to afford a week long holiday away from home once a year; being unable to pay an unexpected expense without borrowing any money (MDI: arrears, MDI: holidays, MDI: expense; for details see chapter 2 in this volume). In relation to the index developed in chapter 4, we extend our measure of deprivation to include two further items that were asked in the SHARE questionnaire but not in Eurobarometer, and were thus excluded from the analysis in the previous chapter. In

particular, we take into account information on whether lack of money prevents people from doing what they would like to do (included in the “basic necessities” domain) and whether they can afford to shop for groceries regularly (pertaining the “financial difficulties” domain). These two items are labelled as “MDI: doingthings” and “MDI: groceries” respectively. If households report inability to afford any of the items or failure to attain them, they are classified as “deprived” with respect to that item.

For the index developed in this chapter we aggregate the selected items in a single index of material deprivation on the basis of a hedonic weighting scheme. This means that the index assigns relative relevance of specific items with reference to its association with self-reported life satisfaction (see e.g. Haisken-DeNew & Sinning 2010 and Cavapozzi et al. forthcoming). We estimate hedonic weights by running an ordered probit regression of self-reported life satisfaction on all the items considered and country dummies. The weight attached to each item is given by the related coefficient, after rescaling in such a way that they sum up to 1. To avoid problems related to the aggregation of life satisfaction within households, we consider all observations for whom life satisfaction is reported in each household (standard errors in this estimation are clustered at the household level).

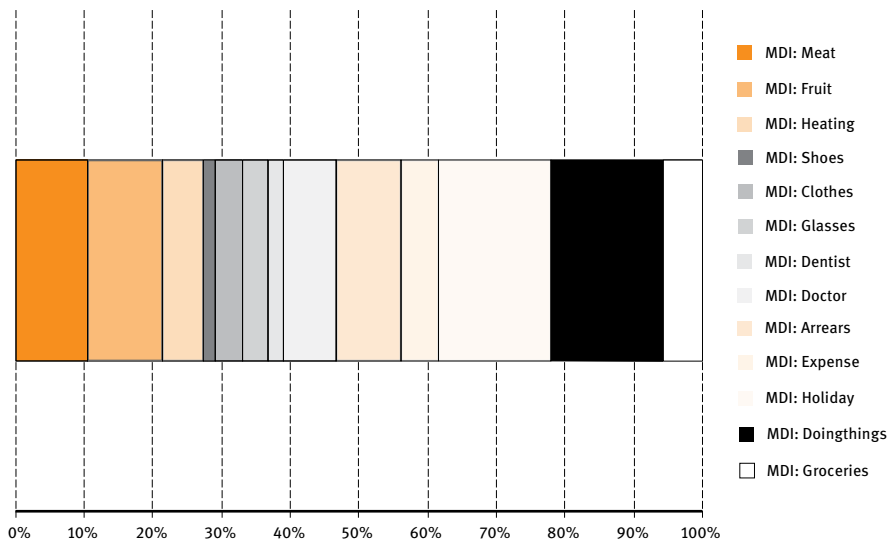


Figure 5.1: Weights assigned to MDIs in the material deprivation index

Source: SHARE Wave 5 release 0

The average values of material deprivation by country are presented in Figure 5.2. The relative ordering of countries according to their material deprivation score is in line with what we show in chapter 4: Scandinavian countries have the lowest levels of material deprivation, while countries such as Italy and Estonia have the highest average values of the derived index.

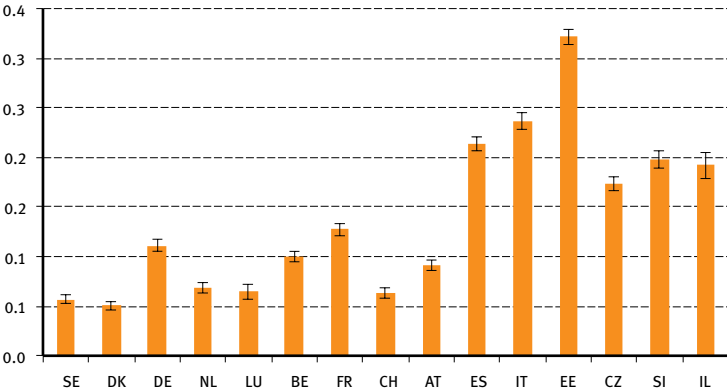


Figure 5.2: Deprivation score by country – hedonic weights
Notes: n = 39,283. Calibrated cross-sectional household weights used
Source: SHARE Wave 5 release 0

5.3 Material deprivation and other measures of material conditions

In this section we use a number of alternative measures of material conditions collected in SHARE to assess the validity of the derived index of material deprivation.

In Figure 5.3 we report the association between our material deprivation score and the proportion of households reporting difficulties in making ends meet. The information is given separately by country and age group (<65, 65-79, 80+), and we label countries by colour and age groups by the shape of the marker. The figure shows a strong relationship between the material deprivation score and the proportion of households with difficulties in making ends meet. The R-squared of the unconditional linear regression plotted in Figure 5.3 is close to 0.9, with most of the variation across countries rather than within countries (across age groups).

In Figure 5.4 we consider the association between deprivation and another measure of subjective assessment of material conditions, this time expressed as

the minimum amount of money needed to easily make ends meet. This information is asked of households who declare that they do not make ends meet easily. Figure 5.4 shows the relationship of deprivation with the ratio between the minimum amount of money needed to make ends meet declared by the households and their actual household monthly income (income deficit ratio). By construction, this ratio should be greater than 1. For example, if the ratio is equal to 1.2 this means that the household would need 20 per cent more income to easily make ends meet. As the figure shows, once again there is a strong relationship between the two measures – the more deprived is the household, the higher is the additional amount of income needed to easily make ends meet. The unconditional correlation is very high in this case as well, as the R-squared for the country/age group correlation is about 0.8.

Finally, in Figure 5.5 we show the relationship of deprivation with median household equivalent income (expressed in PPP adjusted euros), once again split by country and age group. Higher incomes are associated with lower levels of deprivation, but in this case the association is much weaker, with the R-squared lower than 0.5. While this confirms an important role of current income in determining material deprivation levels, the comparison with two other indicators in Figures 5.3 and 5.4 suggests that current income is unable to capture significant degree of variation picked up by the broader, subjective measures of material conditions.

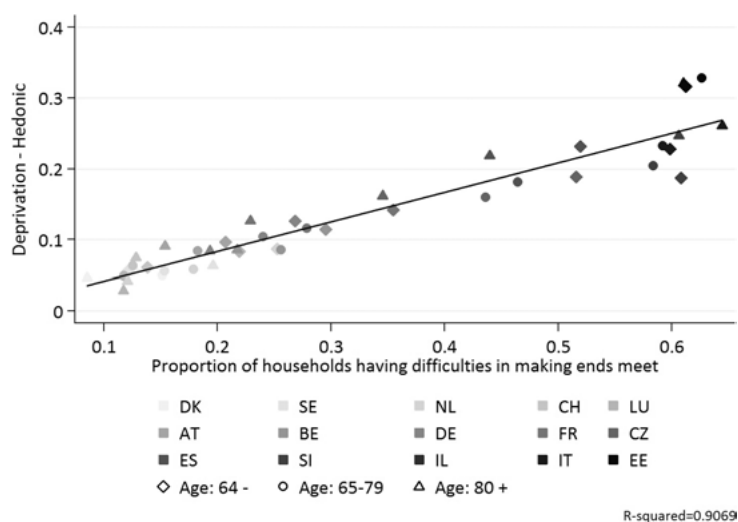


Figure 5.3: Deprivation and difficulty making ends meet

Notes: $n = 36,975$. Calibrated cross-sectional household weights used

Source: SHARE Wave 5 release 0

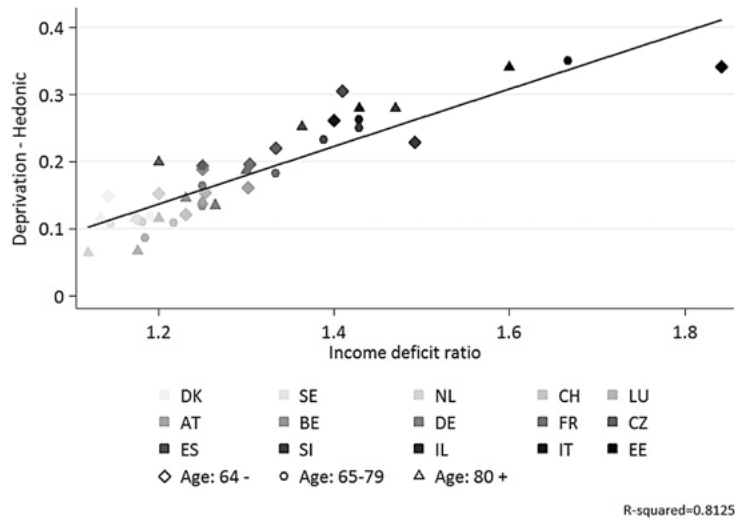


Figure 5.4: Deprivation and the amount of money needed to easily make ends meet
Notes: $n = 23,282$. Calibrated cross-sectional household weights used; the sample considered includes only households declaring to make ends meet with great difficulties, difficulties or fairly easily
Source: SHARE Wave 5 release 0

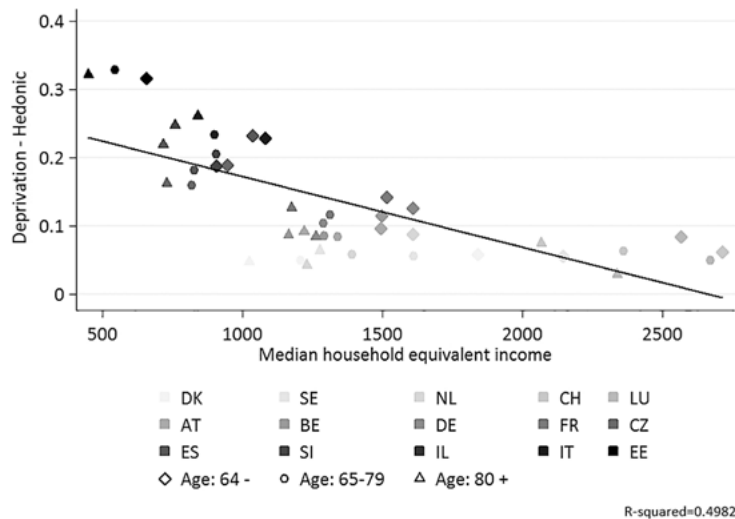


Figure 5.5: Deprivation and equivalent household income
Notes: $n = 36,975$. Calibrated cross-sectional household weights used
Source: SHARE Wave 5 release 0

5.4 Determinants of deprivation

To shed more light on our material deprivation measure we run a multivariate regression of the material deprivation index on a relevant set of covariates. Since the material deprivation indicator is computed at the household level, our dataset includes one observation per household. For each household we select the respondent who answered to the questions on the economic condition of the whole household. Individual characteristics considered by the covariates refer to the selected person in the household.

Among the regressors we include a quadratic function of age, household size, a dummy variable for gender, being single, an interaction term between gender and being single, education level (secondary, post-secondary), employment and health status (in the latter case using subjective poor health and the number of chronic health conditions). We also control for ownership status of the dwelling (being homeowner), the number of rooms per capita in the household and living in a rural area. Once observations with missing values in any of the variables included in the estimation are dropped, the resulting sample includes 33,238 households. Results are reported in Table 5.1. We see that material deprivation decreases with age and is lower among couples. Single females are more likely to suffer material deprivation compared to single men. Apart from the difference between single and couple households, material deprivation does not vary with the household size. Education reduces the likelihood of being materially deprived as does employment status and being retired, while poor health significantly contributes to poor material conditions. Households living in rural areas and those with low levels of capital (proxied by property ownership and household size) have higher levels of material deprivation.

Table 5.1: The correlates of deprivation

	(1) Coefficient	(2) Standard error
Age	-0.008 ***	(0.001)
Age squared	0.000 ***	(0.000)
Household size	0.001	(0.001)
Female	-0.010 ***	(0.002)
Single	0.032 ***	(0.003)
Female and single	0.027 ***	(0.004)
Secondary education degree	-0.042 ***	(0.002)
Tertiary education degree	-0.061 ***	(0.003)
Retired	-0.061 ***	(0.003)
Employed	-0.107 ***	(0.003)

Table 5.1 (continued)

	(1) Coefficient	(2) Standard error
The household owns the house they occupy	−0.052 ***	(0.002)
Rooms per capita	−0.011 ***	(0.001)
Poor health	0.077 ***	(0.003)
N. of chronic conditions	0.016 ***	(0.001)
Household lives in a rural area	0.005 **	(0.002)
Constant	0.590 ***	(0.043)
Country dummies	YES	
Observations	33,238	
R-squared	0.315	

Significance: *** = 1 %; ** = 5 %; * = 10 %

Source: SHARE Wave 5 release 0

5.5 Measuring and outlining the material deprivation of the older Europeans

In this chapter we develop and validate a comprehensive measure of material deprivation for the European 50+ populations using information collected in SHARE Wave 5.

Our index weights 13 items accounting for material conditions of households, attaining to the broad domains of financial difficulties and failures to reach basic needs. The index provides a comprehensive view on deprivation going beyond information on consumption and income levels. Our measure of material deprivation varies substantially across countries, with the lowest level of material deprivation in Scandinavian countries and the highest in Estonia and Italy. It correlates very strongly with two broad measures of material conditions – the simple assessment of the ability to make ends meet and a ratio of desired to actual household income. The association of the material deprivation index with current income is negative but the correlation is much lower as compared with the previous two measures, in our view confirming the disadvantage of relying only on current income information for analysis of material circumstances. Finally, we have assessed the association between material deprivation and other covariates at the household level and we have shown that deprivation is negatively associated with age and education and positively with being single, living in a rural area and poor health. Although these associations cannot be interpreted as causal effects,

they are still informative about some salient predictors of deprivation and indicate a strong relationship between a number of areas relevant from the point of view of policy. Detailed mechanisms determining the variation in material deprivation deserve further investigation, but we believe the measure developed in this chapter can serve as an important tool to monitor developments in material well-being of older people and to guide policy decisions to improve it.

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6 Measuring social deprivation and social exclusion

-
- ▶ While material deprivation decreases with age, social deprivation affects those aged 65+ much more often compared to those aged 50-64
 - ▶ Estonia, Israel and Italy are countries with highest proportion of the 50+ suffering high levels of both material and social deprivation
 - ▶ A two-dimensional measure of social exclusion shows strong correlation with poor health and with hearing and eyesight impairments. It is lower among the employed and those with income from retirement pensions
-

6.1 The social dimension of deprivation

While material conditions of households have been a key concern for policy, effective policymaking aimed at improvements in the quality of life should consider broader aspects of welfare. In this chapter we provide evidence on the degree of social deprivation among the 50+ in Europe and combine it with the material deprivation index from chapter 5 in this volume to develop an indicator of social exclusion.

The construction of the “social deprivation index” follows the methodology presented in chapter 5 for material deprivation. Our measure of social deprivation uses a number of additional variables collected in SHARE Wave 5 and combines information on items related to participation in everyday life, social activities and the quality of the neighbourhood into a single index. We find that social and material deprivation are strongly correlated, though social deprivation is more severe among older individuals, while material deprivation seems to fall as people grow older. The index of social deprivation is then used jointly with the material deprivation index to identify those who suffer both material and social deprivation. Using the two indices we construct a severe deprivation indicator which is treated as a two-dimensional proxy for social exclusion. The risk of social exclusion is highest in Estonia, Israel and Italy and is higher for individuals who are in poor health and with hearing and eyesight impairments. The risk of social exclusion is lower for high-educated individuals and for those with income from employment or retirement pensions.

6.2 Developing a Social Deprivation Index

Although the literature is compliant about one of the main features of the concept of social exclusion, namely its multidimensional character, there is little consensus on the number or scale of those dimensions. Often, however, the relevant aspects of exclusion are divided along the lines of material and social dimensions. For the purpose of this study we look at social exclusion following Jehoel-Gijsbers and Vrooman (2008), who also study this problem in the context of older people. They propose a combination of distributional and relational dimensions of social exclusion thus covering both economic-structural and socio-cultural aspects of the concept. They identify a material and non-material distributional dimension of social exclusion and divide the relational aspect of the concept into integration with regard to social relations and norms and values adapted in the society. They thus distinguish:

- material deprivation which covers deficiency in basic material needs and unequal access to rights of social citizenship in the form of public services
- social deprivation which includes social isolation and lack of social support and normative integration which stands for behaviour inconsistent with legislation and regulations, limited compliance with basic social norms and values, reduced involvement in local community or society at large.

For the purpose of the analysis of social deprivation we select 15 items from the fifth wave of SHARE, each representing a possible deprivation domain in the social dimension. Eight out of 15 items have been collected at the household level. In these cases, as in the case of the material deprivation index, the household level information is used for both partners in the household. In Table 6.1 we present details of all 15 social deprivation items included in the analysis together with source variables from the SHARE study and the proportion of deprived individuals in the sample. Table 6.1 includes also a specific weight assigned to each item in the construction of the social deprivation index based, as in the case of the material deprivation index from chapter 5, on a life satisfaction regression. There is substantial variation in the degree to which people are classified as “deprived” among the chosen items. As we can see, while almost 91.6 per cent of respondents did not participate in any political or community-related organisation in the year prior to interview, only 1.6 per cent reported that they did not feel part of their neighbourhood.

Table 6.1: Social deprivation items (SDIs)

Social deprivation item	Description	Deprived	Hedonic weight*	SHARE source
SDI: room	Less than one room per person in HH.	2.84 % (0.166)	0.044	ho032, mn013
SDI: literacy	Poor reading or writing skills.	5.44 % (0.227)	0.077	cf001, cf002
SDI: IT skills	Poor computer skills or never used a computer.	45.56 % (0.498)	0.041	it003
SDI: feeling part	Not feeling part of the local area.	1.59 % (0.125)	0.104	hh022
SDI: vandalism	Vandalism in the local area.	4.43 % (0.206)	0.035	hh023
SDI: clean area	Local area not clean.	2.26 % (0.149)	0.053	hh024
SDI: help in area	No helpful people in local area.	2.93 % (0.169)	0.090	hh025
SDI: bank access	Difficult access to bank.	5.68 % (0.231)	0.005	hh027
SDI: shop access	Difficult access to grocery shop.	4.16 % (0.200)	0.041	hh028
SDI: pharmacy access	Difficult access to pharmacy.	4.82 % (0.214)	0.017	hh030
SDI: doctor	Waiting too long to see a doctor.	6.45 % (0.246)	0.088	hc115
SDI: course	Not attending any course in the past 12 months.	64.03 % (0.480)	0.055	ac035
SDI: organisation	Not taking part in any organisation in the past 12 months.	91.60 % (0.277)	0.037	ac035
SDI: trust	People cannot be trusted.	21.14 % (0.408)	0.076	ex026
SDI: isolation	Feeling left out of things.	20.97 % (0.407)	0.237	ac016

Notes: * - Hedonic weights constructed on the basis of a regression of the chosen items on the reported values of life satisfaction (see chapter 5 in this volume). Number of observations varies from 59,089 in case of 'SDI: help in area' to 64,966 in case of 'SDI: room'.

Source: Authors' calculations using SHARE Wave 5 release 0 data, weighted with individual weights

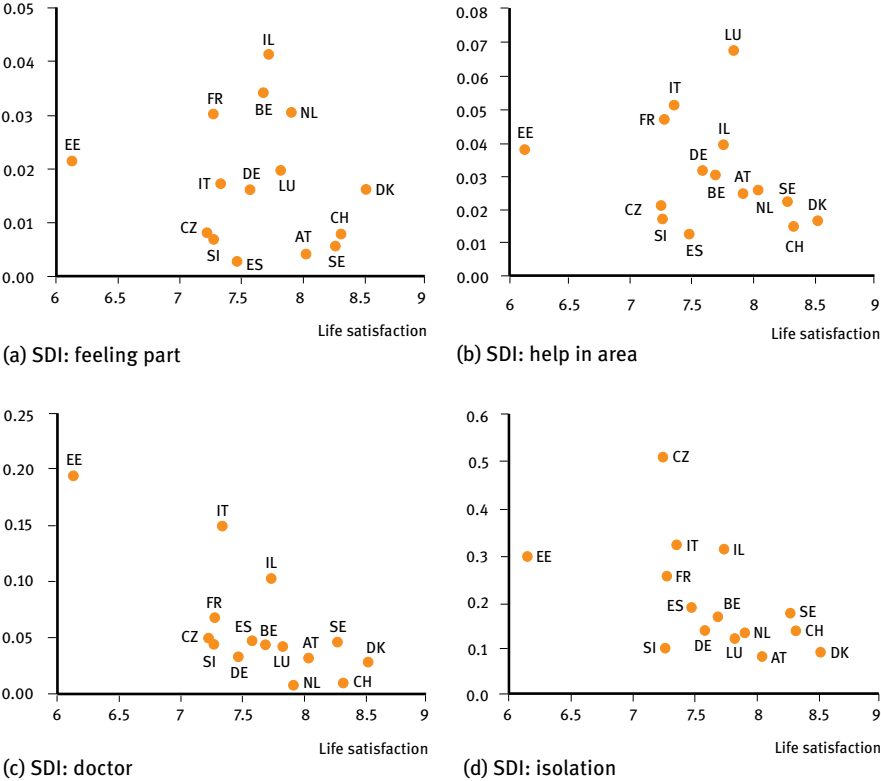


Figure 6.1: Selected social deprivation items (SDI) and life satisfaction across countries

Notes: Number of observations: (a) 57,722; (b) 56,830; (c) 61,897; (d) 61,735.

Source: Authors' calculations using SHARE Wave 5 release 0 data, weighted with individual weights

In the process of selecting the items to be used in the development of our measure of social deprivation we first examined cross correlation between the items to verify that the selected variables reflect a common underlying concept. For this purpose we used the polychoric correlation method (Kolenikov & Angeles 2009), which allows measuring the correlation between two categorical variables treated as outcomes of correlated latent variables. The cross correlation coefficients were either positive or insignificantly different from zero, which supports the choice of our set of items for inclusion in the index.

In order to combine different social deprivation items into a single index (Chakravarty & D'Ambrosio 2006) the weight of each of them has been determined in inverse relation to its correlation with life satisfaction. This method,

based on the so called hedonic weights, is introduced and described in more detail in chapters 4 and 5 in this volume (see also: Haisken-DeNew & Sinning 2010, Cavapozzi et al. 2013). The most important elements of the index, i.e. those with highest weights are (see Table 6.1): feeling left out of things (weight = 0.24), not feeling part of the neighbourhood (weight = 0.10), having no helpful people in the local area (weight = 0.09) and waiting too long to see a doctor (weight = 0.09). In Figure 6.1 we present the correlation of these four items at country level with country-specific average values of life satisfaction. The correlation between life satisfaction and all items included in the index is negative, but in some cases – such as in the case of, for example, not feeling part of the local area – it appears relatively weak. As far as country variation is concerned, Estonia's example stands out with the lowest mean life satisfaction, yet with levels of social deprivation, as reflected in the selected items, at relatively low or average values. In particular the proportion of respondents with poor reading and writing skills in Estonia is among the lowest.

Interestingly, the pattern of deprivation for the selected items varies across countries. For example, while in Spain the percentage of respondents reporting illiteracy is highest at 16.0 per cent, only a very low proportion of respondents are unsatisfied with their local area (1.2% declare that people in their neighbourhood are not helpful and 0.3% do not feel part of their local area). On the other hand, a high proportion of respondents in the Czech Republic feel “left out of things” (50.7%) and relatively few are deprived of other items. Such differences reflect various historical, cultural and institutional aspects which determine the quality of life of the 50+ in Europe and stress the importance of using a comprehensive set of dimensions in the process of creating a meaningful index for the purpose of international comparisons. When taking into consideration most of the considered items, the two countries that stand out negatively with respect to social deprivation in comparison to other 50+ populations are Italy and Israel.

6.3 Social deprivation by country and age group

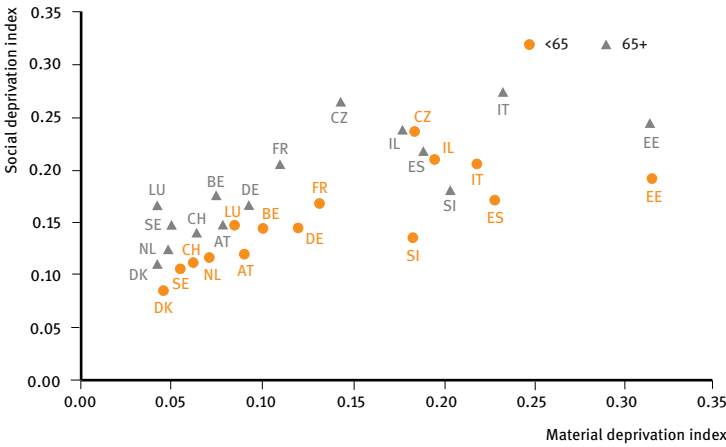


Figure 6.2: Levels of social and material deprivation indices by country for population aged 50–64 and over 64 years

Notes: Values of material deprivation index computed on household level are taken for each individual in the household; No. of observations: Material deprivation index: 56,792; Social deprivation index: 56,635

Source: Authors' calculations using SHARE Wave 5 release 0 data, weighted with individual weights

Figure 6.2 shows a strong positive correlation between the measure of social deprivation and material deprivation developed in chapter 5 and some important variation by age group. Countries with relatively low levels of material deprivation often also have low levels of social deprivation (e.g. Austria, Denmark, Netherlands, Sweden and Switzerland) and vice versa. In general, levels of deprivation in the two dimensions are much higher in Southern and Eastern Europe and Israel. In terms of material distress the highest level is observed for Estonia, while social deprivation is most severe in the Czech Republic. At the same time, there is a number of cases where the level of material deprivation differs substantially for a given level of social deprivation. This is the case for example when we look at Italy and Estonia, or Spain and France. On the other hand, while the average level of material deprivation in Israel and Slovenia is similar, the level of social deprivation in these countries differs significantly.

Looking at the variation by age group and considering those aged 50–64 and the 65+, in the case of all countries the level of social deprivation is higher for the older group while, with three exceptions of Italy, Slovenia and Switzerland, material deprivation is lower among older people. The problem of social deprivation

vation thus appears to be growing with age, which may reflect, on the one hand, increased isolation of older individuals and, on the other hand, greater importance assigned by them to their situation in the social domain.

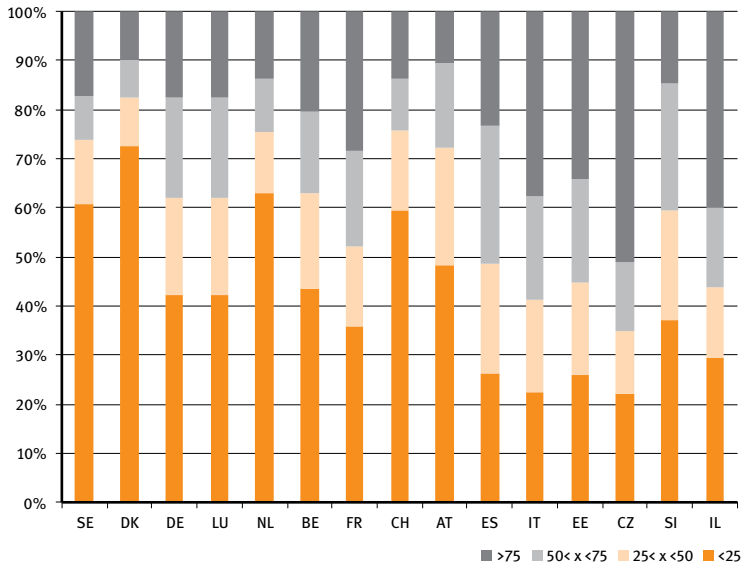


Figure 6.3: Distribution of social deprivation index by country

Notes: No. of observations: 56,635

Source: Authors' calculations using SHARE Wave 5 release 0 data, weighted with individual weights

The indicator of social deprivation is unequally distributed within specific countries. Figure 6.3 shows the percentage of individuals for each country placed in a specific quartile of the total social deprivation distribution. In the case of Western Europe and the Nordic countries the majority of the 50+ population is only mildly deprived. In Austria, Denmark, Netherlands, Sweden and Switzerland 50 to 70 per cent of individuals are in the lowest quartile of the total social deprivation index. On the other hand, in the Czech Republic, Estonia, Italy and Israel between 34 and 51 per cent of individuals are in the highest quartile of the overall social deprivation index distribution. In the Czech Republic every second person is severely socially deprived, in Italy this problem concerns almost 40 per cent of the individuals in the SHARE sample.

6.4 At risk of social exclusion indicator

Because deprivation indices cannot be interpreted in a cardinal fashion, in order to combine the material and social measures of deprivation into a single two-dimensional indicator we refer to specific thresholds in the two distributions to identify those with high levels of deprivation in each dimension. The thresholds are defined with respect to the 75th percentile of the total distribution of each deprivation index (see e.g. Jehoel-Gijsbers & Vrooman 2008). Individuals with deprivation measures placing them above the 75th percentile of distribution in both dimensions are classified as being “severely deprived” and we use this measure as an indicator of risk of social exclusion. While the 75th percentile threshold is arbitrary, on the one hand, it is high enough to capture the most deprived individuals, and on the other, low enough to allow for analysis of the potential cross-country variation. Introducing a universal rather than a country-specific threshold provides us with a common reference and thus ability to compare the levels of risk of social exclusion between the SHARE countries.

Figure 6.4 presents the percentage of households identified as at risk of social exclusion according to our two-dimensional measure. The highest proportion of population classified as being at risk of social exclusion is in Estonia (27.1%), Israel (25.5%) and Italy (23.1%), closely followed by the Czech Republic (17.6%) and Spain (13.0%). In Denmark, Sweden and Switzerland this proportion does not exceed 3.6 per cent.

To investigate the factors behind the probability of being at risk of social exclusion we run a logistic regression with the binary social exclusion indicator regressed on a number of characteristics. These include a quadratic function of age, gender, household size, indicator for living in rural area, partnership status, declared employment status, self-reported health, hearing and eyesight impairments, education and country dummies.

Regression coefficients and marginal effects estimated for the age of 65 years are reported in Table 6.2 and show that the risk of social exclusion marginally decreases with age and is slightly lower among those living in rural areas. Having a partner in the household decreases the probability of being socially excluded by 6.3 percentage points (pp). As compared to other employment states, retirement and employment substantially reduce the probability of social exclusion, respectively by 3.8pp and 7.6pp. Probability of social exclusion decreases with higher education (by 3.7pp). On the other hand, poor health and hearing and eyesight impairments substantially increase the risk of social exclusion, respectively by 7.3pp and 4.0pp. The cross-country comparison confirms the variation reported in Figure 6.1, while a more detailed analysis (not reported here) suggests significant within-country variation in social exclusion in such countries like Israel (with

substantially higher levels of exclusion among non-Hebrew speakers). The geographic pattern of social exclusion and the initial results on differences along the lines of ethnic division suggests an important dimension for analysis of social exclusion for further research.

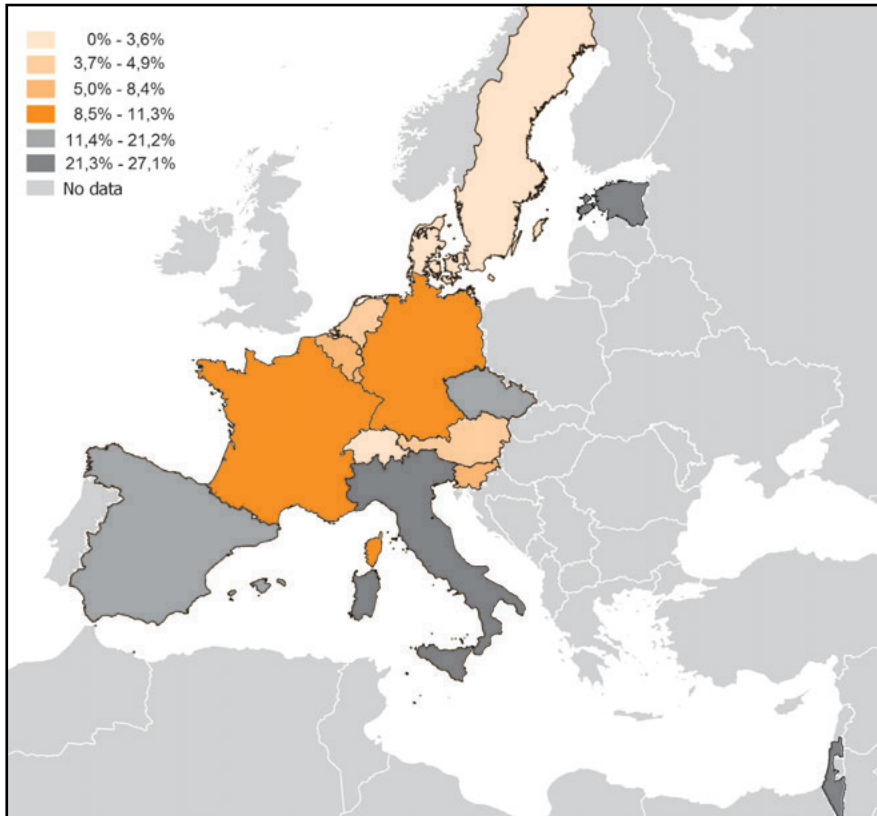


Figure 6.4: Proportion of individuals at risk of social exclusion by country

Notes: Values of material deprivation index computed on household level are taken for each individual in the household; No. of observations: 54,873

Source: Authors' calculations using SHARE Wave 5 release 0 data, weighted with individual weights

Table 6.2: Logistic regression results: coefficients and marginal effects calculated for age 65

	Coefficients	Standard error	Marginal effects	Standard error
Age	-0.093***	(0.017)	-0.001***	(0.000)
Age squared	0.001***	(0.000)	–	
Female dummy	-0.042	(0.032)	-0.003	(0.002)
Household size	0.144***	(0.017)	0.009***	(0.001)
Living in rural area	-0.078**	(0.034)	-0.005**	(0.002)
Having partner in household	-0.846***	(0.037)	-0.063***	(0.003)
Retired	-0.613***	(0.043)	-0.038***	(0.003)
Employed	-1.238***	(0.050)	-0.076***	(0.003)
Poor self-reported health	1.195***	(0.038)	0.073***	(0.003)
Poor hearing or eyesight	0.649***	(0.040)	0.040***	(0.003)
Higher education	-0.609***	(0.042)	-0.037***	(0.003)
Constant	1.305**	(0.601)	–	
Country dummies	YES		YES	
Observations	53,888		53,888	

Notes: In case of dummy variables marginal effects are calculated for discrete change of dummy variable from 0 to 1; * p<0.10, ** p<0.05, *** p<0.01

Source: Authors' calculations using SHARE Wave 5 data, unweighted

6.5 Monitoring social exclusion to support policies for an inclusive society

In this chapter we introduced an index measuring social deprivation constructed using a battery of questions included in SHARE Wave 5 data. Selection of the items was based on previous studies which evaluated social exclusion (Chakravarty & D'Ambrosio 2006, Levitas et al. 2007, Jehoel-Gijsbers & Vrooman 2008) and on cross-correlation analysis of specific items. We adopted the 75th percentile of the distribution of the social deprivation index as a threshold indicating severe deprivation and combined this with severe material deprivation indicator derived from the material deprivation index developed in chapter 5. Individuals classified as severely deprived in both of these dimensions have been considered as being at risk of social exclusion.

We find that while our measure of social deprivation strongly correlates with material deprivation, there is no direct relationship between these two indices. The social deprivation index is generally higher for older individuals, while the opposite is true for the material deprivation measure. There are also substantial

differences in social deprivation for a number of countries with very similar levels of material deprivation. The social deprivation index provides us thus with additional, potentially valuable, information on dimensions of the quality of life of the 50+ populations, which are missed in the measures of material conditions.

The proportion of people at risk of social exclusion, as identified by the material and social dimensions, varies significantly across countries. The levels of social exclusion are lowest in Western Europe and Scandinavian countries and highest in Estonia, Israel and Italy. Our analysis suggests that, as European societies grow older, the importance of different aspects of social inclusion as determinants of people's quality of life will grow. If public policy is to respond to these developments, then it should take into account dimensions which go beyond material conditions of older people. Such issues as access to public facilities and services, social relations and infrastructure for their development may thus require more attention among policy makers. These topics should deserve more space in the academic debate on ageing and in public policy discussions.

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7 Material and social deprivation in the macroeconomic context

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- ▶ Both the average level of national income and its distribution are strongly related to the indices of social and material deprivation among older people
 - ▶ Income-defined poverty rates reflect variation in material deprivation but are not informative of its social dimension
 - ▶ Higher public expenditure on social protection and healthcare is associated with lower material and social deprivation
-

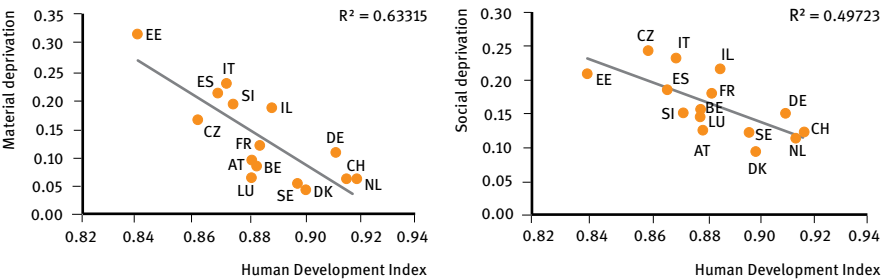
7.1 Deprivation – a structural issue?

In chapters 5 and 6 in this volume, material and social deprivation among the 50+ have been examined from the perspective of individual respondents and households. This chapter takes a broader perspective and sets the derived indices against the background of the macroeconomic and institutional environment. Institutional arrangements and the overall level of a country's economic development can play a fundamental role in influencing respondents' material and non-material standard of living and understanding their role seems instrumental in designing policies to address the problems of deprivation and social exclusion.

Below we set the average values of the social and material deprivation indices developed in chapters 5 and 6 against various external data sources including Eurostat, United Nations and the World Bank. We analyse the relation between deprivation and the overall level of economic development and explore the relationship between public social expenditure and deprivation to examine the extent of the relationship between deprivation and government spending on welfare and pensions. Finally we also compare the degree of deprivation to the level of public health care expenditures. Although the pattern of correlation of material and social deprivation with the examined macro indicators is often similar, interesting conclusions follow from the observed differences, concerning the role of each of the dimensions of deprivation as potential guides for the design of public policy.

7.2 Deprivation in relation to the standard of living and inequality

People who enjoy a higher material standard of living are less probable to be deprived of basic material needs. Whether this is true not only at individual but also at the aggregate level, it will depend on the one hand on the average level of development, and on the other, on the distribution of resources within countries. Below we begin by analysing deprivation against the Human Development Index (HDI) designed by the United Nations Development Programme (UNDP). The HDI has been developed to overcome some of the shortfalls of simple economic measures of development, such as the GDP per capita. The HDI combines the Gross National Income (GNI) per capita, life expectancy and education capabilities (UNDP 2014). Figures 7.1a and 7.1b present the relation of material and social deprivation to HDI measured in 2013. These figures show that social and material deprivation are both negatively and strongly correlated with the HDI. For example Estonia with the highest average level of material deprivation at 0.316 has also the lowest values of the HDI at 0.84. On the other hand, when we look at Switzerland with the highest HDI among SHARE Wave 5 countries (0.92), it also has the lowest levels of material deprivation (0.063). Average levels of social deprivation show a similar pattern in relation to HDI as material deprivation.



(a) Material deprivation

(b) Social deprivation

Figure 7.1: Material and social deprivation in relation to HDI (2013)

Notes: Weighted with individual weights (for material deprivation index $N=56,792$ and for social deprivation index $N=56,635$)

Source: SHARE Wave 5 release 0, UNDP 2014

We go further with our analysis by focusing on two of the main parts of the HDI, namely GNI per capita and life expectancy. The relationship between GNI per capita (corrected by PPP) and material deprivation (Figure 7.2a) reflects a strong association between the two and shows that people in countries with lower gross output per capita are more materially deprived than those with higher incomes. Interestingly, the same holds also for social deprivation (Figure 7.2b), although as we can see the level of social deprivation among countries with very similar levels of income (Austria, Belgium, Germany, Denmark, the Netherlands and Sweden) may vary between 0.10 and 0.16. The general pattern of the relationship between average income and deprivation is quite clear and confirms earlier findings reported by Whelan et al. (2012: 489–503).

When we look at the relation between life expectancy at the age of 50 and deprivation, the pattern is much less clear, which could be expected given the complex nature of factors which determine life expectancy and the relatively low variation in life expectancy for countries in the SHARE sample. Figure 7.2c shows only a small correlation between material deprivation and life expectancy. Regional characteristics, historical differences and wealth may play a greater role in explaining life expectancy than deprivation.

As mentioned earlier, while the overall level of income may strongly affect the standard of living and the degree of deprivation, the second factor which is likely to be important is how resources are distributed in the society. It has been widely recognised that inequality can be related to diverse aspects of well-being at the macro level including health, life expectancy and the level of violence (Wilkinson & Pickett 2010). In Figures 7.3a and 7.3b we present the relation of material and social deprivation derived from SHARE data to income inequality expressed by the Gini coefficient. Although the relationship is weaker than the one found for the level of income, we can still confirm a positive correlation between rising income inequality and both material and social deprivation. The reported patterns suggest that not only the level of income but also the degree of inequality in its distribution may play a role in influencing deprivation of older people.

In the next section we examine the possible policy channels which may affect the differences in the levels of deprivation by looking at a number of indicators related to the degree of government's influence on the distribution of resources through transfers and government spending.

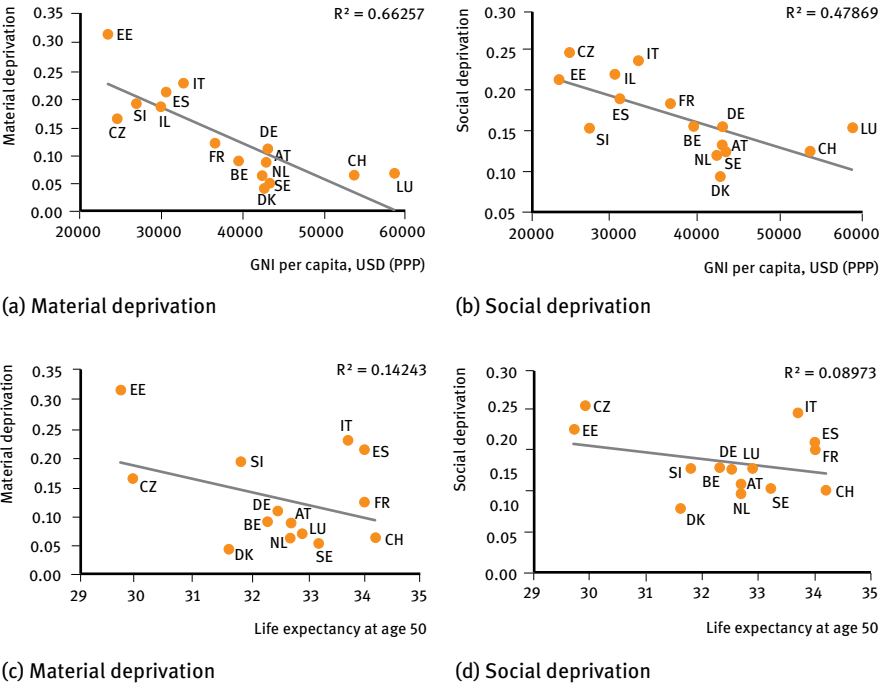


Figure 7.2: Material and social deprivation in relation to Gross National Income per capita (in PPP adjusted 2012 USD) and to life expectancy at age of 50 (2012)

Notes: Weighted with individual weights (for material deprivation index $N=56,792$ and for social deprivation index $N=56,635$)

Source: SHARE Wave 5 release 0, UNESCO Institute for Statistics (2013), Life expectancy by age, Eurostat

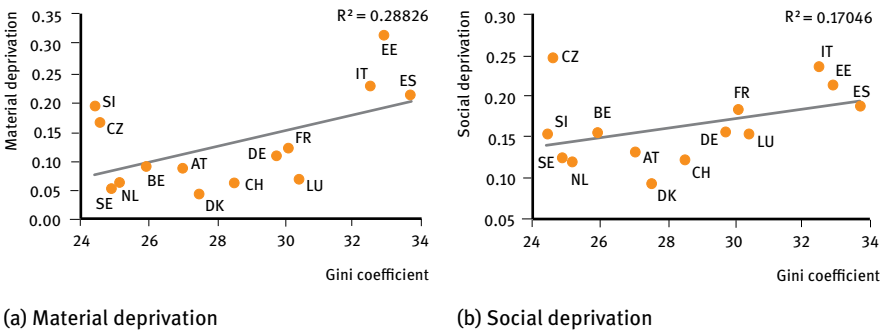


Figure 7.3: Material and social deprivation in relation to income inequality (Gini coefficient, 2013)

Notes: Weighted with individual weights (for material deprivation index $N=56,792$ and for social deprivation index $N=56,635$)

Source: SHARE Wave 5 release 0, Gini coefficient of equivalised disposable income, Eurostat

7.3 Social protection and the levels of deprivation

Social protection consists of policies and programs designed to reduce the exposure or mitigate the negative effects of economic and social risks affecting people, such as unemployment, poor health, disability or old age. The policies include labour market support, social insurance schemes and various forms of social assistance.

European countries differ in the extent and form of welfare support exercised by their governments. The model adopted by Northern European countries (e.g. Sweden, Denmark and the Netherlands) has been inspired by the principle of universalism, with broad access to benefits and services and limited degree of means-testing financed via a strongly progressive tax system. Many Central and Southern European countries (e.g. Austria, Belgium, France, Germany, Spain and Italy) follow the model based on the principle of subsidiarity with a more prominent role played by social insurance schemes and informal support through family ties. Finally, the liberal model, adopted by Anglo-Saxon countries and Switzerland, confines the role of the state to the provision of basic needs, typically on a means-tested basis, with greater role given to the private provision of benefits and services.

In this section we provide some descriptive data on the relationship between different extent of social welfare support and social exclusion among older people in SHARE Wave 5. In particular, we compare the material and social deprivation indices with macro indicators measuring poverty and government expenditure on pensions and social protection.

Figure 7.4a shows the relationship between material deprivation and the at-risk-of-poverty rate for persons aged 65+ as measured by Eurostat (European Commission 2003). There is a positive correlation between these two measures, but the relationship is weaker than one could expect, and there is virtually no correlation between the poverty rate and the degree of social deprivation (Figure 7.4b). Given the findings reported above, these results may reflect the concerns raised earlier in the literature (e.g. Atkinson et al. 2004) that income based relative poverty measures may be poor indicators of material conditions – in particular with respect to the living standards of older people.

Whether public pensions, as the main source of replacement income in most European countries, are effective in guaranteeing adequate standards of living to retired people is clearly an important policy question. The possible conclusion we can draw from Figure 7.4c is that in general a higher proportional expenditure on public pensions leads to a reduction in material deprivation. Some countries, like Italy for example, seem to deviate from this general pattern with a very high ratio of public pension expenditures to GDP (11.1 %) combined with high levels of

material deprivation among older people (0.23). In addition to having the third highest median age in the world, Italy's high income inequality, as measured by the Gini index (32.5), is most likely reflected also in pension benefits inequality. In the similar fashion to the relationship between poverty and deprivation, there seems to be very little correlation between social deprivation and pensions expenditure. This shows that even if the material conditions among the 50+ population could be improved with higher public spending on social security benefits, there will be aspects of well-being which will demand a more comprehensive and complex approach.

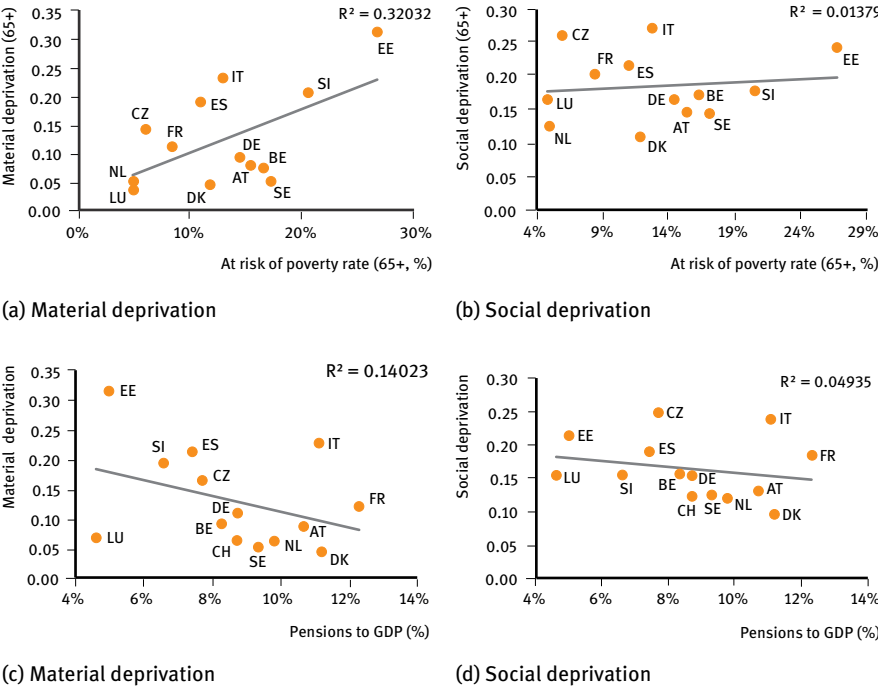


Figure 7.4: Material and social deprivation in relation to poverty rate for persons aged 65+ and to public pension expenditure as proportion of the GDP

Notes: Poverty line defined as 60 % of median equivalised disposable income; weighted with individual weights (Number of observations in: (a) 30,267; (b) 29,917; (c) 56,792; (d) 56,635)

Source: SHARE Wave 5 release 0, Public pensions expenditure, Eurostat

Figure 7.4c may also serve as a warning signal for the coming decades. Since public old age pensions are usually the most important source of income for retired people, discontinuous working careers and high levels of unemployment among current working age individuals may result in very low public pension

benefits for some individuals, particularly in funded contributory schemes. The relationship presented in Figure 7.4c suggests that such low levels of pensions in the future may lead to increasing problems of material deprivation among the future retirees.

Since in most countries social protection systems provide additional benefits targeted at people without adequate resources to cover economic, social and health related difficulties, we extend the analysis presented in Figure 7.4 to include these additional forms of support. Figure 7.5a plots material deprivation against government social protection expenditure as proportion of the GDP in 2012. The negative correlation pattern in this case seems stronger compared to that presented for social security benefit expenditures and it can also be detected in the case of social deprivation (Figure 7.5b). Countries in Northern (Sweden, Denmark and the Netherlands) and to a lesser extent Central Europe (Austria, Germany, Belgium and France) which spend more on social protection achieve lower levels of material deprivation. Conversely, Eastern European countries (e.g. Estonia and Czech Republic) spend less and score higher in material deprivation. Italy, once again, appears to be a country where high social protection expenditure does not go together with low levels of deprivation.

Figures 7.5c and 7.5d relate material and social deprivation to expenditure on housing and social exclusion protection in proportion to GDP. This measure should serve as a good proxy for the level of support targeted at the worse off households. The figures show that low public expenditure in this area is associated with high levels of both material and social deprivation (e.g. Italy, Spain, Estonia, Slovenia and Czech Republic) and may give support to the extension of such policies if governments aim at reducing exclusion. The example of Italy is worth noting in this context as it is a country with high overall social protection expenditures but at the same time the lowest expenditure on housing and social exclusion protection (0.1 % of GDP). This may partially explain the higher levels of both material and social deprivation in Italy, as there essentially seems to be no specific material support targeted at the lowest income groups.

The welfare models adopted in Northern and Central European countries seem to be more effective in reducing material deprivation and mitigating social exclusion of older people. On the other hand, there seems to be scope in the Southern and Eastern European countries such as Italy, Spain, Estonia, Slovenia and Czech Republic for reduction in the extent of both material and social deprivation which could be achieved through targeting of additional resources through housing support and social assistance to the worst-off groups of the population.

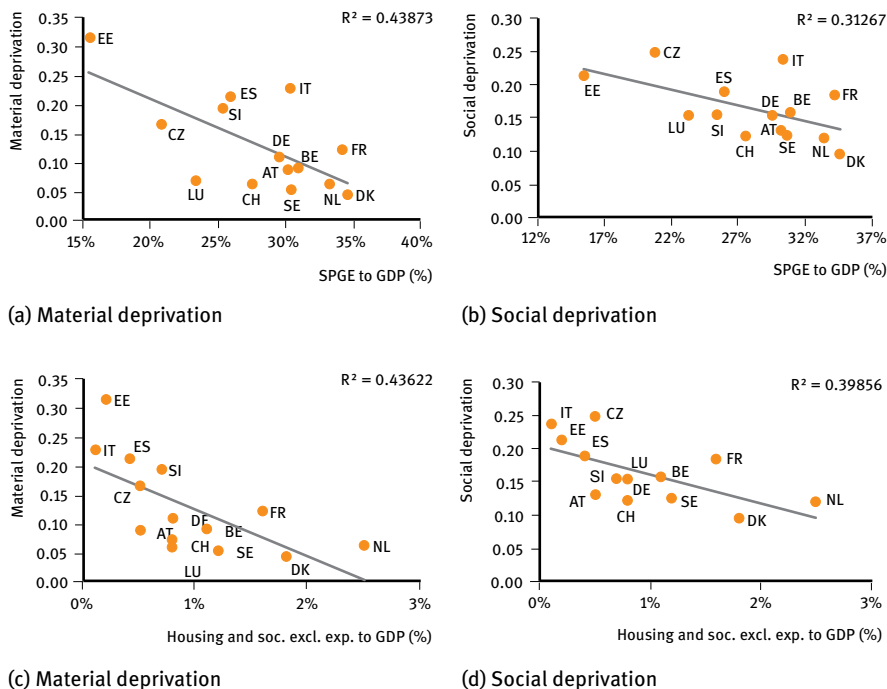


Figure 7.5: Material and social deprivation in relation to social protection government expenditure (SPGE) and to expenditure on housing and social exclusion as proportion of the GDP (2012)

Notes: Weighted with individual weights (for material deprivation index N=56,792 and for social deprivation index N=56,635)

Source: SHARE Wave 5 release 0, Social protection government expenditure, Eurostat

7.4 Relating health care expenditure and deprivation

Health has been named as one of the most important factors in the multidimensional process of social exclusion (Jehoel-Gijsbers & Vrooman 2007) and it has significant implications for a number of socio-economic outcomes determining well-being at individual and social level. The effect of health on deprivation and social exclusion is an example of such consequences as deteriorating health can lead to loss of income, poverty and social exclusion. At the same time social exclusion may further contribute to ill-health (Wagstaff 2002).

Public health care expenditure plays a significant role in explaining cross-country variation in health outcomes (Nixon & Ulmann 2006). This relationship,

however, is very complex as outcomes will be affected by affordability of care, adequacy of supply, equal availability and geographical access to health services (Gulliford et al. 2002). European healthcare systems differ in these respects and one has to have in mind that the level of spending is just a proxy for quality of care provision. In Figure 7.6 we can see however, that there is a strong relationship between the level of public healthcare expenditure (PHE) as proportion of the GDP and both material and social deprivation in the countries participating in SHARE Wave 5.

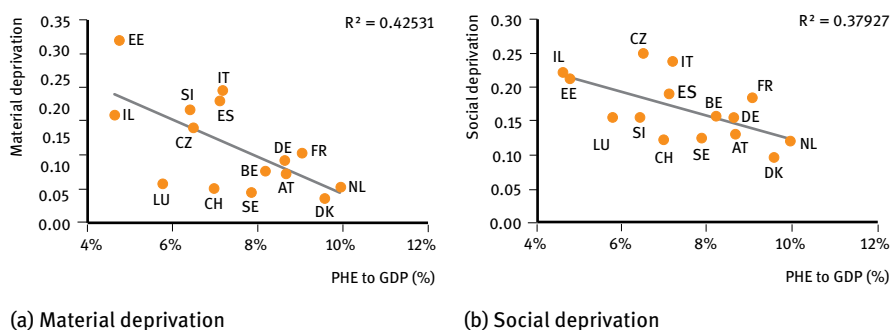


Figure 7.6: Material and social deprivation in relation to public health expenditure (% of GDP, 2012)
 Notes: Weighted with individual weights (for material deprivation index N=56,792 and for social deprivation index N=56,635)
 Source: SHARE Wave 5 release 0, World Development Indicators, World DataBank

As Figures 7.6a and 7.6b show, it seems that countries that spend less of public resources on health care face a larger scale of deprivation in both the material and social dimensions, and in effect, higher levels of social exclusion. For example Estonia and Israel both scoring high in terms of material and social deprivation (Estonia in material deprivation: 0.316 and social deprivation: 0.215, Israel: 0.227 and 0.237 respectively) also have the lowest PHE to GDP from among the analysed countries (4.7 % and 4.6 % respectively). On the other hand, Denmark and the Netherlands score very low in social deprivation (respectively 0.097 and 0.120) and material deprivation (0.044 and 0.061), and these are countries with almost double the level of public health expenditure in GDP (9.6 % and 9.9 %) in comparison to Estonia and Israel. The most likely mechanism behind this relationship is that higher levels of public health expenditure lead to improvements in health and these in turn have positive implications for material conditions of individuals and their social participation. Given the complicated nature of healthcare systems, the question of the specific aspects of particular systems which are most effective in bringing about health improvements which reduce deprivation

certainly deserves more attention. Efficiency of the systems may stem from high quality of care, unrestrained access to health care facilities or high effectiveness of spending.

7.5 A broader perspective on socioeconomic policy

In this chapter we have used the material and social deprivation indices derived in chapters 5 and 6 in the context of cross-country variation in macroeconomic indicators to demonstrate their potential as references for benchmarking of government policies. Both material and social deprivation fall as income per capita grows and are lower in countries where incomes are distributed more equally. We also find evidence that higher government expenditure, in particular in the area of public health and social safety net is related to deprivation in the two analysed dimensions. Interestingly, while poverty levels defined with respect to current income are associated with material deprivation, there is little evidence on their correlation with the social dimension. This last finding would suggest that if policymakers aim at reducing the levels of social exclusion and seriously consider various non-material aspects of deprivation, they have to focus on broader targets than poverty levels. Higher financial transfers, in particular targeted at those at the lower end of the income distribution, may be effective in improving the material position of households. However, as a complex phenomenon, social exclusion requires a comprehensive policy approach. It seems that such approach should combine targeted redistribution with improved health care and other forms of support to address issues such as social isolation, mobility and lack of social infrastructure. Further research should consider continued improvement in understanding different aspects of social exclusion and development of indicators to monitor its variation and development over time.

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8 Does hearing impairment lead to social exclusion?

-
- ▶ The development of hearing difficulties is positively associated with feeling left out of things often and negatively associated with the frequency at which individuals carry out social activities
 - ▶ Hearing impairment increases subjective feelings of exclusion throughout the population, while it threatens the objective participation in social activities only for the population aged 70 + and among those who have a large social network
 - ▶ Feelings of exclusion and reduced social participation act as pathways through which hearing problems may lead to depression, functional limitations and cognitive impairment
-

8.1 The effects of hearing loss late in life

Hearing loss is a common sensorial deficit among older people. In an ageing society, the assessment of its consequences in terms of physical and mental health and quality of life is of uttermost importance to understand whether there is a scope for policies facilitating audiological rehabilitation that may improve the well-being of senior individuals affected by hypoacusia.

Recent empirical evidence (see Arlinger 2003 for a review) shows indeed that hearing impairment is associated with limitations in activities of daily living (Gopinath et al. 2012), a faster cognitive decline (Lin et al. 2013), and increased odds of developing symptoms of depression (Andersen-Ranberg & Vestergaard 2013). Nevertheless, little is known yet about pathways that can explain these effects and understanding mechanisms is crucial to design interventions that could help hearing impaired people and to target them to those for whom the consequences would be more negative.

One such channel could be that hearing impairment leads to reduced participation in social activities and in turn to social isolation, which has been shown to increase symptoms of depression (Abu-Rayya 2006) and to impair cognitive functions (Fratiglioni et al. 2000).

Although we are not the first to address this topic, previous studies on the matter do not lead to univocal conclusions. On the one hand, using longitudinal data from the Alameda Country Study, Strawbridge et al. (2000) showed that baseline hearing impairment is associated with feelings of being left out and loneliness in a one-year follow-up. On the other hand, in a prospective study on

Japan, Yamada et al. (2012) showed that baseline hearing impairment plays no role in predicting enjoyment in carrying out social activities in the three-year follow-up. Both studies rely on measures of subjective social inclusion and loneliness, rather than on objective measures like the frequency at which individuals carry out social activities. An early exception in this sense is Weinstein and Ventry (1982) that report a cross-sectional negative correlation between objective social inclusion and hearing impairment. Furthermore, no comparable evidence is available for other countries, and no evidence about the consequences of the onset – rather than the prevalence – of hearing impairment is available either.

This paper tries to fill these gaps using cross-national longitudinal data on the European older population from the SHARE survey, where information on self-reported hearing impairment, subjective feelings of exclusion and objective indicators of involvement in social activities are available.

Our analysis shows that, conditional on the baseline level of the outcome and a large set of baseline covariates measuring socio-economic status, physical and mental health, developing hearing impairment between the two interviews is associated with increased feelings of being left out of things and with a lower likelihood of carrying out activities that involve a social component at least once a week, confirming that social exclusion can be a pathway through which hearing impairment leads to other negative health outcomes.

To gain a better understanding about the subpopulations that are mostly affected by the negative social consequences of hearing impairment, we carry out a subgroup analysis. We split the sample by age groups, distinguishing between people below and above age 70, and between respondents whose social network size is below and above the median level by country. On the one hand, those aged 70+ belong to the top quartile of the age distribution in the sample of unimpaired individuals at baseline, and are clearly above working age in all countries and for most occupations. Also, there is a discrete jump in cognitive impairment at age 70, as shown in Celidoni et al. (2013). On the other hand, social network size is a proxy for the baseline level of social inclusion. Interestingly, while subjective feelings of exclusion are significantly associated with incidental hearing impairment for people both below and above age 70, we detect a significant association between the onset of hearing difficulties and the involvement in social activities only for people aged 70+. We observe a similar pattern also when we split the sample by social network size: we find significant effects on the involvement in social activities only for those with a large social network. This may surprise, because having a large network could mitigate the consequences of hearing impairment. But people with a small network are less likely to carry out social activities to begin with, and this could explain why we do not see negative differences for them.

These findings allow us to identify the 70+ and those with a large social network as the groups for whom hearing loss is more likely to lead to reduced social participation, and this information can be used to target rehabilitative interventions, such as public subsidies towards the purchase of hearing aids.

The chapter is organised as follows: section 8.2 presents the data and some descriptive statistics. The empirical model for the multivariate analysis is introduced in section 8.3 and results are shown in section 8.4. Conclusions follow thereafter.

8.2 Data and descriptive statistics

We use data on individuals from 13 European countries that participated in both SHARE Wave 4 and 5 and were aged between 50 and 85 at the baseline SHARE Wave 4 interview. The full baseline sample is composed of 31,608 observations. Prevalence of hearing impairment at baseline is 18.13 per cent in the full sample, and ranges from a minimum of 9.6 per cent in Austria and a maximum of 24.4 in Estonia. Since our longitudinal analysis is focused on measuring the consequences of the onset of hearing impairment, we consider only individuals who were not impaired at baseline. Once we drop individuals with missing values for the covariates considered in the analysis, described below, we are left with a total sample of 25,878 observations.

As in Andersen-Ranberg and Vestergaard (2013) we use self-reported information on “hearing abilities using hearing aid as usual”, and define individuals as impaired if they report to have a “fair” or “poor” hearing, and not impaired if they claim to have a “good”, “very good” or “excellent” hearing. Figure 8.1 reports the fraction of people developing hearing impairment between the two waves by country and age group. We compute that 11.3 per cent of the full sample have developed hearing impairment between waves. As expected, the onset of hearing impairment is more common for people aged 70+, among whom the incidence equals 18.3 per cent, but increasing hearing difficulties are also acknowledged by 8.5 per cent of respondents younger than 70. Furthermore, we detect a large variability in the onset rate across countries, with the lowest incidence in Switzerland (6.4 %) and the highest in Estonia (18.2 %).

We measure subjective social exclusion with whether the individual feels left out of things often, and objective social participation with whether the respondent carries out one or more of the following activities at least once a week: voluntary or charity work, educational and training programs, participation in religious, political or community-related associations, playing cards or games such as chess. Figure 8.2 reports subjective social exclusion and objective social participation rates at the follow-up, by country and hearing impairment status at the follow-up.

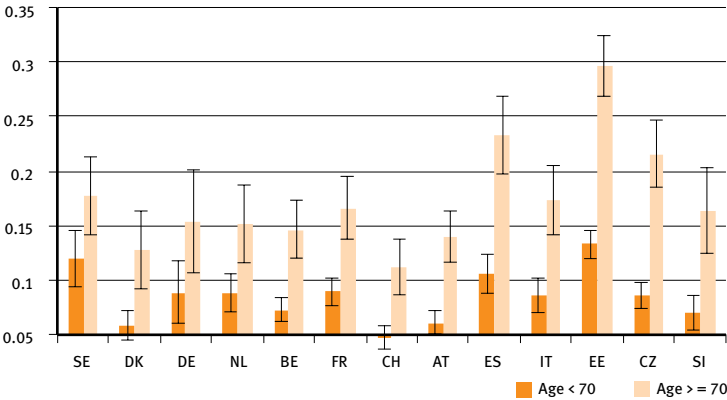
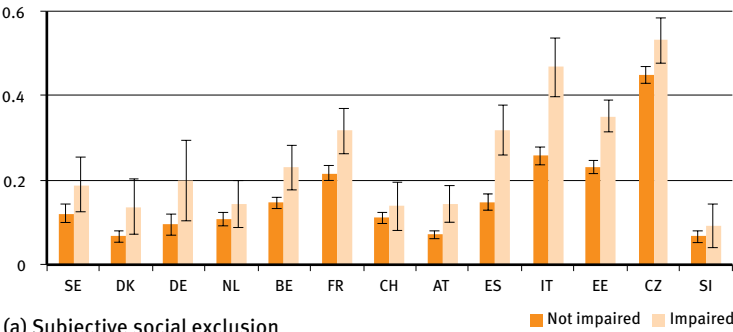
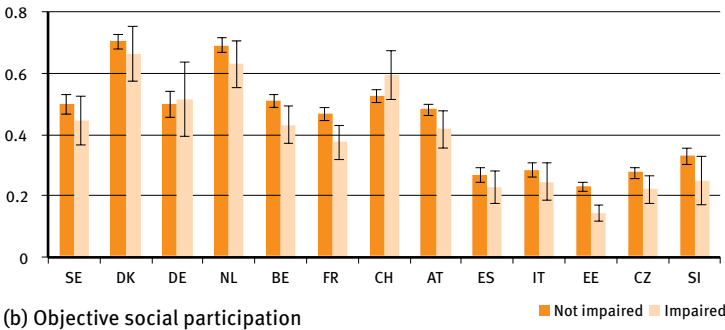


Figure 8.1: Incidental hearing impairment, by country and age group
Notes: The sample includes only individuals with no hearing problems in SHARE Wave 4; number of observations: 25,878
Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0



(a) Subjective social exclusion



(b) Objective social participation

Figure 8.2: Subjective social exclusion and objective social participation rates at the follow-up by country and hearing impairment status at the follow-up
Notes: The sample includes only individuals with no hearing problems in SHARE Wave 4; number of observations: 25,878
Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

Although there is large heterogeneity in both subjective social exclusion and objective social participation across the different European countries, people with hearing impairment issues report higher levels of exclusion and lower participation in most countries. Pooling data across all countries, we compute that the share of respondents who did not develop hearing issues between the two waves declaring to feel excluded is equal to 17.8 per cent. This share is equal to 29.3 per cent among those who report to have developed hearing difficulties, a statistically significant positive difference of 64.6 per cent with respect to the mean value for the non-impaired. The picture is similar as far as objective social participation is concerned: the share of non-impaired people carrying out at least one social activity weekly equals 42.6 per cent, while this is true only for 33.2 per cent of those who have developed hearing impairment. The difference is statistically significant and equal to 22 per cent of the mean value for those who did not develop hearing issues.

8.3 Empirical methods

We perform a multivariate regression analysis to assess the robustness of the bivariate associations shown so far, adjusting for a progressively more extensive set of demographic, socio-economic and health-related controls.

In a sample of non-impaired individuals at baseline, we model the association between incidental hearing impairment between the baseline and follow-up interviews and the probability of subjective social exclusion and objective social participation at the follow-up using Probit models with robust standard errors. All regression models include controls for the baseline level of the outcome variable, gender, country dummies, the distance in months between the baseline and the follow-up interview, living in a rural area at baseline, the use of hearing aids at baseline, and a full set of age dummies (the basic controls set). We progressively include controls for baseline socio-economic status (having a partner, children or grandchildren, weekly contact with children, education levels, dummies for wealth and income quartiles by country, employment status and having a social network size above the median size) and baseline health (having any limitation in ADLs or IADLs, poor sight, depression and word recall ability).

8.4 Results

Figure 8.3 reports the marginal effects of the onset of hearing difficulties on subjective social exclusion and objective social participation.

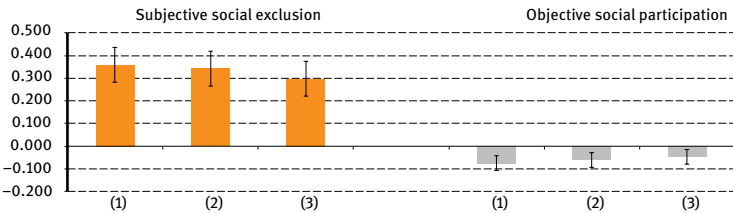


Figure 8.3: Incidental hearing impairment, social exclusion and social participation, marginal effects

Notes: We report the estimated coefficients as percentage of the mean of the dependent variable in the sample of non-impaired individuals. The sample includes only individuals with no hearing problems in SHARE Wave 4; number of observations: 25,878; robust standard error used to compute confidence intervals; (1) Basic controls included, (2) + S.E.S controls, (3) + health controls
Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

Results presented in Figure 8.3 broadly confirm the patterns described by the bivariate associations: we detect negative and statistically significant associations between hearing impairment, on the one hand, and subjective social exclusion and objective social participation on the other. The estimated marginal effects are precisely estimated and decrease in size as we add covariates, especially those related to physical and mental health. When we relate the estimated marginal effects to the mean outcome in the group of non-impaired individuals we estimate that poor hearing leads to an increase in the likelihood of feeling left out of things often of 29.7 to 35.9 per cent, depending on the empirical specification, and to a decrease in the probability of carrying out social activities at least once a week of -4.7 to -7.5 per cent. The association is strongly significant for both subjective and objective outcomes, but the marginal effect is larger for subjective social exclusion. Hence, hearing impairment strongly hampers the perception people have about their inclusion, and also prevents them to carry out activities that involve social interactions, but to a smaller extent.

Marginal effects for the controls are not reported in the chapter to save space, but we briefly describe here results for the specification including all controls. Both outcomes are very persistent, as the baseline outcome level is positively and significantly associated with the follow-up one. There are no significant gender differences in objective social exclusion, but females feel left out more often than males. Feelings of exclusion reach a minimum at age 65, while participation in

social activities peaks between 65 to 67 years. Individuals with a partner feel excluded less often, but having a partner makes no difference in social activities. Wealth is positively associated with subjective and objective social inclusion, and people with higher education carry out more social activities. There are no differences in objective participation by employment status, but employees and retirees feel left out less often than housewives, disabled and unemployed respondents. Respondents having a social network size above median level by country feel left out less often, and are more likely to carry out social activities. Finally, poor physical and mental health, poor eyesight and low levels of cognition are also positively and significantly related with subjective and objective social exclusion.

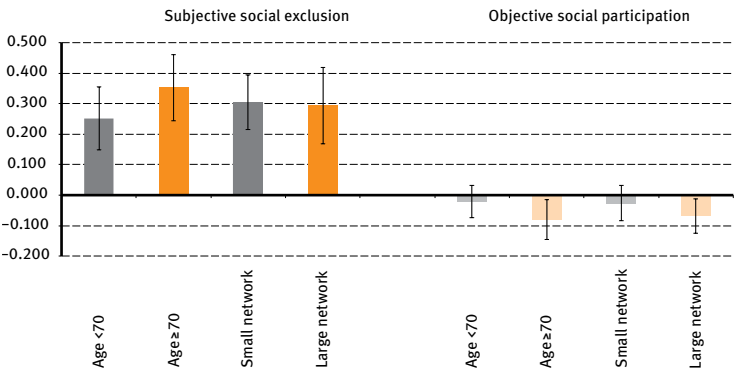


Figure 8.4: Incidental hearing impairment, social exclusion and social participation, heterogeneous effects by age group and social network size, marginal effects

Notes: We report the estimated coefficients as percentage of the mean of the dependent variable in the sample of non-impaired individuals; the sample includes only individuals with no hearing problems in SHARE Wave 4; robust standard error in parentheses; basic, S.E.S. and health controls included

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

To provide some empirical evidence about the subpopulations exposed to a greater risk of suffering the negative social consequences of hearing impairment, we re-estimate our model after splitting the sample between respondents aged above or below 70 years at baseline – which corresponds to the top quartile of the age distribution – and between respondents who have a baseline social network size below or above the median level by country – a proxy of their baseline level of inclusion. Figure 8.4 reports marginal effects estimated in the split samples for the most extensive model specification that includes all the controls listed above.

The left panel shows that both younger and older respondents feel left out of things more often if affected by hearing impairment and that hearing impairment

is also positively associated with subjective feelings of exclusion irrespectively of social network size. However, in the right panel we see that the association between hearing impairment and objective social participation is only statistically different from zero for older individuals and for respondents who have a large social network at baseline. While in principle having a large social network could play a protective role for social participation, people with small networks are less likely to take part in social activities to begin with, and are thus only to a lesser extent affected by the negative social consequences of hearing impairment.

8.5 Policy implications

Hearing loss is a common perceptual constraint within the senior population that is negatively associated with depression, functional limitations and a faster cognitive decline.

This chapter used longitudinal information on a representative sample of the European population aged 50 to 85 to show that the onset of hearing impairment leads to increased feelings of social exclusion and to reduced participation in activities that involve social interactions, the former association being quantitatively more relevant than the latter. While the whole population suffers from estrangement related to the insurgence of hearing difficulties, actual behavioural changes in objective social participation are detected only among respondents aged 70 years or more as well as for respondents which had previously reported to have a large social network.

Our results suggest that the negative consequences of hearing impairment on physical and mental health can be partly due to the consequences of hypoacusia on subjective and objective social exclusion. Furthermore, our subgroup analysis suggests that the population more exposed to these risks are the older and those who have a larger network. By highlighting which subgroups of the population suffer more of the negative social consequences of hearing impairment, our findings are particularly relevant for the design and the targeting of rehabilitative interventions, such as subsidies to purchase hearing aids.

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9 Older adults living with cognitive and mobility-related limitations: social deprivation and forms of care received

-
- ▶ Limitations in cognitive functioning in older adults are often related to dementia or similar conditions and may serve as a predictor in the absence of a clinical diagnosis
 - ▶ Social deprivation is significantly associated with cognitive and mobility related limitations
 - ▶ Cognitive and mobility-related limitations in older adults are both associated with the use of formal and informal help at home
 - ▶ Living alone is more unlikely for older people with severe cognitive limitations or dementia but not for those with mobility-related limitations
 - ▶ It is suggested to systematically examine the social environment of older adults who show early symptoms of cognitive impairment since they may be at risk of social deprivation
-

9.1 Disability in old age and quality of life

Cognitive impairment and mobility-related limitations are two major risk factors for disability among older adults. In Europe, 9.95 millions of people aged 60 and over live with dementia (Alzheimer's Disease International-ADI 2010). The prevalence rate is estimated at seven per cent among individuals aged 60 and over. After age 65, the likelihood of developing dementia roughly doubles every five years: 22 per cent of people aged 85 to 89 and 43 per cent of people aged 90 and over suffer from dementia (ADI 2010). Mobility-related limitations concern about 20 per cent of persons aged 65 or older, increasing with age (Guralnik et al. 1996).

Both, cognitive and mobility-related limitations affect the ability of a person to carry out normal daily activities. Accordingly, older persons with moderate limitations may receive occasional help from informal or formal caregivers, or a combination of both, to enable them to continue to live at home (e.g. domestic tasks, personal care) and participate actively in the community. Older adults with more severe limitations require substantial help from a third party to fulfil daily activities. Therefore, care needs resulting from severe disability are often addressed by institutional long-term care over an extended period of time. Disability in old age is thus associated with adverse outcomes at the individual and societal level, such as diminished quality of life, increased costs for health and long-term care,

and social exclusion or the inability to fully participate in society (Van Bergen et al. 2014).

In order to develop effective support programs for older adults with disability and reduce social exclusion in this population, a fundamental step is to better understand their living conditions and how socioeconomic and demographic factors influence forms of care received. A large-scale population survey, such as SHARE, appears to be a helpful resource to study risk factors and consequences of cognitive and mobility-related disability among the 50+ in Europe. Concerning cognitive limitations, in addition to the self-reported diagnosis of dementia or related conditions, the cognitive module of SHARE allows the examination of intellectual capacities and how they change in old age. Mobility-related limitations are also examined in a specific module of the survey.

New SHARE Wave 5 data has been used to build a social deprivation index (see chapter 6 in this volume) that reflects the degree to which individuals are deprived of a basic social context covering domains such as social participation, social rights, and access to services. Regarding the forms of care received, SHARE also gathers basic data related to the source of help (i.e. formal or informal) received by survey respondents. With respect to informal care, SHARE examines separately if personal care is received from someone within or outside the household.

The main objective of this work was to use SHARE data to study socioeconomic factors and forms of care received by older adults living with cognitive and mobility-related limitations. Two hypotheses were formulated:

- 1) Both cognitive and mobility-related limitations increase social deprivation in older adults.
- 2) Both cognitive and mobility-related limitations increase the use of formal and informal care at home and limit the ability of disabled older persons to live alone.

This paper is structured in three sections. First, we explain how SHARE data can be used to identify people with cognitive or mobility-related limitations. Second, we study the relationship between living with cognitive or mobility-related limitations and being socially deprived based on the social deprivation index from chapter 6 in this volume. Then, we investigate whether the kind of care (i.e. formal or informal) received by older adults living with a disability differs according to the nature of the limitations (i.e. either cognitive or mobility-related). After discussing overall results obtained in this first analysis we review some methodological aspects and suggest further steps for our work.

9.2 Definition and measure of cognitive and mobility-related limitations

The selection of cognitive measures in population surveys is useful to study the impact of cognitive functioning on different domains of functioning in the life of an individual and in the use of economic and social resources. Over the last decades several large-scale population surveys have included assessment of cognitive function, for instance the English Longitudinal Study of Ageing, the National Social Life, Health, and Aging Project, Health and Retirement Study (Crimmins et al. 2011). At the European level, SHARE offers the possibility of examining cognitive functioning in the non-institutionalized population aged 50 and older and its association with other variables, such as life course occupation or macroeconomic conditions (Adam et al. 2007, Leist et al. 2014).

It is worth to remind that the diagnosis of dementia in older people is important in order to plan comprehensive and cost-effective care programs. However, underdiagnosis of this condition is very high leading to a delayed implementation of medical and social care or even to the absence of treatment. Underdiagnosis occurs when a disease is not recognised or is inaccurately diagnosed at the population level. It has been estimated that less than one-half of persons with dementia have actually received a clinical diagnosis (Connolly et al. 2011). Underdiagnosis for a given condition can be studied by measuring the variation in the difference between observed and estimated prevalence of dementia for a specific area or setting.

In this work, in order to identify people aged 65 or older who have cognitive limitations, two elements from SHARE are used: (a) a global composite score of cognitive functioning and (b) the self-reported diagnosis of dementia variable, in which the respondent declares if a doctor has ever told him/her having Alzheimer's disease, dementia, organic brain syndrome, senility or any other serious memory impairment (PH006).

For computing the composite score of cognitive functioning we used a set of measures from the Cognitive Functioning Module from SHARE Wave 5. We have focused our analysis on 29,036 people aged 65 and over who completed the four cognitive tests described here:

- *Verbal fluency*: the respondent is asked to name as many animals as possible in one minute. Fluency is a measure of executive function. Scores for this measure range from 0 to 100.
- *Immediate free-recall*: the respondent is asked to recall as many words as possible from a 10-word list that had been read out loud once by the interviewer immediately before. For this measure of short-term memory scores range from 0 to 10.

- *Delayed free-recall*: the respondent is asked to recall the same 10-word list after a standardised interval of time. For this measure of episodic memory scores range from 0 to 10.
- *Serial 7's*: the respondent is asked to subtract 7 from 100, and continue subtracting 7 from each subsequent number for a total of five trials. For this measure of working memory scores range from 0 to 5.

A general examination of mean scores showed a wide variability in the number of correct answers to the different cognitive tests; therefore, it was decided to create a standardised score. For doing so, we used the aforementioned cognitive measures to build a cognitive indicator using averaged z-scores for the four tests. The final indicator (“z-cognitive limitations score”) is a reversed and standardised score ranging from 0 to 10 (10 = worst cognitive performance, 0 = best cognitive performance).

We next examined whether the “z-cognitive limitations score” was a good indicator of respondents’ general cognitive functioning, using as reference their self-report on having received a dementia diagnosis from a physician or not (PH006). The mean z-cognitive limitations score was 5.5 for persons who did not declare having received a dementia diagnosis, whereas it was 6.8 for people who have reportedly been diagnosed. These findings show that people clinically diagnosed with dementia appear to have worse cognitive functioning than those undiagnosed. Consequently, it can be suggested that SHARE respondents who declared having received a dementia diagnosis had a good awareness of their diagnosis, since the cognitive limitations score reflected well the generalized cognitive decline expected in dementia.

Nevertheless, it is important to take into account that 64 per cent of persons who reported having received a diagnosis of dementia did not respond to the four cognitive tests. This high proportion of non-respondents in this section might be explained by the cognitive module being a non-proxy section, which is skipped if the respondent does not have enough cognitive resources to understand the meaning of the information or to respond alone. Thus, the z-cognitive limitations score for respondents with reportedly diagnosed dementia and, consequently, also the difference in cognitive scores between those with and without diagnosed dementia might be underestimated.

Mobility-related limitations, in SHARE, are defined by one or more affirmative answers on a list of 10 activities:

- (a) Walking 100 meters
- (b) Sitting for about two hours
- (c) Getting up from a chair after sitting for long periods

- (d) Climbing several flights of stairs without resting
- (e) Climbing one flight of stairs without resting
- (f) Stooping, kneeling, or crouching
- (g) Reaching or extending your arms above shoulder level
- (h) Pulling or pushing large objects like a living room chair
- (i) Lifting or carrying weights over 5 kilos, like a heavy bag of groceries
- (j) Picking up a small coin from a table.

Respondents are asked to declare if they experience any difficulty executing any of these activities, excluding those for which difficulties were expected to last less than three months.

The mobility-related limitation was calculated by summing the number of activities in which the respondent encountered some difficulty (10 = worst mobility performance, 0 = best mobility performance).

9.3 Social deprivation and disability in older adults

In order to estimate the impact of mobility-related and cognitive limitations on social deprivation, adjusting for country, sex, age, having a partner, number of children, and education level, we used the method of ordinary least squares (OLS). Figure 9.1 shows a clear association between cognitive and mobility-related limitations and social deprivation. Interestingly, the explanatory power of each kind of limitation is almost identical. The introduction of quadratic terms shows nevertheless that cognitive limitations have a non-linear effect on social deprivation whereas the effect of mobility-related limitations is linear. This suggests that, while the onset of cognitive decline is barely accompanied by increased social deprivation, consequences get more pronounced with progressive dementia. However, despite controlling for a set of observable possible confounders, causality of this relationship cannot be warranted; probably causation is bidirectional and occurs through many different pathways. Further research is needed to better understand the corresponding underlying mechanisms.

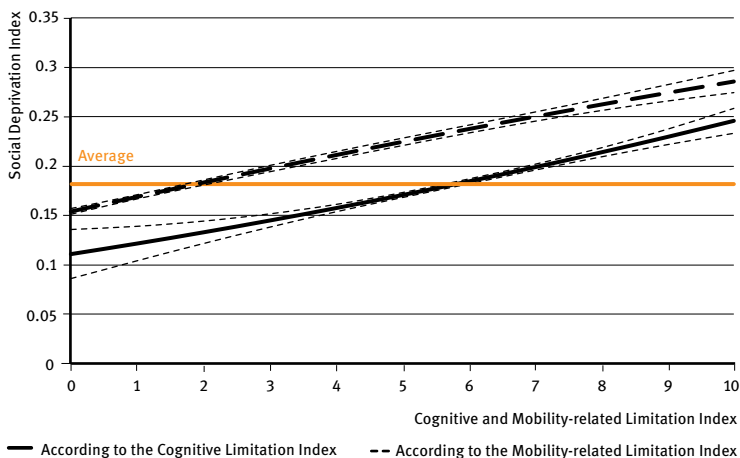


Figure 9.1: Predicted social deprivation conditional on cognitive limitation index and mobility-related limitation index

Notes: Controlled for country, sex, age, having a partner, number of children, and education level; N=29,036

Source: SHARE Wave 5 release 0

9.4 Forms of care received and disability in older adults

A majority of people with functional limitations need assistance to perform activities of daily living. Based in particular on the Social Support module of the questionnaire, previous literature using SHARE data (Bonsang 2009, Fontaine et al. 2009) has contributed to a better description of care received by older people with disabilities and a better understanding of socioeconomic determinants of the kind of care received. Traditional methods to measure care needs do not clearly identify care needs resulting from cognitive limitations because most daily life activities have an important physical component. To overcome this limit, we propose to measure care needs through an indirect approach based on functional limitations using the mobility-related limitation index and the cognitive limitation index in order to disentangle cognitive and mobility related limitations. We investigated the specific effect of cognitive and mobility-related limitation on three outcomes:

- the propensity to live alone
- the propensity to receive informal care by non-co-residents (at least weekly)
- the propensity to receive formal care.

Note that we did not consider in our empirical analysis information available in SHARE on care received from co-residents because this information is limited to personal care (such as washing, getting out of the bed, or dressing). Practical household help from co-residents is known to be underestimated. The information is thus not collected. Because they may substitute or complement each other, we assumed that common unobserved factors are likely to influence each outcome. To deal with this issue, we specified a Trivariate Probit Model where the residual of each equation is assumed to be correlated. The specific effect of cognitive and mobility-related limitations was investigated controlling for country dummies, age, age squared, education level, living with a partner, number of sons, number of daughters and two dummy variables allowing to identify among those not having completed the cognitive tests whether or not they have received a diagnosis of dementia.

Both cognitive and mobility-related limitations are significantly associated with the propensity to receive care. Predicted probabilities in Figures 9.2 and 9.3 show that the propensity to receive (informal or formal) care from outside the household is much more sensitive to mobility-related limitations than to cognitive limitations. Moreover, the use of home-care services is more dependent on care needs than informal care from non-co-residents. People suffering from severe cognitive limitations are significantly more unlikely to live alone. This is also true for those not having completed the cognitive tests but having received a diagnosis of dementia. They are less likely to live alone and are more liable to receive formal care. Mobility-related limitations do not have any significant effect on the disposition to live alone. This shows the importance to distinguish between cognitive and mobility-related limitations to understand household composition in the older population. The results allow suggesting that the specific care needs of people with dementia, such as companionship or regular supervision, limit the ability of these individuals to live alone to a greater extent than in those with mobility-related limitations.

Estimation results further reveal that the form of care received is also associated with traditional social and demographic characteristics (not shown). Women are more likely to live alone but tend to receive more formal and informal care. As could be expected, having a partner is negatively associated with the likelihood of living alone. In addition, as the partner is traditionally the main care provider, his or her presence significantly reduces the probability of receiving both formal and informal care. With regard to number of children, our results confirm previous findings: an additional daughter significantly increases the probability of receiving informal care from outside the household whereas an additional son does not have any significant effect. Also, the number of children reduces the disposition of living alone in older adults, probably because it increases the pos-

sibility of (re)forming an intergenerational household. More interestingly, only the number of sons is significantly associated (negatively) with the propensity to receive formal care. This gender effect was not expected and requires further investigations. Education level is positively associated with formal care use, probably because it captures an income effect. It is nevertheless not significantly associated with informal care.

Finally, correlations between residuals suggest that after controlling for the main sociodemographic characteristics, cognitive limitations and mobility-related limitations, living alone is positively associated with informal care from outside the household. Moreover, informal care provided by non-co-residents is *ceteris paribus* positively associated with formal care use. This suggests that formal care and informal care from non-co-residents are frequently used together and tend to be a substitute to care from co-residents.

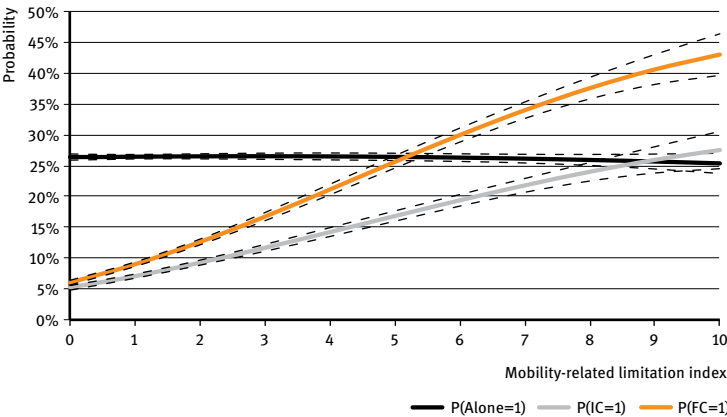


Figure 9.2: Average predicted probabilities of living alone, receiving informal care from outside the household and receiving formal care, according to the mobility-related limitation index

Notes: N=29,036

Source: SHARE Wave 5 release 0

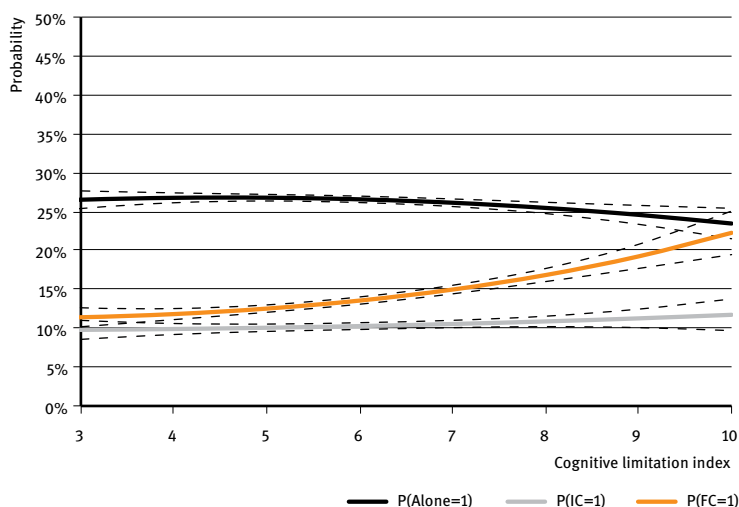


Figure 9.3: Average predicted probabilities of living alone, receiving informal care from outside the household and receiving formal care, according to the cognitive limitation index

Notes: N=29,036

Source: SHARE Wave 5 release 0

9.5 Disability in old age and increased risk of social deprivation: areas for further investigation and suggested preventive measures

Existing literature highlights the negative impact of physical disability on social inclusion of older adults leading to a high risk of marginalization of this group in their community context. A number of studies have shown that participation in social activities prevents cognitive decline in older persons. However, the specific impact of cognitive impairment, and particularly of dementia, on social inclusion has received less attention from researchers.

The present analysis offers a first focus on the risk of social deprivation and on the need for social support of older adults in particular when they face cognitive or physical limitations. Two results can be highlighted after this preliminary analysis. First, both cognitive and physical limitations seem to be a risk factor for social deprivation. Second, cognitive limitations reduce individuals' capability of living alone, while this is not the case for physical limitations.

Complementary analyses are needed to go beyond these first results. Indeed, the cognitive impairment definition that we have used for this analysis should

only be understood as a starting point. A valid dementia diagnosis involves a thorough clinical and medical examination. A validation of the proposed cognitive functioning score using SHARE data has yet to be done. Moreover, exploiting of the longitudinal dimension of SHARE offers important research perspectives to better understand the dynamics of cognitive disorders and their interplay with individuals' economic and social environment. It is indeed critical to consider that dementia develops over several years and that the notion of change, or decline, between previous and current level of cognitive functioning is fundamental. A natural next step would thus be to use panel data to follow respondents through time. This is also true for following cognitive performance of persons that have been reportedly diagnosed with dementia. The measure of change in cognitive function is particularly important because the rate of decline, rather than the absolute level, is a critical indicator of dementia onset.

In terms of public policy, the examination of the social environment of older adults who show early symptoms of cognitive impairment should be done systematically, since they may be at risk of social deprivation. The present study highlights the need of developing measures to prevent and deal with the effect of cognitive and mobility-related limitations on social inclusion in old age.

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10 Who can realise their retirement plans? Poor health and employment crises as factors of exclusion

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- ▶ A decline in industry-specific employment leads women, but not men, to expect their pension payments earlier
 - ▶ Women with health problems are more strongly affected by employment decline in their retirement planning than women without health problems
 - ▶ Healthy men and healthy women are affected by employment decline to a similar extent. Unlike men, women in poor health are particularly affected
-

10.1 Health, employment crises, and plans for retirement

In our study we investigate whether individuals are able to realise their plans for the timing of retirement. In particular we look at how poor health and the industry-specific relative decline in number of employees ('employment crisis') are related to the discrepancy between actual exit from the labour market and the expected start of pension payments. Such a discrepancy could arise either if a person retires earlier than planned or if he or she leaves the labour market before the beginning of planned retirement for any type of non-employment. The period before retirement is typically the first time in which health problems become so common and widespread throughout the population that health must be regarded as a potential factor leading to unintended early retirement. At the same time, decreasing sector-specific employment will make layoffs more likely, especially for those who are in poor health: an employment crisis should therefore be especially harmful to those individuals who are already less likely to be able to realise their plans for retirement.

Most research until now has examined the age of retirement (or early retirement) as the labour market outcome of interest. The expectations of the individuals in question play only a minor role. By focusing on the expectations of men and women before their retirement, we provide two new aspects to the literature discussing this phenomenon.

First, we treat retirement not as a single event, but as an important process and transitional phase in later life. It can be argued that, certainly in European

societies, it is perhaps the single most important transition for older people. If we consider retirement to be a process, then our interest should not only be focused on the date of formal retirement, but on the timing of the actual exit from the labour market. If the formal date matches the expectations and planning of the first pension payments, but the last two years were spent in involuntary non-employment, then there is an obvious mismatch between the plan and the ability to realise that plan. This example would not be captured by a focus on formal retirement. It is therefore worthwhile to investigate the extent to which the retirement process can be planned by and is subject to the influence of individuals.

This leads to the second new aspect we contribute to the literature on retirement. We explicitly account for the plans that individuals make for the beginning of their retirement, and investigate whether those in poor health and those affected by an employment crisis are deprived of the ability to realise their plans. Unintended early retirement can have long-term consequences for potential material deprivation during retirement, and short-term consequences in the form of exclusion from the social network at the workplace.

Our definition of a plan for retirement is the age at which persons expect to collect their main pension. Using this definition, an individual's ability to actually realise their retirement plans is defined not by their private and perhaps impractical aspirations, but by a realistic plan conforming to the structures of the labour market, social norms, and the pension scheme in question. Unintended early retirement can have long lasting consequences for potential material deprivation during retirement and short-term consequences for the exclusion from the social network that is provided at work.

Our strategy for investigating the relationship between health, employment crisis – both separately and in interaction – and the discrepancy between retirement planning and exit from the labour market is divided in two parts.

First, we look at the association between health, employment crisis, and the age at which persons expect to collect their main pension. This should give us an indication as to whether or not persons adjust their expected retirement age according to their current health status and their expectations regarding future developments in employment in their industry.

We expect that persons with more reported health problems will plan to claim their pension earlier than healthy persons. On the other hand, any employment crisis that we record after persons report their expectations should not be related to their expected age of retirement, as it would represent a future decline in employment that should be hard to incorporate in their plans.

Second, we look at the association between health, employment crisis, and the risk of departure from the labour market when controlling for the expected start of pension payments. If an association remains, this means that either

certain developments could not be foreseen or that the start of pension payments is only flexible to a certain degree, and cannot be completely adapted to individual health problems and the structural situation of the labour market, it is likely that both are the case. The analysis yields insights into the extent to which the start of retirement and pension payments can be planned. It also makes a comparison between an individual characteristic (health) and a structural determinant of the labour market situation (decline in employment) that is beyond the influence of the individual. The latter is harder to incorporate into retirement plans, because it would require the ability to project future economic development.

There already exists a great deal of evidence to support the claim that poor health leads to an earlier exit from the labour market (Griffin & Hesketh 2008, Oksanen & Virtanen 2012, Aranki & Macchiarelli 2013).

Economic growth and unemployment have also been shown to influence retirement age (Börsch-Supan et al. 2009, Aranki & Macchiarelli 2013, Riedel & Hofer 2013). The decline in employment is an alternative measure that directly relates to the demand for labour in certain industries and is easier to measure on a sub-national level.

After taking into account the expected start of pension payments, it is possible that health no longer exhibits any association with drop-out from the labour market, because the influence of health on retirement behaviour is wholly commensurate with individuals' own expectations. It is less likely that individuals will be able to predict future developments regarding employment in their profession. Therefore, an employment crisis should be an important factor in limiting individuals' ability to realise their retirement plans. As individuals in poor health are the first that might be considered for redundancy or an early retirement scheme, this mechanism should be even stronger for those individuals.

Based on these considerations, we propose three hypotheses regarding labour market exit, in each case predicting the presence or absence of correlation when controlling for the expected age of pension collection. First, health does not influence the time of labour market exit. Second, an employment crisis leads to earlier labour market exit. Third, the impact of an employment crisis is stronger for those who are in poor health.

We differentiate in all our analyses between men and women, because their labour market trajectories are still very different in Europe.

10.2 Analytic strategy

For the first part of the study, we conduct a simple linear regression of the expected age at the start of pension collection on health and future employment crisis. This allows us to estimate how many months earlier or later persons with health problems expect to receive their main pension compared to those who report no physical symptoms. The same goes for the degree of decline in employment, and for the interaction of the two.

In the second section we construct an event history data set. The analysis time is age and the event of interest is (final) departure from the labour market. We employ a log logistic hazard function for the survival analytical models; this function most closely mirrors the risk of labour market exit. The predictors are the same as in the first section. In addition, we control for the expected age of pension payment collection, early retirement plans, and the fear of not being able to work right up to retirement. The results can therefore be interpreted as being conditional on the expectations of the individuals.

One potential problem in our analyses is the fact that unobserved factors might result in a spurious correlation between poor health or employment crisis and exit from the labour market. We try to exclude as many alternative explanations for the association as possible by controlling for household composition, the economic and labour market situation, the characteristics of the expected pension, information on childhood health problems and socio-economic conditions, gender, age, education, and finally nationality in all our models. Table 10.1 gives an overview of the variables used and the SHARE questions they are based on.

In contrast to spurious correlation, reverse causality as an explanation for the association is, in our opinion, of minor importance. We can rule it out completely in cases of employment crisis, because the timing of an individual's labour market exit cannot affect the employment situation in a whole sector of the economy. It is also unlikely that the future timing of the exit will have a direct impact on the health status of the individual at the time of the first interview.

10.3 Sample restrictions

We restrict our sample to those SHARE participants who answered the question on expected start of pension payments in Wave 1 and who reported that they are either employed or self-employed at Wave 1. Respondents from Poland and the Czech Republic only entered the SHARE database at Wave 2, and thus their data begins in Wave 2. Our analyses only consider persons between the age of 50 and

63 at the age of the first interview. This excludes all persons who retire unusually early or very late in life, since these extreme cases might be systematically different and warrant separate analyses. We want to draw conclusions principally for persons who retire in the normal age range between 50 and 70. These restrictions leave a sample of 2,327 women and 2,772 men¹.

We use the full information of the SHARE Waves 1-5. This allows us to observe respondents for a period of up to nine years in which enough labour market exits occur to split our sample by gender. This allows us to make more differentiated analyses, which is necessary because men and women have quite different career and retirement paths.

10.4 Variables

In the questionnaire for the SHARE Waves 1 and 2, the respondents are asked to state when they expect to collect different types of pension payments. The main pension is defined as the pension which has the highest wage replacement rate or, if this information is not available, the type of pension to which the individual has made the longest contribution. As a health measure we use the number of reported physical symptoms from a list of eleven possible physical health conditions. The overall number of reported health conditions allows us to distinguish between healthy individuals and those in poor health, which is an important characteristic of a health indicator for what is still a relatively young sample. The variable also has the advantage that it is self-reported, implying that individuals are aware of their problems, and can therefore take them into account according to their own perception of the severity of the health condition.

Employment crisis is measured as the decline in employment in per cent between the year of the interview and the year in which the person expects to collect their pension. If a person states that they expect to collect their pension after 2010, the decline is calculated for them between the year of the interview and 2010, as more recent data is not available from EUROSTAT. To increase the variance of the employment crisis indicator beyond the national level, we use information on decline in employment and self-employment by industry (NACE) in each country. This approach is useful, not only because it increases variance; different sectors of the economy have been affected to different degrees by the

¹ Repeating the analyses without the sample restriction on age yields similar results; estimated associations are on average a little smaller, though.

economic crisis. In addition, research has shown that early retirement is a mild form of downsizing, especially in industries that are in decline (De Preter et al. 2012). Furthermore, our data allow us to distinguish between external crisis indicators for employed and self-employed persons. Differentiating by country, industry, year, and type of employment ensures that the crisis indicators are as specific to the individual's labour market situation as possible. The data we use comes from EUROSTAT (last update by EUROSTAT in February 2014). For Switzerland, we use information from the Swiss national statistical office. To ensure that the employment crisis variable does not capture a long-term trend of gradual employment decline, but rather a new trend or crisis, we control for the decline in employment in the seven years before the first wave of SHARE.

Several of the variables from Table 10.1 contain missing information due to either dropout or non-response. To avoid excluding all cases with missing values on one of the covariates, multiple imputation via chained equations was done separately for men and women.

Table 10.1: Variables used in the study

Dimension	Indicator
Health	– Number of symptoms
Employment crisis by country, industry, year, employee/self-employed	– Decline in employment between first wave and expected age of pension, max. 2010 (per cent) – Decline in employment in the seven years before first wave (per cent)
Household	– Household size – Partner – Number of children – Number of grandchildren
Economic situation	– Home owner – Financial distress – Log. household income – Wealth
Labour market situation	– Log. income from employment – Occupational group – Effort-reward imbalance (upper third per country) – Employed for more than one year – Job satisfaction – Job security – Chances of advancement – Partner in employment – Industry sector

Table 10.1 (continued)

Dimension	Indicator
	<ul style="list-style-type: none"> – Employee or self-employed – Level of responsibility – Labour force status – Public sector – Last labour market activity – Temporary employment
Childhood information	<ul style="list-style-type: none"> – Bedridden for a month – Parents smoked – Sustained an injury – Number of books at home – Number of facilities at home – Skill level of parents (ISCO-88)
Demography	<ul style="list-style-type: none"> – Country – Born in current country of residence – Years of education – Age
Pension characteristics	<ul style="list-style-type: none"> – Public pension scheme – Plans early retirement – Fears that health might impede ability to work until retirement – Expected age to collect (main) pension

Source: SHARE Wave 1 and Wave2 releases 2.5.0, SHARELIFE release 1.0.0, Wave 4 release 1.1.1, Wave 5 release 0

10.5 Results

The results from the first part of the analysis are summed up in Table 10.2. It shows the association between, on the one hand, number of symptoms and decline in employment (in per cent) and, on the other, the expected start of pension payments (in months). Women expect to collect their pension earlier if they report symptoms of illness. Per additional symptom they expect to collect their pension approximately 0.8 months earlier, given a stable employment situation in their industry. This effect is relatively large, but the estimate has a high statistical uncertainty. However, in a model specification without the interaction term the coefficient of health symptoms is about 1.1 months in size and statistically significant, indicating that on average women with more symptoms actually expect to collect their pension earlier. Interestingly, a *future* decline in employment is

also associated with an earlier-than-expected pension. Per one per cent decline in employment, women expect to collect their pension approximately 0.4 months earlier. A relevant interaction of the two variables could not be detected. For men, the associations are invariably negligible and the statistical uncertainty too high to infer any association at all.

Women seem to adjust their expected pension collection age more strongly than men. It is surprising that future developments in employment are associated with their expectations. That could either be because they actually (correctly) expect a downward trend or because workers in industries typically affected by employment crises tend to plan an earlier retirement anyway. Future research should investigate whether this pattern can be reproduced with alternative indicators or data.

The results of the analyses of labour market exit while controlling for expectations of the exit's timing (step 2) are presented in Table 10.3. Negative coefficients mean that exit from the labour market occurs earlier; positive coefficients mean that the exit occurs later. The models show only the coefficients of the number of symptoms, the employment crisis indicator, and their interaction. All models are controlled for the variables mentioned in Table 10.1. As the scale of the survival analytical models that is presented in Table 10.3 has no intuitive interpretation except for its sign, we calculated marginal effects for the interaction of health and employment crisis. These marginal effects are presented in Figure 10.1, and can be interpreted as the number of months that an individual retires earlier due to a one per cent decrease in employment, given a certain number of reported symptoms.

For women, there is a substantial association between the number of symptoms and their exit from the labour market. For every additional symptom a woman reports, she is predicted to leave the labour market three months earlier. In Figure 10.1 we can also see that the higher the number of symptoms, the stronger the association between an employment crisis and an early exit from the labour market is. Whereas women without any symptoms are expected to leave the labour market 0.21 months earlier given a one per cent decline in employment, women with five symptoms are predicted to leave the labour market more than 1.12 months earlier if their industry declines by the same degree. The interaction term is relatively large – about the same size as the main term of the employment crisis – indicating that the association between employment crisis and earlier exit from the labour market is roughly proportional to the number of symptoms. This is also represented in Figure 10.1 by the relatively steep rise of the marginal effects. Note, however, that the interaction term still contains a large degree of statistical uncertainty, because the decline in the employment variable has relatively little variance, as it can only be measured on the industry level, not on the individual level. This warrants a cautious interpretation of the results, and

requires a replication with a larger sample, or an even longer period of observation, before a clear interaction can be established.

For men, the results are strikingly different. We can see no substantial association between health and exit from the labour market. An employment crisis does lead to an earlier exit from the labour market, although the interaction term is small, and statistical uncertainty for the estimates is too high to infer even a small association. In Figure 10.1 we can see that, for a low number of symptoms, the association between decline in employment and labour market exit is approximately the same for men as it is for women (between 0.3 and 0.4 months earlier for one or no symptoms). However, it is considerably smaller for a higher number of symptoms; for men predictions are practically zero.

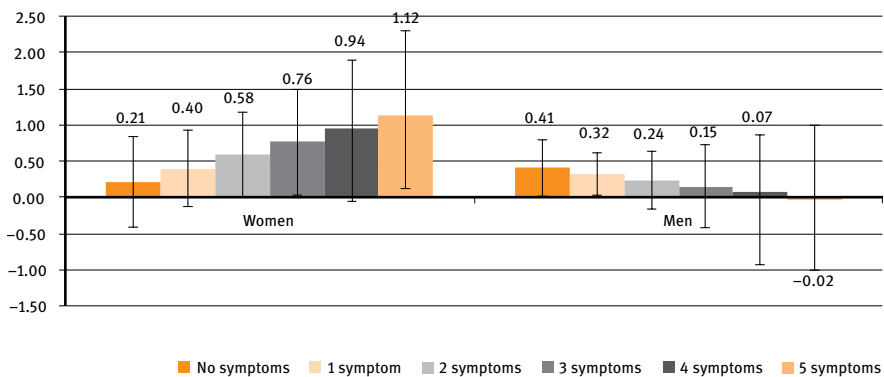


Figure 10.1: Effect of employment crisis on earlier exit from labour market by number of symptoms (in months)

Notes: 95 %-confidence interval shown, controlled for variables listed in Table 10.1, observations (men):2,772, observations (women): 2,327

Source: SHARE Wave 1 and Wave2 releases 2.5.0, SHARELIFE release 1.0.0, Wave 4 release 1.1.1, Wave 5 release 0, authors' own calculations

It seems that, while employment crisis and health play an important role for women, even after taking their expectations about retirement into account, for men this is not the case at all for health and only to a lesser degree for decline in employment. A poor economic situation seems to be a strong factor preventing women from achieving their retirement goals, while men seem to have other options in the same situation.

Table 10.2: Association between expected age of collection of main pension payments and health in Wave 1 and future employment crisis (in months)

Variables	Women		Men	
	Coefficient	Standard error	Coefficient	Standard error
Number of symptoms	−0.843	(0.532)	−0.0508	(0.0547)
Decline in employment (per cent)	−0.431 ***	(0.155)	−0.000504	(0.0088)
Interaction symptoms with decline in employment	0.0654	(0.0733)	0.0039	(0.0066)
Observations	2,327		2,772	

Notes: Significance: *** = 1 %; ** = 5 %; * = 10 %; Controlled for variables listed in Table 10.1
Source: SHARE Wave 1 and Wave2 releases 2.5.0, SHARELIFE release 1.0.0, Wave 4 release 1.1.1, Wave 5 release 0, own calculations

Table 10.3: Survival model predicting labour market exit by health in Wave 1 and future employment crisis, controlling for expected pension age

Variables	Women		Men	
	Coefficient	Standard error	Coefficient	Standard error
Number of symptoms	−0.0094***	(0.0030)	−0.0024	(0.0029)
Decline in employment (per cent)	−0.00052	(0.00076)	−0.0010**	(0.00044)
Interaction symptoms with decline in employment	−0.00046	(0.00034)	0.00020	(0.00030)
Observations	2,327		2,772	

Notes: Significance: *** = 1 %; ** = 5 %; * = 10 %; Controlled for variables listed in Table 10.1
Source: SHARE Wave 1 and Wave2 releases 2.5.0, SHARELIFE release 1.0.0, Wave 4 release 1.1.1, Wave 5 release 0, own calculations

10.6 Health and employment crises are more important for women

We have argued that the retirement process and the degree to which the individual can plan this should be seen as one dimension in which social exclusion can manifest itself in the life course. Empirically, we were able to show that exposure

to an employment crisis leads women to adjust the expected start of their pension payments more strongly than men. In addition, women's ability to realise their plans is impeded considerably by poor health, particularly during an employment crisis. For men we find only a small association of decline in employment and labour market exit. From our analyses, we cannot say why these differences exist between men and women. One possible explanation could be that women are more often employed in less secure jobs. Another could be that, on average, households are less dependent on women's income, in which case the economic costs of an earlier-than-planned labour market exit are smaller for women than for men. It should also be kept in mind that an earlier exit from the workforce in a stressful economic situation and in poor health could be seen as a relief. Therefore, future research should investigate further whether earlier exits of women should be characterized as voluntary or involuntary. One step would be to compare single women to women in a relationship, and to investigate whether their patterns of labour market exit are similar, or whether single women more closely resemble the pattern observed in men.

Acknowledgement

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Stefan Listl and Hendrik Jürges

11 Social inequalities in oral health – towards targeted health policy interventions

-
- ▶ Oral diseases belong to the most common chronic diseases worldwide and there are substantial oral health inequalities both within and between countries
 - ▶ Tooth status is a relevant marker of health and a useful measure to detect pathways between socioeconomic status, health, and general well-being, particularly in older adulthood
 - ▶ The number of natural teeth exhibits strong pro-rich inequalities with respect to income and deprivation
 - ▶ Inequalities in oral health appear partially attributable to dental non-attendance due to treatment costs – more so in some countries, less so in others. No clear geographical pattern or clustering according to welfare state regime could be detected
-

11.1 Oral health and socioeconomic status

Oral health remains an essential element of people's health and well-being. As measured by the recent Global Burden of Disease Study, oral diseases continue to be among the most common diseases affecting human mankind. Globally, 3.9 billion people suffer from common oral conditions along with tooth loss (Marcenes et al. 2013). Dental caries is still the most common chronic disease worldwide and affects large parts of the global population in both child- and adulthood. The high prevalence of oral diseases and their treatment places considerable economic burden on the society and individuals. Moreover, oral health status is a relevant determinant of general health as it is associated with diet and nutrition. Not least, tooth loss has been shown to have a significant detrimental impact on people's quality of life and well-being and to affect them functionally, psychologically and socially. Oral health may thus be considered an important determinant of general health and well-being.

From a clinical perspective, oral diseases are largely preventable. The main causes of dental caries – the most common oral condition – relate to behavioural risk factors, most importantly high consumption of sugary food and poor oral hygiene. As such, oral diseases share common behavioural risks with other major non-communicable health conditions such as overweight, diabetes, and cardiovascular disease. Yet oral health is multi-faceted with its current manifestation

mirroring disease experience over the entire previous life course. There are many ways and components to measure oral health, including self-reported outcomes; oral health related quality of life, clinical measures for diseases such as caries, periodontitis, congenital deformities such as cleft lip and palate, oral cancer, as well as number of teeth. With regard to the latter, tooth loss has been suggested to be a good measure in older age as it provides a ‘big picture’ of various risks accumulated over the previous life course and their aggregated impacts on oral health (Steele et al. 2015).

Similar to general health, there is vast empirical evidence on the existence of social inequalities in oral health, characterised by worse oral health at the lower end of the socioeconomic scale (Steele et al. 2015). In addition, oral health behaviours such as oral hygiene, sugar consumption and smoking are often found to be socially patterned (Sheiham et al. 2011). The literature to date documents social gradients in virtually all types of oral health outcomes and oral health measures. Yet there is a continuing debate about the existence and nature of a social gradient, that is, an incremental reduction in oral health when moving from rich to poor along the socioeconomic scale. While the so far evidence implies that the extent of such a gradient depends crucially on the specific measures used, the overall magnitude of oral health inequalities is substantial and depends on cohort as well as age (Steele et al. 2015).

Recent literature examining pathways through which policy might influence oral health inequalities has focused mainly on the role of welfare state regimes and on the role of dental coverage. Social gradients in oral health were found in various European welfare state regimes and – in line with recent literature on general health – were not systematically smaller in Scandinavian countries and did not exhibit a consistent pattern of health inequalities across welfare regimes (Guarnizo-Herreño et al. 2013). In addition, there is a continuing debate about the extent to which more comprehensive dental coverage may allow to reduce inequalities in oral health and care. Not least, health and dental care use have been described to be determined by a multitude of various different factors, only part of them relating to cost risks carried by the patient (Listl et al. 2014a).

This chapter presents first results based on a newly introduced oral health measure in SHARE Wave 5. Previous waves of SHARE contained information on people’s eating difficulty (Listl et al. 2014b), denture wearing (Listl 2012), and dental attendance (Listl 2011), whereas SHARE Wave 5 now includes information on tooth loss which may be highly relevant at age 50+. In what follows, particular attention will be given to social inequalities in number of natural teeth within and between countries.

11.2 Data and descriptives

For the first time in SHARE, Wave 5 now contains information on respondents' tooth status, i.e. whether they still have all natural teeth. Respondents were first asked the question “Do you still have ALL your natural teeth (except wisdom teeth)?” and could reply with either “yes” or “no”. Respondents who answered “no” to the aforementioned question, were additionally asked: “About how many natural teeth are you missing?”. Based on the two aforementioned survey items, computation of respondents' remaining number of natural teeth is straightforward. The usual number of natural adult teeth is 28, whereby wisdom teeth are not counted.

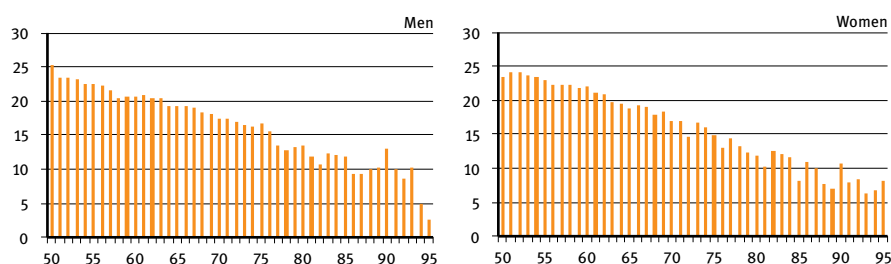


Figure 11.1: Average number of natural teeth, by age and sex

Notes: N=61,987

Source: SHARE Wave 5 release 0, authors' own calculations

On average across all SHARE Wave 5 countries, respondents' number of teeth was 17.8 (women: 17.8; men: 17.9). Figure 11.1 shows the proportion of average number of natural teeth by age and sex and highlights a relatively consistent decline in number of teeth as people get older. Yet as shown in Figure 11.2, there also are substantial cross-country differences in oral health, with the highest proportion of people who still have all their natural teeth being found for Sweden and the lowest proportion for Estonia.

11.3 Cross-national association between deprivation and oral health

Figure 11.2, Panel A, shows the cross-national association between average material deprivation and the average number of natural teeth (associations between average *social* deprivation and the average number of teeth are slightly weaker but

look similar). The measure for deprivation used is the multidimensional index of deprivation as introduced in chapter 5 in this volume. A larger value of the index indicates a higher level of deprivation. Sweden, Switzerland, and Denmark are characterised by a relatively low level of deprivation and a high average number of teeth. On the other hand, Estonia is found on the bottom right of Figure 11.2, Panel A, and has the lowest average number of teeth alongside the highest level of deprivation. Despite the association between level of deprivation and average number of teeth being less consistent for other countries, the depicted snapshot nevertheless is in support of a tendency towards fewer teeth in countries with higher levels of material deprivation.

Any interpretation of social inequalities (in health) should bear in mind the respective underlying socioeconomic measure. For example, income may be relevant with respect to affordability of care, which in turn can influence oral health outcomes. Education may link to health literacy, i.e. understanding and processing information that can influence oral health behaviours, hence influencing oral health outcomes through other pathways than income. In contrast, the findings presented above are based on a multidimensional index of deprivation which combines various different measures into a composite measure. As such, multiple mechanisms may be mirrored in the respective inequalities which include but also go beyond aspects of income and education. For example, inequalities in number of teeth by (composite) deprivation may also reflect the preferences and values of various population groups and this goes beyond aspects of affordability of care or health literacy.

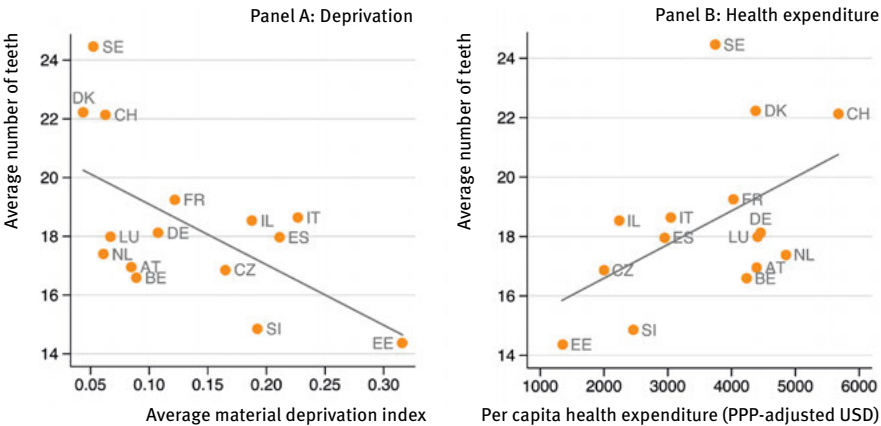


Figure 11.2: Cross-national association between average material deprivation, per capita health expenditure and the average number of natural teeth

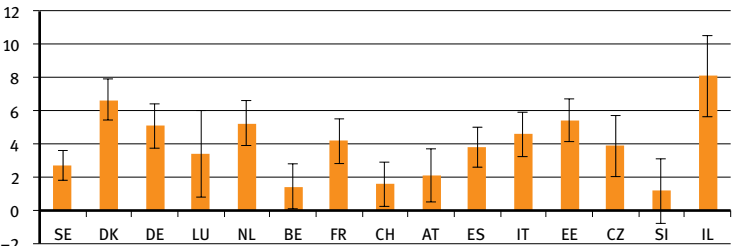
Notes: N=61,987

Source: SHARE Wave 5 release 0, authors' own calculations

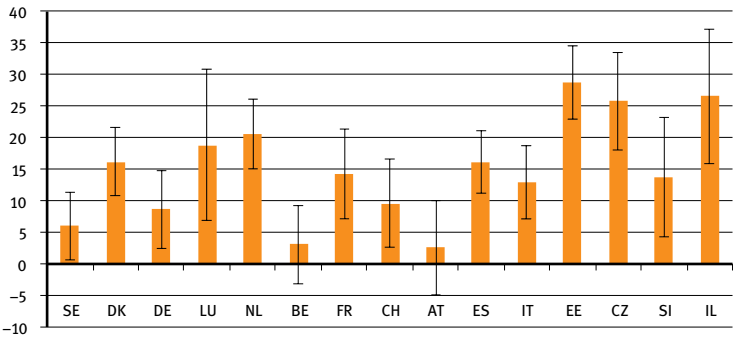
Panel B of Figure 11.2 shows the cross-national association between per capita total health expenditure in U.S. dollars (adjusted for differences in living costs, source: OECD) and dental health. There is a clear positive (and statistically significant) relationship. Assuming that the proportion of expenses on dental care is similar in all countries, this result mirrors findings in the literature on the link between health expenditures in general and broader measures of population health, such as life expectancy (e.g. OECD 2010). However, one should bear in mind that we compare contemporaneous health expenditure with a measure of health that largely reflects past health investments; hence the conclusions that can be drawn are limited. Moreover, Figure 11.2, Panel B, also highlights that there are large cross-national differences in dental health conditional on health care expenditures. Especially in the group of countries that spent around 4,000 USD per capita per year (Benelux, Germany and Austria, France, and Nordic countries), there is a wide range, with Swedes having about eight more natural teeth than Belgians. Such findings are clearly worth continued research effort using the SHARE data.

11.4 Poor-rich differences in oral health and dentist visits

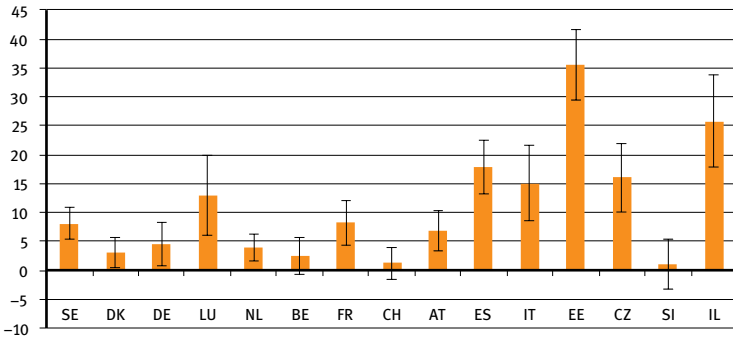
Panel A in Figure 11.3 shows, for each country, the absolute difference in number of teeth between richest and the poorest ten percent of the sample, i.e. between those in the first and tenth country-specific decile of net annual household income. Such quantile differences (or ratios) are commonly used measures of absolute and relative inequality, respectively. Rich-poor differences in dental health are found for all countries. Israel is the country with the highest observed level of inequality, where the difference between the poorest and the richest sample members is eight teeth. The lowest level of inequality is found for Slovenia (which is also the only country in which the differences are not significant at the 95 % level), where the richest ten per cent of the sample have only about one tooth more than the poorest ten per cent. It is interesting to note that there is no clear geographic pattern or clustering according to welfare state regime. Even Denmark as a Scandinavian country with a more generous welfare state exhibits large poor-rich differences in the average number of natural teeth. Although perhaps somewhat unexpected, this is in line with recent findings based on the Eurobarometer survey (Guarnizo-Herreño et al. 2013).



Panel A



Panel B



Panel C

Figure 11.3: Poor-rich differences dental health, dental care use, and unmet dental care need. Each bar shows the within country difference - between the first and tenth household income decile - in the average number of natural teeth (Panel A), the proportion of respondents who have visited a dentist in the last twelve months (Panel B), and the proportion of respondents who have postponed a dentist visit because of cost (Panel C)

Notes: N=11,534

Source: SHARE Wave 5 release 0, authors' own calculations

One potential behavioural determinant of inequalities in oral health is dental care use. Panel B in Figure 11.3 shows the absolute difference in the likelihood of having had a dentist visit within the past year between richest and the poorest ten per cent of the sample. Significant rich-poor differences are found for all countries except Belgium and Austria. Estonia is the country with the highest observed level of inequality. Here, the richest decile is nearly 30 percentage points more likely to have visited a dentist in the past year than the poorest decile. In contrast, in Austria and Belgium, the difference is below five percentage points. Similar to Panel A, there is no clear geographic pattern or clustering according to welfare regime. Moreover, the ranking of countries differs between Panels A and B, suggesting that rich-poor variations in dentist care use (in the past year) may at most partially explain rich-poor variations in number of teeth at age 50+.

If inequalities in dentist visit at least partially explain inequalities in tooth status, it is important to understand whether such inequalities are driven by costs that need to be borne by the patient. Panel C in Figure 11.3 shows the rich-poor difference in the proportion of respondents who have postponed dentist visits due to costs. The pertaining survey question reads “Have you postponed visits to the dentist in the last twelve months to help you keep living costs down?” and it is also part of the composite deprivation index. As before, we compare the richest and poorest ten per cent within each country. Significant inequalities are found for all countries except Belgium, Switzerland, and Slovenia. In decreasing order of inequality, countries rank as follows: Estonia, Israel, Spain, Czech Republic, Italy, Luxembourg, France, Sweden, Austria, Germany, Netherlands, Denmark, Belgium, Switzerland, Slovenia. Countries rank similar as in Panel B above (inequalities in dentist visit); exceptions include Netherlands and Italy. These findings could be interpreted in the sense that inequalities in oral health are partially attributable to inequalities in dental attendance and the latter themselves are partly cost-related.

The cross-national associations between rich-poor differences in postponing dentist visits due to cost, rich-poor differences in the number of dentist visits and rich-poor differences in dental health are illustrated in Figure 11.4:

- Panel A of Figure 11.4 suggests that social inequality in the number of natural teeth is associated with social inequality in dentist attendance.
- Panel B of Figure 11.4 indicates that social inequality in dentist attendance is partly rooted in cost-related postponement of attendance.
- Panel C of Figure 11.4 shows the association between social inequality in number of teeth and cost-related postponement of dental attendance.

All cross-national correlations are highly significant.

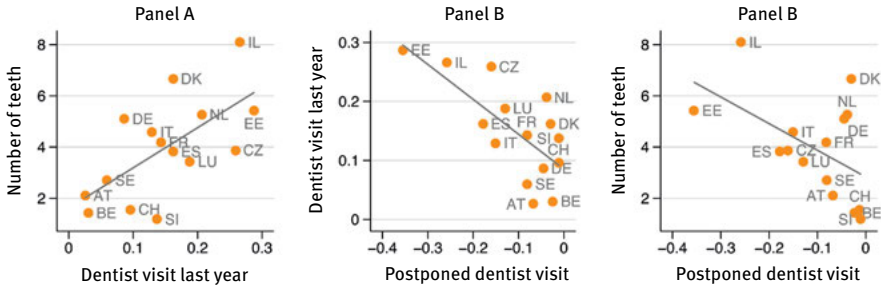


Figure 11.4: Cross-national associations between poor-rich differences in dental care use and poor-rich differences in dental health (Panel A), poor-rich differences in unmet need and poor-rich differences in dental care use (Panel B), and poor-rich differences in unmet need and poor-rich differences in dental health (Panel C)

Notes: N=11,534

Source: SHARE Wave 5 release 0, authors' own calculations

11.5 Derivation of potential health policy recommendations

Health policy makers may be interested in prioritising activities according to anticipated impact of alternative interventions. Obviously, socioeconomic differences in dental attendance are one important determinant of socioeconomic differences in oral health. Thus it seems sensible to design interventions that specifically improve dental attendance among the poor. As we have seen above, part of the relative non-attendance can be explained by cost. The remaining part might be termed “behavioural” in the sense that it reflects rich-poor differences in health knowledge, time preferences, etc., which might be harder to address by health policy. The smaller that latter part, the more successful policy interventions that aim at reducing patients co-financing of dentist care. Moreover, interventions may also have higher impact in countries with comparably large levels of oral health inequality. Along this reasoning, the information collected in SHARE allows us to make some tentative policy recommendations for each of the participating countries.

Table 11.1 repeats the information on rich-poor differences as already shown in Figure 11.3 in a slightly different way. Column (A) shows rich-poor differences in the number of teeth by country. They can serve as an indicator of policy relevance if the aim is reducing inequality. Column (B) shows rich-poor differences in dental attendance rates: the rich were more likely to visit a dentist in all countries, although with large variation. Column (C) shows rich-poor differences in

attendance rates that are *attributable to cost* (i.e. poor-rich difference in unmet need). Additionally, we show in the last column (D) the ratio of inequality in dental attendance due to cost divided by the total inequality.

Table 11.1: Parameters for potential health policy prioritisation

	Rich-poor difference in average number of teeth	Total rich-poor difference in dental attendance rates (percentage points)	Rich-poor difference in dental attendance due to cost (percentage points)	Proportion of difference in dental care use due to cost (%)
	(A)	(B)	(C)	(D)=(C)/(B)
Israel	8.1	27	26	97 %
Denmark	6.7	16	3	18 %
Estonia	5.4	29	35	124 %
Netherlands	5.3	21	4	19 %
Germany	5.1	9	5	53 %
Italy	4.6	13	15	116 %
France	4.2	14	8	57 %
Czech Rep.	3.9	26	16	62 %
Spain	3.8	16	18	110 %
Luxembourg	3.4	19	13	69 %
Sweden	2.7	6	8	135 %
Austria	2.1	3	7	260 %
Switzerland	1.6	10	1	12 %
Belgium	1.4	3	2	79 %
Slovenia	1.2	14	1	8 %

Notes: N=11,534

Source: SHARE Wave 5 release 0, authors' own calculations

For example, the rich-poor difference in oral health is largest in Israel, so there is both the necessity and the scope for comparatively large improvements. Would an intervention that reduced out-of-pocket cost for dental care among the poor be useful? Probably yes, because the large rich-poor difference in dental attendance can almost completely be “explained” by unequal attendance patterns related to cost. In contrast, in Denmark, only a small proportion of the difference in dental attendance can be attributed to cost. Thus most of the rich-poor difference in dentist visits is “behavioural” and other interventions than reducing cost may be prioritized. Arguing along similar lines, Table 11.1 suggests that there are three groups of countries:

- for countries such as Spain, Italy, Israel, Estonia, and Sweden cost-related difference in attendance explains virtually all of the social inequality in dental care use; health policy interventions targeting dental coverage may be a powerful policy tool.
- for countries such as Netherlands, Denmark, Switzerland, and Slovenia cost-related aspects seem to play less of a role; hence, health policies centred around cost-risks for poor patients may be less relevant in these countries than other interventions such as oral health promotion and raising awareness of the importance of good oral health.
- for other countries, about half of the social inequalities in dental care use seem attributable to treatment costs; here, a mixture of both treatment-cost-related policies and of oral health promotion may be expedient.

In addition, it is relevant to consider the potential magnitude of inequality reduction in each respective country. Interventions are likely to have higher impact in countries with larger levels of oral health inequality such as measured by the poor-rich difference in the number of natural teeth. Relatively large scope for reducing inequalities in number of teeth seems to exist in Israel, Denmark, Estonia, the Netherlands, and Germany.

11.6 The value of measuring oral health

In survey research, oral health may substantiate a very sensible marker for social deprivation and associated health disparities. Asking persons about their number of teeth entails unique advantages as tooth status is arguably easy to measure and comparably independent of expert diagnosis as well as emotionally influenced subjective ratings. Not least, due to the cumulative nature of tooth loss over time, number of teeth can be considered a highly relevant oral health measure in older adulthood. Over and above, due to its importance for people's diet, nutrition, and quality of life, tooth status provides a highly sensible marker for general health and well-being.

On basis of data from SHARE Wave 5, our findings suggest that the self-reported number of respondents' teeth (1) decreases steadily with age, (2) differs substantially across countries, (3) varies across countries with respect to level of average deprivation, and (4) varies within countries according to household income. Furthermore (5), inequalities in number of teeth are partially attributable to treatment costs and associated dental attendance patterns, to a large extent in some countries, to a lesser extent in other countries.

There are many possible paths between socioeconomic position and oral health that need to be unravelled, particularly against the background of varying social contexts. However, while increasing resources for treatment services may provide benefits, recent findings also suggest such interventions might not always have large impacts on reducing inequalities and aspects of health literacy and health promotion need also be taken into account (Listl et al. 2014a, Steele et al. 2015).

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12 Slipping into poverty: effects on mental and physical health

-
- ▶ The strong cross-sectional correlation of poverty and health decreases in a longitudinal perspective
 - ▶ Slipping into poverty has (at least) a short-term impact on mental health but not on physical health
 - ▶ Mental health is more strongly associated with material deprivation than with income poverty, both in a cross-sectional and in a longitudinal perspective
 - ▶ To reduce poverty-related inequalities in (mental) health, policies should not only consider income but a more broadly concept of poverty
-

12.1 Poverty and health

Financial resources are an important factor for social inclusion but also for many other parts of life. A lack of income and wealth is associated with adverse life circumstances of which poor health is one of the more serious issues. This relation between low levels of wealth and income and poor health is well documented (e.g. Mackenbach et al. 2005, Braveman et al. 2010). The relationship appears quite strong in analyses using cross-sectional data whereas it diminishes considerably in a longitudinal perspective (Jones & Wildmann 2008, Gunasekara et al. 2011). Nevertheless, studies with longitudinal design which assess mental health (see McKenzie et al. 2014) as well as subjective physical health (see Gunasekara et al. 2013) report a moderate short-term impact of slipping into poverty.

In addition, previous studies have shown that in particular poverty measures that are not based on income correlate with health (e.g. Adena & Myck 2014). Relative income poverty – measured by own income in relation to a society's income distribution – is an indicator for financial resources. However, also wealth and individual living standard (i.e. consumption habits) are relevant for the economic condition and its perception. Therefore, the concept of material deprivation can be useful to catch poverty more broadly (see chapter 4 in this volume).

There are several explanations for the relationship between income and health. On the one hand it is claimed that higher income results in better health due to the possibility to afford a healthier lifestyle (in particular food and accommodation). On the other hand reverse causality is possible, i.e. healthy persons are more likely to perform better in the labour market and hence have a higher income. Another

explanation is that income and health are connected indirectly. Socioeconomic, cultural, or biological background variables might affect both income and health, mediated through, for example, career opportunities and health behaviour (such as diet, smoking, physical activity, and use of medical care).

This study compares the poverty-health-link in cross-sectional and longitudinal data. While cross-sectional analyses inform us about the correlation of health and being poor, causal inference rests on rather strong assumptions, even when controlling for observable possible confounders. Longitudinal analyses offer the advantage to effectively control for all unobserved characteristics of individuals stable over time. Exploiting the longitudinal information of the SHARE data with appropriate methods to assess the poverty effect on health thus in general increases the confidence in a causal interpretation of the found effect. An additional feature of this study is the use of an objective health measure. Since studies using such measures are rare, this may also lead to new insights into the relationship of poverty and health.

To identify the causal effect of poverty on health it is further necessary to rule out the possibility of reverse causality. Partly this can be achieved by conducting the analyses with a sample that consists of retired persons only. In doing so, it is possible to rule out that changes in health affect the individual income. If estimates based on the full and the reduced sample are similar, this might serve as an indication of the relative unimportance of such a pathway and strengthen the causal interpretation of the found effect. Still, there can be financial consequences that come along with illness so that the state of health does not influence income but expenditures.

12.2 Data and methods

Cross-sectional analyses in this chapter use data from SHARE Wave 5 (release 0). In addition, waves 2 and 4 of SHARE are used for longitudinal analyses on the effects on mental and physical health of slipping into and out of poverty in old age, as information on poverty status is only partly available for waves 1 and 3. Poland did not participate in SHARE Wave 5 but is included in the longitudinal analyses with its previous waves. Luxembourg is included in the cross-sectional analyses only as it participated for the first time in SHARE Wave 5. For all other countries two or three waves are available, with a maximum time span of seven years. Therefore, the effects of changes in poverty status using longitudinal methods are considered as short-term effects, compared to effects that evolve over the whole life course.

To get an impression of the dimension of poverty and its relationship to health, descriptive (cross-sectional) statistics of the SHARE Wave 5 data are shown in the next two sections. Afterwards, to compare the effects of poverty on health in cross-sectional and longitudinal models, results from linear regression (OLS) and fixed-effects regression models are contrasted. Models were computed in a four-step procedure. First, a bivariate OLS regression was calculated. In the second step the country in which respondents live was added as a control. The third OLS model additionally controlled for other important factors of health: age, gender, partner in household, household pay rent, employment status, and education. In the last step fixed-effects models were used to reveal the effects of *changes* in poverty status. Age, partner in household, paying rent, and employment status are included as controls in these models. By using the fixed-effects-method time-constant unobserved heterogeneity is eliminated. Only within-individual changes contribute to the analysis. In addition, to address the issue of possible reverse causality, the same analyses were conducted on a smaller sample consisting of retired persons only.

12.3 Measures of poverty

Two common definitions of poverty are used here to classify households into poor and non-poor. First, households are classified on the basis of their equalised income compared to the poverty threshold (60 % median income) reported by EUROSTAT and the Israel Central Bureau of Statistics for the relevant year and country (*income poverty*). Second, households are considered as poor if the household respondent reported that the household is able to make ends meet with “some” or “great difficulty” (*material deprivation*). In contrast to income poverty, material deprivation covers not only income but also spending. While the material deprivation index introduced in this volume might be less endogenous with regard to self-reported health measures than making ends meet and therefore more appropriate for the analyses (see chapter 2 in this volume), it has also been shown to strongly correlate to the latter (see chapter 5 in this volume). Since in this chapter also longitudinal analyses were conducted, and the new deprivation index can only be computed for wave 5, making ends meet is used as indicator of material deprivation instead.

Figure 12.1 shows the share of households in SHARE Wave 5 considered as poor according to the definitions of income poverty as well as material deprivation. In most countries the rate of material deprivation is higher than the rate of income poverty. Only in Denmark, Switzerland, and Austria the share of income

poor households is higher than the share of material deprived households. A high level of households reporting material deprivation appears in Southern and Eastern European countries: Spain, Italy, Estonia, Czech Republic, Slovenia, and Israel. Rates of income poverty are markedly lower in these countries but still high compared to other countries. What is particularly noticeable is the huge difference of about 40 percentage points between the two poverty indicators in Estonia and Israel.

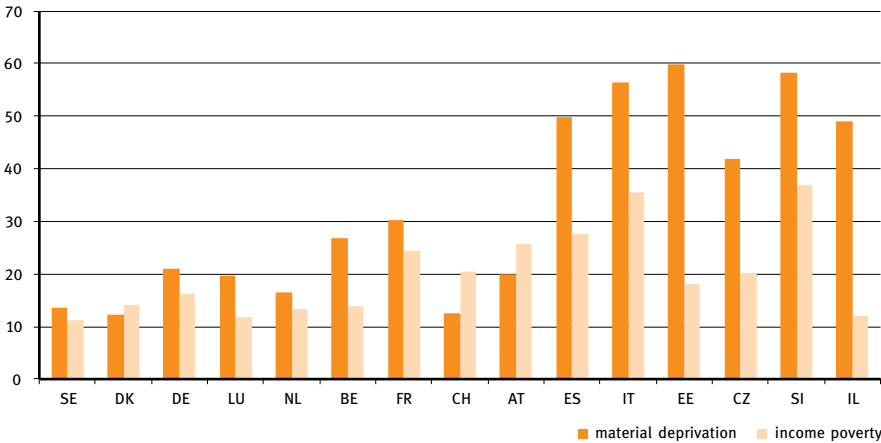


Figure 12.1: Percentages of poor households by country and poverty measure

Notes: 22,340 observations, unweighted

Source: SHARE Wave 5 release 0

12.4 Measures of health

Two different measures of health are used as outcome variables. First, grip strength is used as an objective indicator for physical health. Reduction in hand-grip strength has been shown to predict morbidity, disability, as well as mortality (e.g. Gale et al. 2007, Sasaki et al. 2007). It is measured by using a handheld dynamometer that reports strength in kilograms. Second, the “Euro-D” scale, which is the sum of depression symptoms ranging from 0 to 12, provides a measure for mental health. Items that contribute to the scale are for example sadness, death wish, irritability, and loneliness.

Figure 12.2 presents means of grip strength for poor and non-poor over all countries. Lowest levels of grip strength are found in France, Spain, Italy, and Israel. These findings are in line with results of previous waves of SHARE that indicate on

average lower grip strength for Southern European countries than for Northern-continental European countries, even with controlling for sociodemographic characteristics and socioeconomic status (Andersen-Ranberg et al. 2009). In every country, on average the non-poor perform better in grip strength than the poor, regardless of which poverty indicator is used. The differences between poor and non-poor are significant (95 %) for most countries. In Spain there is a significant difference in the

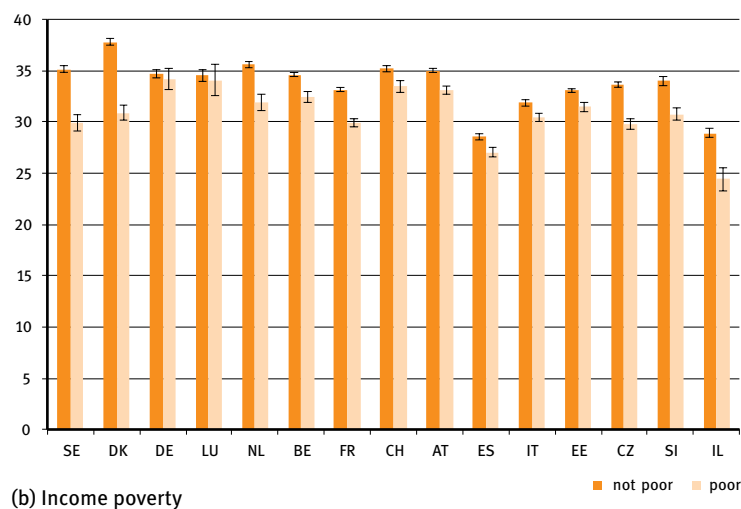
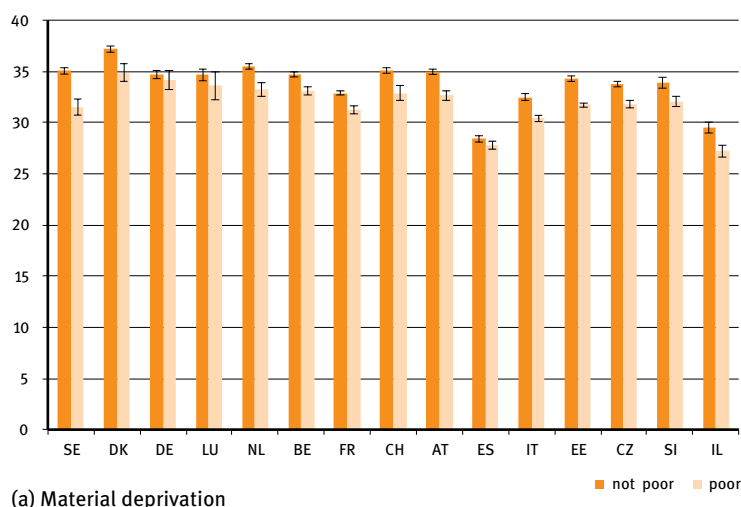


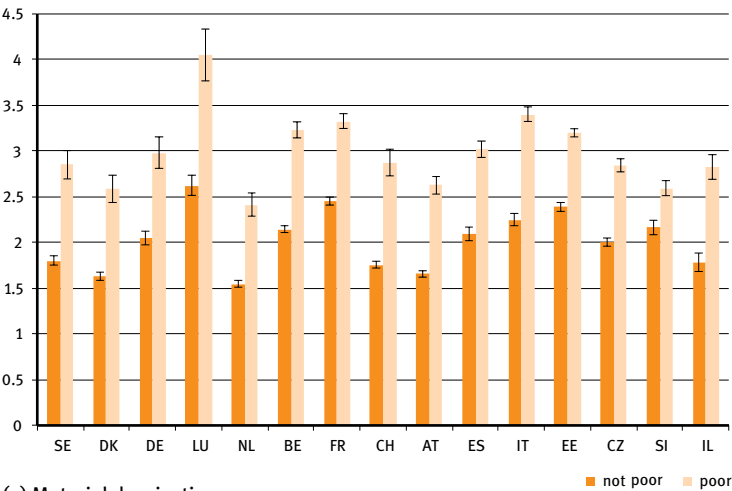
Figure 12.2: Mean of grip strength by country and poverty status

Notes: 30,044 observations, unweighted, brackets denote standard errors

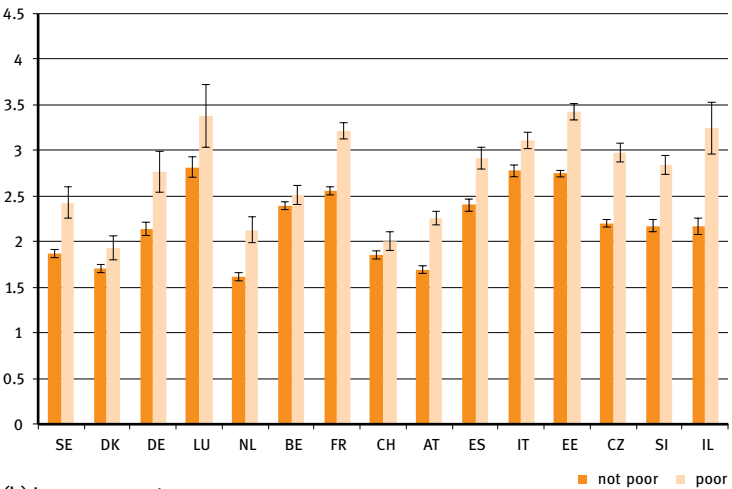
Source: SHARE Wave 5 release 0

level of grip strength only if poverty is defined by income. No significant differences at all show up in Germany and Luxembourg. In addition, it is striking that the gap in grip strength between poor and non-poor in Denmark is small when stratifying by material deprivation but huge when stratifying by income poverty.

Figure 12.3 shows the mean scores on the Euro-D scale of the poor and non-poor by country. Analysed countries differ considerably in the level of mental health, e.g. in Denmark, the Netherlands, Switzerland, and Austria the average



(a) Material deprivation



(b) Income poverty

Figure 12.3: Mean of Euro-D scale by country and poverty status

Notes: 30,044 observations, unweighted, brackets denote standard errors

Source: SHARE Wave 5 release 0

number of depression symptoms is relative low whereas compared to these countries in Luxembourg the Euro-D score is on average about one point higher. Also in the mental health measure the poor are worse off compared to the non-poor in every country. Differences in mental health are significant in every country by using the material deprivation indicator. Stratified by income poverty the depression gap between poor and non-poor is smaller but still existent except for Denmark, Luxembourg, Belgium, and Switzerland.

12.5 Multivariate analysis

Turning to the findings from the multivariate regression analyses, Figure 12.4a presents the marginal effects of income poverty and material deprivation on grip strength. The first bar indicates the bivariate correlation obtained from a cross-sectional OLS regression. The average effect over all countries is -2.88 and -2.99 for material deprivation and income poverty, respectively. When controlling for country the detrimental effect of poverty decreases significantly. Additionally controlling for observed sociodemographic characteristics and other possible confounders in the third model decreases the correlation of poverty and grip strength even more. Finally, the last bar shows the marginal effect of poverty using fixed-effects regression analysis with up to three waves of SHARE. Neither material deprivation nor income poverty show a significant effect on grip strength.

Similar patterns show for mental health, displayed in Figure 12.4b. Both, material deprivation and income poverty have a strong correlation with the Euro-D scale in OLS-regressions and a smaller effect in fixed-effects models. In longitudinal analyses the marginal effects of poverty are small (0.13 and 0.08), however, the effects remain significant. Compared to grip strength, the two poverty measures do not equally correlate with mental health. The marginal effects of material deprivation are about double – or even higher – as the effects of income poverty.

All models have been also estimated with retired persons only (not shown). The effect of poverty measures on health indicators is somewhat weaker in the cross-sectional regressions. However, results in the fixed-effects models are basically the same compared to the full sample. This finding can be seen as indicator of the absence of a substantive bias due to causality running from health to income.

It is noteworthy that results from the cross-sectional models, both on physical and mental health, are very similar when the index introduced in chapter 4 is used as measure of material deprivation instead of making ends meet. Thus, making ends meet seems an appropriate proxy for material deprivation in the absence of more elaborate measures.

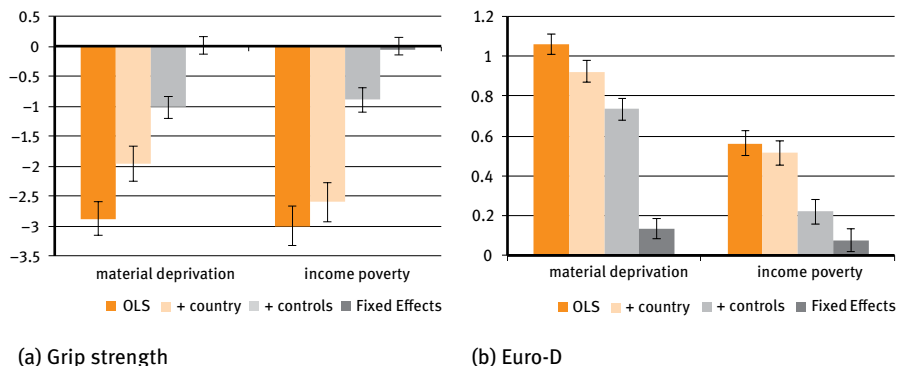


Figure 12.4: Marginal effects of poverty measures on grip strength and Euro-D in linear regressions and fixed-effects models

Notes: OLS models: 30,044 observations. Fixed-effects models: 67,045 observations for 29,630 individuals. Bars show marginal effects with 95 % confidence intervals.

Source: SHARE Wave 2 release 2.6.0, Wave 4 release 1.1.1, Wave 5 release 0

12.6 Discussion

This study showed that the relatively strong bivariate correlation of poverty and health diminishes when more controls are included in the analysis. By using fixed-effects regression to effectively control for time-constant unobservable confounders the detrimental effect of poverty is even weaker compared to multivariate OLS models. Longitudinal analyses indicate that there are detrimental short-term effects of slipping into poverty on mental health. However, changes in poverty status seem not to be related to changes in grip strength.

Confirming previous studies, material deprivation is more strongly correlated with health outcomes than is income poverty. This is especially true for mental health. Therefore, to reduce poverty-related inequalities in mental health, policies should not only consider income but a more broadly concept of poverty.

There are considerable differences in the magnitude of effects derived from cross-sectional versus longitudinal models. This pattern tells us that although short-term effects are relatively weak, there may be mechanisms at work that lead to poor health of materially deprived people over a longer period, probably over the whole life course. Long-term effects as well as other individual characteristics that are connected to poverty are more important for explaining health status than short-term changes in poverty status. Obviously, this is especially true for grip strength, which is a relatively constant measure compared to mental health which is more susceptible to short-term changes.

The question of causality is not completely clear, though. Theory and empirical evidence suggest that income and health are interdependent. While this problem cannot be finally solved here, the presented estimates based on fixed-effects regression models (and restricted to a sample of retired) hint to inflated results in previous cross-sectional research. Results show that changes in both poverty indicators correlate with mental health but not with grip strength. Since physical health is influenced by many factors (e.g. genetic endowments), especially for older people, this seems plausible. The very similar results of the retirement-sample compared to the whole sample give some hint that reverse causality (i.e. health influences income) does not seem to matter much for people age 50 and older who are at the end of their occupational career or beyond. This mechanism may however be more relevant in earlier phases of life. Moreover, reverse causality may still occur with regard to health-related expenditures.

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Kimberly J. Stoeckel and Howard Litwin

13 Social cohesiveness and neighbourhood environmental deprivation: how are they related to life satisfaction in late life?

-
- ▶ Socially cohesive neighbourhood environments facilitate social inclusion; deprived neighbourhood environments do not
 - ▶ Most older Europeans live in environmentally satisfactory neighbourhoods and have socially cohesive relationships with neighbours
 - ▶ There is little variation between countries in regard to social cohesiveness and neighbourhood deprivation; differences on these measures seem to be driven by micro-level factors
 - ▶ Residents of socially cohesive neighbourhoods report greater life satisfaction, especially those living in otherwise deprived neighbourhoods
-

13.1 Social cohesiveness and neighbourhood deprivation

Neighbourhood environment, particularly the extent of social cohesiveness and the physical state of the neighbourhood (e.g. cleanliness and safety), has been shown to influence well-being among older adults (Cagney et al. 2009). Social cohesiveness, as demonstrated by the presence of supportive neighbourhood-based social ties, is an indicator of social inclusion. Correspondingly, a lack of cleanliness or safety in the local area, which may be a sign of neighbourhood deprivation, is an indicator of social exclusion.

Meaningful social interactions and social reciprocity in the neighbourhood facilitate constructive aging-in-place as well as promoting positive aging experiences (Emlet & Moceris 2012). Perceived social cohesion within neighbourhood settings and a sense of belonging are both related to enhanced well-being outcomes among older adults (Bowling et al. 2002, Momtaz et al. 2014). Social cohesiveness has also been shown to promote positive social interactions and a greater sense of inclusion (Cramm et al. 2013). Moreover, older adults who maintain relationships with their neighbours have elevated feelings of belonging and self-worth, as well as greater overall life satisfaction (Oswald et al. 2011).

The physical environment of a neighbourhood may either enhance or restrain the well-being of older adults. Safe and well-organized neighbourhoods promote

social engagement outside of the home and, as such, are reflective of social inclusion. Research shows that living in nice and safe neighbourhoods improves well-being in later life (Netuveli et al. 2006). In contrast, living in environmentally deprived neighbourhoods is negatively related to well-being among older adults (Scharf et al. 2002). Neighbourhoods with high rates of vandalism, graffiti and unkempt streets reflect social exclusion insofar as these particular characteristics tend to limit the actions and the behaviours of people living in such settings (Scharf et al. 2002).

A key question that is yet to be resolved is whether feelings of social cohesiveness among neighbours counteract the otherwise negative effects of residing in deprived neighbourhoods. Research has underscored a positive link between neighbourhood social connections and satisfaction (Hur & Morrow-Jones 2008). Some findings suggest that neighbourhood social cohesion has a mediating role in the generally negative association between neighbourhood deprivation and individual mental health outcomes (Drukker & van Os 2003). Additional empirical work is required, therefore, in order to ascertain whether the association between neighbourhood social cohesion and well-being varies according to the degree of neighbourhood deprivation. That is, do social ties become even stronger in their association with well-being when older adults live in environmentally deprived neighbourhoods and, in essence, assist in overcoming the countervailing effects of social exclusion that stem from the physical environment?

The study reported upon in this chapter explores the nature and extent of social cohesion and neighbourhood deprivations among older Europeans. In the first stage, a component representative of social cohesion and a component representative of neighbourhood deprivation were developed using data from the social exclusion module in SHARE Wave 5. Social cohesion was operationalised as a measure of the strength of relational ties with neighbours. Neighbourhood deprivation was operationalised as a measure of environmental characteristics representative of the physical quality of the neighbourhood. In the second stage, country differences of each component were analysed to explore whether or not variations on these domains exist between countries. The third and final phase of the analysis examined how social cohesion and neighbourhood deprivation respectively influence subjective well-being, operationalised as overall life satisfaction. In addition, the analysis builds on these findings to consider if and how the interaction of social cohesion and neighbourhood deprivation alters the associations with life satisfaction.

13.2 Social inclusion and social exclusion

The study addressed the neighbourhood aspects of the social exclusion module from SHARE Wave 5. Household survey respondents eligible for the social exclusion module ($n=41,784$) were asked to rate the level to which they feel part of the local area (hh022_), if vandalism and graffiti are a big problem in the neighbourhood (hh023_), the extent of neighbourhood cleanliness (hh024_) and if local people would be helpful if they would be in trouble (hh025_). The variables are coded on a 4-point Likert scale ranging from 1) strongly agree to 4) strongly disagree. The probe on vandalism and graffiti was reverse coded to align the positive answer category order with the other variables in the question series. For the purpose of the present analysis, the four variables were separated into two components each consisting of two items: social cohesion (hh022_ ; hh025_) which reflects social inclusion, and neighbourhood deprivation (hh023_ ; hh024_), which represents social exclusion. Dummy variables were created to distinguish between those answering strongly agree or agree (1) and those answering strongly disagree or disagree (0). For the social cohesion component, a count of the strongly agree or agree category (1) was calculated. High values on the possible score of 0–2 represent more social inclusion. For the neighbourhood deprivation component, a count of the strongly disagree or disagree category (0) was calculated. High values on the possible score of 0–2 represent greater exclusion.

Descriptive analysis of the sample showed that the surveyed older Europeans lived predominantly in neighbourhoods in which they felt high levels of social cohesiveness. The majority had a score of two in this variable (81.5%), suggesting they felt a part of their local area and would have people willing to help them if they encountered any troubles. 15 per cent (15.2%) had this level of agreement with only one of the two social cohesion items. Between three and four per cent (3.3%) did not agree with either statement, an indicator of having no feelings of social cohesiveness with neighbours.

Similarly, the sample of older Europeans lived in neighbourhoods without much perceived deprivation. That is, members of the sample resided predominantly in neighbourhoods which were seen to be clean, safe and subject to little vandalism. 73 per cent had a score of zero on the neighbourhood deprivation variable. 21 per cent had a score of one, suggestive of neighbourhood environments with some degree of deprivation. Some six per cent of respondents had the highest score of two, indicating that they lived in local areas with high levels of neighbourhood environment deprivation.

13.3 Social cohesion and neighbourhood deprivation: country comparisons

Analysis of country differences revealed significant variations on neighbourhood social cohesion and neighbourhood deprivation (see Figures 13.1 and 13.2). For neighbourhood social cohesion, a one-way analysis of variance (ANOVA) yielded significant results with a small to medium effect size, $F(14, 40,629) = 50.87, p < 0.001$, Cohen's $f^2=0.13$. On the whole, respondents from Israel reported the lowest country mean (1.68), those from Sweden reported the highest mean (1.89), and the remaining 13 countries fell in between these two extremes. However, as is demonstrated in Figure 13.1, post hoc analysis using the Tukey HSD criterion revealed no unique or distinct country subgroupings.

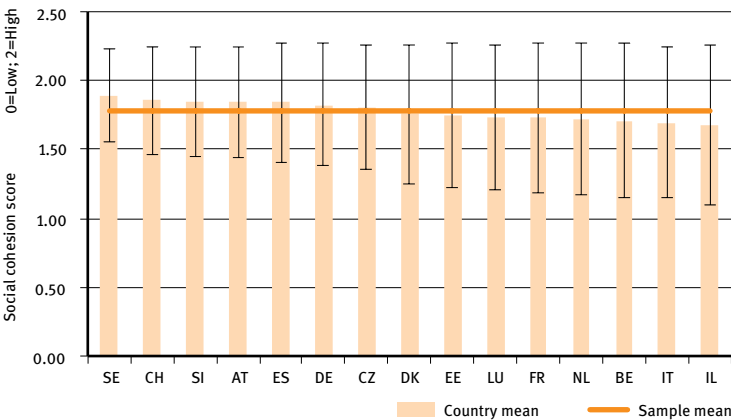


Figure 13.1: The extent of neighbourhood social cohesion, by country

Notes: Countries ordered according to mean, $n = 40,629$, unweighted, $F(14, 40,628) = 50.87$, $p = .000$, Cohen's $f^2 = .13$

Source: SHARE Wave 5 release 0

For neighbourhood deprivation, ANOVA results of country differences were significant with a medium effect size, $F(14, 40,730) = 205.20, p < 0.001$, Cohen's $f^2=0.26$. In addition, the Tukey HSD post hoc analysis revealed that distinct country variation for perceived neighbourhood deprivation could be discerned. As Figure 13.2 shows, three distinct country sub-groupings with relatively high levels of deprivation emerged. Respondents from the Czech Republic reported the highest mean of neighbourhood deprivation (0.72). The corresponding mean of the Italian respondents was 0.54, forming the second country grouping. Israeli respondents had a mean of 0.46 and formed a third distinct country grouping. A

distinct country sub-grouping also surfaced for the lowest neighbourhood deprivation score. The Swedish respondents (0.12) reported having the lowest neighbourhood deprivation score of all the respondents in this 15-country comparison.

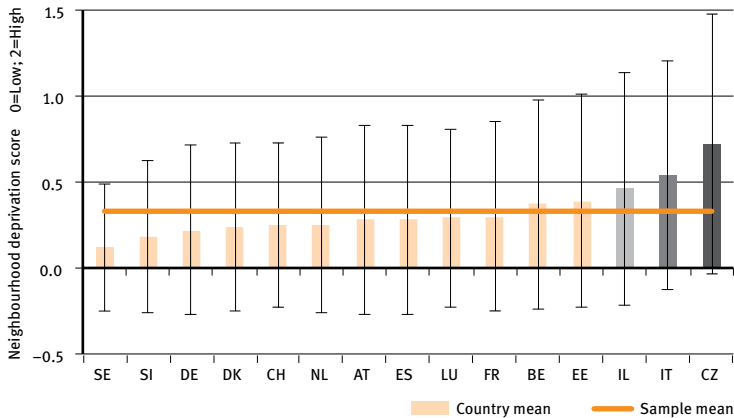


Figure 13.2: The extent of neighbourhood deprivation, by country

Notes: Countries ordered according to mean, $n = 40,731$, unweighted, $F(14, 40,730) = 205.20$, $p = .000$, Cohen's $f^2 = .26$

Source: SHARE Wave 5 release 0

In sum, the general lack of distinct country differences on perceived neighbourhood social cohesiveness suggests that to the extent that the individual scores on this variable vary, it is due to individual factors rather than country-level norms and characteristics. This same conclusion can be drawn from the relatively small number of distinct country sub-groupings that emerged in relation to the neighbourhood deprivation measure as well. That is, neighbourhood exclusion may primarily reflect differences in micro-level characteristics, such as poverty status or urban/rural neighbourhood settings, rather than clear cultural, country specific variations.

13.4 Social cohesiveness and neighbourhood deprivation: well-being

The final analysis considered the relationship between the measures of neighbourhood social cohesion and neighbourhood deprivation and subjective well-being. It was performed as a household level analysis among the respondents who were

eligible for the social exclusion module. Specifically, the analysis was designed to examine how social cohesiveness and neighbourhood deprivation intersect in their associations with well-being in later life. The well-being outcome was operationalised using a subjective measure of self-rated life satisfaction. In SHARE Wave 5, respondents were asked to rate their satisfaction with their life on a scale of 0–10, with 0 meaning completely dissatisfied and 10 meaning completely satisfied (ac012_).

The statistical analysis utilised hierarchical OLS regressions. The first step in the analysis considered the associations of neighbourhood social cohesion and neighbourhood deprivation with life satisfaction, controlling for sociodemographic background, perceived economic adequacy, urban/rural neighbourhood, country, health and personal social network characteristics. The personal social network variables included a dummy variable indicating if a respondent has no children (0) or one or more children (1); the frequency of contact with the most contacted child ranging from never (1) to daily (7); and marital status, which was operationalised as a series of dummy variables that distinguished between married/partnered, single, divorced or widowed respondents. In the second step of the analysis, an interaction term of neighbourhood social cohesion and neighbourhood deprivation was entered.

Table 13.1: The inter-relationship of neighbourhood social cohesion and neighbourhood deprivation vis-a-vis life satisfaction: hierarchical regressions

Variables	Model 1			Model 2		
	Coefficient	Standard error	Standardised β	Coefficient	Standard error	Standardised β
Social cohesion	0.386***	0.018	0.099	0.06***	0.022	0.092
Neighbourhood deprivation	−0.108***	0.015	−0.034	−0.193***	0.043	−0.060
Social cohesion x neighbourhood deprivation				0.051*	0.025	0.027

Significance: *** = 1%; ** = 5%; * = 10 %

Notes: n = 36,973, controlled for age, gender, marital status, education, perceived income adequacy, children (dummy), most frequent contact with a child, country, urban/rural setting, number of mobility limitations, physical health symptoms

Source: SHARE Wave 5 release 0

The first model explained a respectable amount of variance in the life satisfaction outcome ($R^2 = 0.29$). It revealed that life satisfaction was positively associated with social cohesiveness ($\beta = 0.10$), even after controlling for background, personal social network and health characteristics. In contrast, a negative association was found between neighbourhood deprivation and life satisfaction ($\beta = -0.03$). Moreover, the standardised coefficients indicate that living in a socially cohesive neighbourhood had a stronger positive association with life satisfaction than the negative association of the deprived environmental characteristics did. In other words, the quality of the relationships with nearby neighbours seems to have a stronger positive impact on well-being in later life than the negative consequences of living in deprived neighbourhoods.

These findings highlight the next question addressed in the current inquiry, namely, whether the positive strength of strong social relationships with neighbours on well-being offsets the negative experience of living in physical environments which are otherwise deprived. In order to address this issue, an interaction term was entered in the second step of the analysis. The interaction term allows exploration of whether and how the two variables – social cohesiveness and neighbourhood deprivation – inter-relate in their association with late life satisfaction. The results revealed that the interaction between social cohesiveness and neighbourhood deprivation was, indeed, significantly associated with overall life satisfaction. That is, the interaction showed that the positive association between neighbourhood social cohesion and life satisfaction ($\beta = 0.10$) became stronger as neighbourhood deprivation increased, with the standardised coefficient of the interaction term increasing by 0.03. This means that having social connections with others in the neighbourhood was even more related to life satisfaction among those older Europeans who resided in deprived local areas, that is, neighbourhoods with higher rates of crime, graffiti and unkempt streets and parks, than it was among those who lived in nicer residential areas.

13.5 Lessons from this study

Social inclusion and exclusion were examined in parallel in the analyses presented in this chapter utilising measures generated from the neighbourhood aspects of the social exclusion module in SHARE Wave 5. A measure of social cohesiveness, indicative of the nature of the personal relationships with neighbours, was developed to represent social inclusion. In contrast, a measure of neighbourhood deprivation was generated as a measure of social exclusion. This measure represented exposure to negative physical neighbourhood characteristics, such as vandalism.

The descriptive analysis of these two measures revealed that the majority of survey participants lived in neighbourhoods in which there was a high level of social inclusion and limited exclusion. Personal social connection and strong interrelationships between neighbours were relatively common. Four-fifths of the older Europeans sampled indicated that they felt a part of their local area and that their neighbours would support and assist them if they would need help. However, a small but notable number of SHARE survey participants lacked one or both of the indicators of neighbourhood social cohesiveness and therefore experienced some level of social alienation within their neighbourhood setting. Likewise, a large majority of the sample lived in socially inclusive neighbourhoods in terms of their physical environmental characteristics. Such neighbourhoods were clean and safe and had little or no reported vandalism. Some degree of neighbourhood deprivation was experienced, however, by nearly one-third of the older Europeans sampled in the survey. For these persons, the neighbourhood surroundings may yield a greater sense of insecurity about physical safety and also a perception of barriers which limit their active engagement with their surroundings.

The country specific analyses of social cohesiveness and neighbourhood deprivation revealed that country differences in these measures do exist. Swedish respondents had the highest score for social cohesiveness combined with the lowest score for neighbourhood deprivation. Those from the Czech Republic had the highest score for neighbourhood deprivation but an average degree of social cohesion. Respondents from Israel emerged as having poor social inclusion on both domains; low social cohesion and high neighbourhood deprivation scores. However, the lack of distinctive country sub-groupings in the post-hoc analyses suggests that the reasons for differences in social cohesion and neighbourhood deprivation are most likely multifaceted and reflect more than country differences alone.

The multivariate findings, which examined the associations between social cohesion, neighbourhood deprivation and subjective well-being, underscore the intrinsic value of social connections in later life, particularly among older Europeans living in deprived neighbourhoods. Life satisfaction was greater for people who had stronger social ties and feelings of connectedness with their neighbours, all things considered. It was lower, on the other hand, among those living in environmentally deprived, unkept neighbourhoods in which vandalism occurred, again, after controlling for other factors. Moreover, the findings revealed that social cohesiveness and a sense of connectedness with neighbours had a more positive association with life satisfaction among older adults living in deprived neighbourhoods than among those living in less deprived neighbourhoods. In other words, strong social ties become even more important in improving sub-

jective well-being when persons reside in neighbourhoods which may lead to feelings of being excluded from their local surroundings because of its physical environmental characteristics. In conclusion, it can be asserted that social inclusion, in terms of social cohesiveness, can play an important role in improving quality of life among older Europeans, especially within neighbourhoods that are otherwise environmentally deprived.

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14 Social exclusion and support between generations

-
- ▶ Socially excluded parents aged 50+ give less money to their adult children than the socially included give
 - ▶ Socially excluded parents aged 50+ receive more support from their adult children than the socially included receive
 - ▶ There is less exchange of supports in countries having greater social exclusion
 - ▶ Social exclusion changes functional solidarity patterns between generations
-

14.1 Does social exclusion matter for inter-generational support?

Intergenerational assistance, that is, the informal exchange of money and practical aid is a key function in modern society. Family members help each other for several reasons and most intergenerational exchange takes place between parents and their children. We know, for example, that the family often fulfills an insurance function and that family members care for each other in times of need (e.g. Finch & Mason 1990). This functional solidarity is a crucial dimension of intergenerational relations (Bengtson & Roberts 1991).

Until now, however, little attention has been given to exchange patterns that take place among families who are excluded from the fabric of social life. Are the transfers between older parents and their adult children linked to the extent of social exclusion in different welfare states across Europe; i.e. do socially excluded persons give and receive less assistance from their children, or do they give and receive more such assistance? Moreover, do different policy regimes play a role in the level of intergenerational exchange?

14.2 Background: linking social exclusion and intergenerational support

Altruistic as well as reciprocal motives are important drivers for intergenerational support (Altonji et al. 1997; Silverstein et al. 2002). Some people simply like to give (Lüth 2001), while for others, love and concern matter greatly, especially within

the family (Björnberg & Latta 2007). But even if “there is more to receiving than needing” (Künemund & Rein 1999), need and opportunity both play important roles in the exchange of assistance between (older) parents and their (adult) children (Brandt & Deindl 2013). Based upon typical need structures that exist along the life course, we learn that financial transfers flow mostly downwards from parents to children, while practical help tends to flow upwards from children to parents, at least in older age (Attias-Donfut 1995). Financial assistance occurs most often when the children are still in education or are just starting their own, independent lives, periods in which the parents frequently still have the financial means to support their offspring (Brandt & Deindl 2013). When parents get older, however, they are more likely to need assistance themselves. In most such cases, support is provided by the members of the family, first by the spouses and then by the children, mostly the daughters (Brandt 2013).

There are two possible influences of social exclusion on the exchange of intergenerational support within a family. First, social exclusion due to material deprivation might lead to more transfers since more support is needed. On the other hand, social exclusion due to material deprivation might restrain support because potential givers have less to give. Consequently, transfer flows between parents and children might differ considerably when one or more of the parties involved in the exchange are socially excluded.

In addition, the availability of resources is important not only on the micro-level, but on the macro-level as well. That is, intergenerational exchange may be shaped by the larger social context. Past research has shown, for example, that the welfare state and societal conditions like social inequality play important roles for intergenerational transfers and have to be taken into account when analysing the role of exclusion for intergenerational transfers in a comparative setting. Public assistance and private support work together complementarily, with different intergenerational transfers in developed welfare regimes (Brandt & Deindl 2013), and higher social inequality shifts intergenerational support from financial to non-monetary assistance (such as, e.g., co-residence; Deindl & Isengard 2011).

14.3 Data and methods

The analyses in this chapter are based on release 0 of the data from the fifth wave of the *Survey of Health, Ageing and Retirement in Europe* (see Malter & Börsch-Supan 2015 for more details). Intergenerational exchange is defined in terms of two kinds of transfers: financial transfers and practical support with personal care and household tasks. The question for financial transfers given or received was:

Now please think of the last twelve months. Not counting any shared housing or shared food, have you or your partner given / received any financial or material gift or support to/ from any person inside or outside this household amounting to 250 € or more?

Practical support received and given was measured by means of two questions:

Thinking about the last twelve months, has any family member from outside the household, any friend or neighbour given you or your partner personal care or practical household help?

and

Now I would like to ask you about the help you have given to others. In the last twelve months, have you personally given personal care or practical household help to a family member living outside your household, a friend or neighbour?

These questions for financial transfers and practical support measure intergenerational transfers by different respondents and on different levels. The question about financial transfers relates to the couple level and was answered by the financial respondent in a household (who feels responsible for all financial matters within the household). The second question (receiving of practical support) was answered by the family respondent (who answered all questions on family matters). The third question (giving of practical support) was asked of each individual. For each of the questions, respondents could name up to three different people to whom they gave help or from whom they received it. In the following analyses, we consider only transfers to and from adult children aged 18 and over, representing the main domain of exchange for these kinds of intergenerational assistance in older age (see Brandt 2009, Deindl 2011 for details).

In the analyses that are presented in this chapter, we considered only the financial respondents and transferred missing information from the family respondent if the latter differed. For the analyses we used a binary indicator of exclusion as prepared by the SHARE team and explained elsewhere (see chapter 5 for a detailed description). Social exclusion at the country level was measured by the Gini-coefficient, as provided by Eurostat for the year 2012. The countries in our sample are Sweden, Denmark, the Netherlands, Belgium, France, Luxembourg, Germany, Austria, Switzerland, Italy, Spain, the Czech Republic, Slovenia, and Estonia.

In order to take advantage of the wealth of information available for analysing transfers between respondents 50+ and their adult children, we built a dyadic dataset, so that each respondent-child-relation constituted one observation. The analyses include co-resident adult children although support was only asked for people outside the household. The former could not be identified properly due to

the preliminary nature of the data. Transfer rates are thus still conservative estimates. Children in our dataset are nested within respondents, and respondents are nested within countries. We use multilevel modelling to overcome problems that may be associated with such non-independence between observations (e.g. Snijders & Bosker 1999).

14.4 Results: intergenerational support and social exclusion in Europe

As can be seen from Figure 14.1, financial transfers flow mostly from parents to children and practical support is given mostly to the older generation. This is true for both those who are socially excluded and those who are not. This finding is consistent with previous research and can be explained by the dominance of different needs and resources along the life course. The highest need for financial support from parents exists in younger years when one's children are still in education, or are in the early years of their careers and/or nest-building. In turn, practical support for the parents becomes more important in later years, especially when the parents become frail and may need care and assistance.

Apart from these well-known associations, the current analysis shows, that social exclusion as measured is uniquely related to intergenerational transfers. When comparing the socially excluded respondents' support relations with children to those of the non-excluded, we see that, first, excluded respondents give less transfers, not only in terms of money but also in terms of practical support – although the drop in financial transfers to children is much higher than the drop in help and care. Second, the data show that socially excluded respondents receive more transfers, both for practical support and for financial support. Thus, the greater neediness and receipt of assistance among the socially excluded parent generation may be associated with becoming a burden for their offspring.

In the next stage of the analysis we examined multivariate multilevel models (Table 14.1) based on dyadic parent-child-relations. Transfer patterns were examined controlling for a broad range of important potentially influencing factors that are known from previous research (see e.g. Brandt 2013; Brandt & Deindl 2013). Apart from the social exclusion of the parents, several variables matter for the giving and receiving of support between the 50+ and their adult offspring (not displayed in Table 14.1). These include their education and family structures (partnership, number of children), gender, age and the employment situation of the children themselves as well as relationship features (contact, transfer exchange).

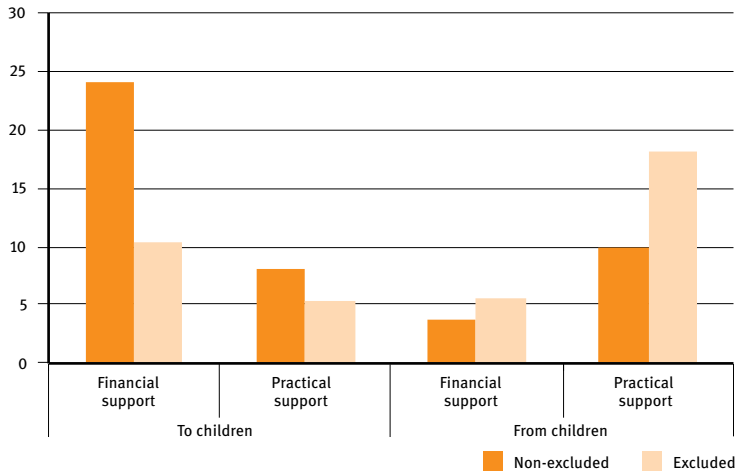


Figure 14.1: Intergenerational transfers and social exclusion

Notes: n = 38,472

Source: SHARE Wave 5 release 0

The main result of the current analysis is that social exclusion correlates negatively with financial transfers to children but is neutral with regard to practical support when the other variables are taken into account. Parents with greater difficulty affording everyday life items are less likely to give financial transfers to their adult children. In addition, as already seen in Figure 14.1, socially excluded parents are more likely to receive money and help from their offspring, all else considered.

In addition to the strong links between social exclusion and intergenerational exchange on the dyadic level, significant associations between social exclusion at the country level and intergenerational transfers on the individual level emerged in this analysis (with the exception of financial transfers to parents). Financial transfers to children and practical support both given and received by parents were significantly less likely to occur in countries characterised by higher social inequality, and thus more social exclusion, as measured by the Gini-coefficient.

Table 14.1: Support between responding parents 50+ and children 18+ and social exclusion (Coefficients of logistic multilevel-models)

	From respondents to children		From children to respondents	
	Financial	Practical	Financial	Practical
Respondent level				
Social exclusion (Severe deprivation)	-1.61** (0.116)	-0.19 (0.130)	0.47** (0.179)	0.88** (0.096)
Country level				
Social exclusion (Gini)	-0.11** (0.011)	-0.09** (0.014)	0.01 (0.019)	-0.11** (0.011)

Significance: ** $p < 0.01$, * $p < 0.05$

Notes: Observations: dyads=72,096; households=31,160; countries=14. Coefficients (standard errors) displayed. Controlled for characteristics of respondents (education, partnership, # children), characteristics of children (gender, age, employment) and relationship characteristics (frequency of contact, help given/received, money given/received).

Source: SHARE Wave 5 release 0

14.5 Discussion

Using the new social inclusion items from SHARE Wave 5 we examined the effects of social exclusion on exchange patterns between older parents and their adult children. We must condition our results with the comment that the findings were derived in a cross-sectional analysis. As such, we cannot confirm causality, and can speak mainly about association. In spite of this limitation, however, the findings show that social exclusion is significantly related to the extent and the nature of informal intergeneration assistance within the family.

Results indicate that socially excluded respondents indeed give less and get more money and help from their adult children all over Europe. Thus, need seems to indeed play an important role. Socially excluded parents not only lose their support function, but potentially become a burden for their offspring (or the state). Moreover, different contexts matter: in countries with more exclusion not only fewer transfers of time and money are given but also less support is received from adult children. Thus, once more, we find links between the context and intergenerational transfers, with indications that more developed welfare systems with lower social inequality are linked to higher levels of (at least sporadic) intergenerational transfers.

In sum, families fulfil an insurance function. Family members support each other if needed and when they can. Typically, older parents support their off-

spring with money whereas adult children support the parents with practical hands-on help and care later on. These patterns are considerably altered when the parents aged 50 and over are socially excluded, and also when the overall level of social exclusion in a country is higher. Older parents then become dependent on receipt of support from their offspring and turn from being mainly givers to mainly receivers. A state of social exclusion might thus be problematic for families not only because parents lose their supporting role in the family but because they might become a burden for their offspring as well.

Thus, it seems that families and intergenerational relations are both more vulnerable in countries that have more social exclusion. In such settings, individuals suffer not only from a higher likelihood of being socially excluded, but also from the fact that they are less able to rely on intergenerational support. Consequently, solidarity between older parents and older children might be at risk in countries with more exclusion on the micro- and on the macro-level. Policies aiming at reducing poverty and social inequality might thus be beneficial not only for the individual, but also for the family. Such policies would seem to promote intergenerational solidarity as well.

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Sharon Shiovitz-Ezra

15 Loneliness in Europe: do perceived neighbourhood characteristics matter?

-
- ▶ Loneliness is more prevalent in Southern and Eastern Europe than in Northern and Western European countries
 - ▶ Loneliness is related to neighbourhood quality, especially the social aspects of neighbourhood quality
 - ▶ The local environment is important among all older age groups in late life, but it is most important in relation to loneliness among the old-old
-

15.1 Loneliness in later life

Loneliness is a feeling of distress that is accompanied by a perception that the quantity, and especially the quality, of one's social interactions do not meet one's social needs. In other words, loneliness is a consequence of an unwanted gap between what individuals want to have in their social environment in terms of quantity and quality, and what they actually have (Perlman & Peplau 1998). Therefore, loneliness can be considered as a marker of perceived social exclusion. Ample studies have shown that loneliness impairs health. For example, loneliness is associated with poorer self-rated mental and physical health in later life (Cornwell & Waite 2009). The loneliness-morbidity association has also been highlighted in research conducted among older adults (Tomaka et al. 2006). Additionally, there is a growing body of research that has specifically linked loneliness to cardiovascular health (e.g. Thurston & Kubzansky 2009). Moreover, a prospective association between loneliness and mortality has repeatedly been reported in the literature (e.g. Luo et al. 2012).

In light of the serious negative health consequences of loneliness, extensive efforts have been made to gather empirical evidence on its potential predictors. Quantitative and qualitative measures, particularly measures of personal social networks, were found to be associated with loneliness. Of these measures, the quality of the spousal relationship and the quality of relationships with other network members such as family members and friends were found to be highly related to loneliness (Shiovitz-Ezra & Leitsch 2010). One potential predictor that has received only limited empirical attention thus far is the perceived quality of one's neighbourhood of residence. The psychosocial importance of local neighbourhoods tends to grow as people age, due to a decline in physical and func-

tional health. Compromised mobility leads to greater dependence on the close environment, where older people perform more daily and social activities (Glass & Balfour 2003).

A growing body of literature has evaluated the associations of objective and perceived neighbourhood characteristics with physical and mental health. In general, significant neighbourhood-level influences have been found. However, when perceived neighbourhood quality measures and objective measures were tested simultaneously, the subjective neighbourhood construct was most strongly associated with health (Weden et al. 2008). In contrast, the association of neighbourhood context with loneliness has received only limited attention. Among the few studies that have dealt with this topic, one relatively recent study tested the associations between objective neighbourhood characteristics, perceived neighbourhood quality and loneliness among older adults in the Netherlands and in the UK (Scharf & de Jong Gierveld 2008). Whereas the objective neighbourhood measures based on the financial status of the local area were significantly associated with loneliness only in the Netherlands, perceived neighbourhood quality was significantly associated with loneliness in both countries. Older adults who perceived their local neighbourhood negatively tended to report greater loneliness, and vice versa. However, as indicated by the researchers, the study was restricted by a limited number of neighbourhood quality assessments. Only three subjective measures were included in the research design. These measures related mainly to two aspects: perceived safety, and general satisfaction with the neighbourhood of residence.

In comparison, the literature that has found a relationship between neighbourhood quality and health is based on a larger number and broader range of environmental quality dimensions. Perceived physical environment relates, for example, to physical dimensions of neighbourhood quality such as noise, crowdedness, and air quality. Perceived local services constitute another dimension which reflects the quality of local services and the accessibility to them. Another variable, perceived social environment, reflects the quality of social interactions in the local area, i.e., interactions with one's neighbours and level of attachment to the neighbourhood (Wen et al. 2006).

The new module of perceived neighbourhood characteristics that was introduced in SHARE Wave 5 included diverse neighbourhood quality measures that cover the three dimensions reported in the literature: (1) perceived physical environment; (2) perceived service environment; and (3) perceived social environment. Therefore, the use of contemporary SHARE data broadens existing knowledge on the neighbourhood quality correlates of loneliness in later life.

Based on the limited literature that deals with the association between local neighbourhood quality and loneliness in later life, it was hypothesised in the

present analysis that older adults who have negative evaluations of their local neighbourhood would report greater loneliness. It was also hypothesised that the three dimensions of neighbourhood quality would have a differential impact on the loneliness outcome, and that the social domain would be a stronger predictor of loneliness, which is a marker of social exclusion. Finally, in light of theories which posit that the immediate local area takes on greater importance as people grow older and have more restricted mobility, it was hypothesised that stronger associations between perceived neighbourhood quality and loneliness would be found among older age respondents than among the young-old respondents.

15.2 Studying perceptions of neighbourhood quality and loneliness

The current analysis used SHARE Wave 5 data (2013) which, as noted earlier in the book, were collected among people aged 50+ in 15 countries ($N=64,966$) representing different regions of Europe. The participation of Luxembourg in the fifth round of SHARE data collection for the first time allowed us to expand our inquiry to include this population as well. It is important to note that whereas in the four previous waves of SHARE loneliness was measured through a leave-behind questionnaire, it was measured in the current wave by means of an in-person interview. This difference in the mode of administering questionnaires has empirical implications that are worth noting. On the one hand, the inclusion of a sensitive negative self-labelling phenomenon such as loneliness through CAPI might lead to less reliable responses. On the other hand, it increases the response rate and yields more representative findings. This issue will be discussed further in the summary section.

The following measures were employed in this study:

Loneliness. Loneliness was measured through a 3-item short form of the widely used R-UCLA loneliness scale, which measures general feelings of loneliness. Participants were asked how often they feel a sense of being left out, lack of companionship, and isolation on a 3-point Likert scale ranging from 1 (*hardly ever*) to 3 (*often*). The three items were summed up to produce a total score which ranged from 3–9, with higher scores indicating greater loneliness. In the current sample, the internal reliability of the scale was found to be sufficient ($\alpha = .75$).

Perceived neighbourhood characteristics. Three dimensions of neighbourhood quality were addressed in the current analysis. In order to evaluate the effects of negative perceptions of these dimensions, the scales of the measures were coded so that higher scores reflected poorer perceptions of the local environment. The

first dimension, perceived physical environment, was tapped using two separate questions about vandalism and cleanliness in the local area. The respondents were asked to indicate the extent to which they agree with the following two statements: “vandalism or crime is a big problem in this area”, and “this area is kept very clean”. The scale for both items ranged from 1 (*strongly agree*) to 4 (*strongly disagree*). The vandalism scale was reverse coded such that a higher score indicated poorer perceptions of the physical environment on both of the perceived physical environment items.

To measure perceptions of the second dimension, service environment, respondents were asked how easy it is to get to four essential services: a bank, a grocery store, a general practitioner, and a pharmacy. A 4-point ordinal scale was used for each type of service, ranging from 1 (*very easy*) to 4 (*very difficult*). The four questions were summed up (range 4–16), with higher scores indicating service inaccessibility. Finally, the third dimension was perceived social environment. It was measured using two separate items. First, respondents were asked to indicate the extent to which they agree with the following statement: “I really feel part of this (local) area”. Second, they were asked to indicate the extent to which they agree with the statement: “If I were in trouble, there are people in this (local) area who would help me”. The response scale ranged from 1 (*strongly agree*) to 4 (*strongly disagree*), with higher scores reflecting poorer social environment quality.

Control variables. Three sociodemographic variables were included – age (≥ 50), gender (men/women), and country; and two health indicators – self-rated health, ranging from 1 (*poor*) to 5 (*excellent*), and limitation of activities, ranging from 1 (*not limited*) to 3 (*severely limited*). Age was also considered by means of three age categories – 50–64 [young-old]; 65–74 [old] and 75+ [old-old], employed to evaluate age differences in the association of neighbourhood quality with loneliness.

15.3 Means of analysis

Analysis of variance (ANOVA) was conducted to explore the differences in mean levels of loneliness across the 15 countries participating in SHARE Wave 5, and to clarify whether the mean differences across countries were significant. Scheffe post hoc tests were conducted to verify which of the countries were significantly different in terms of loneliness levels. Associations between perceived neighbourhood characteristics and loneliness were tested at the bivariate and multivariate levels, using unadjusted and adjusted linear regressions. The multivariate level

included the three dimensions of neighbourhood quality as well as the control variables simultaneously. In the final stage, the multivariate model was applied separately among the “young-old”, “old”, and “old-old” age groups. SHARE Wave 5 release 0 was used for the current analysis using STATA 10.

15.4 How are perceptions of the local environment related to loneliness?

Prevalence of loneliness: Figure 15.1 presents the mean for loneliness among the overall SHARE Wave 5 sample of persons aged 50+, as well as the mean across the countries participating in the current wave – 15 European countries (including Israel). Although the mean for loneliness among the overall sample was relatively low ($M = 3.8$, $SD = 1.33$), it varied across the participating countries. The countries that showed the highest means for loneliness were the Czech Republic, Italy, and Estonia, whereas Denmark, Switzerland, and Austria showed the lowest means. The differences between the countries that showed the highest and the lowest means for loneliness were found to be significant in post hoc tests.

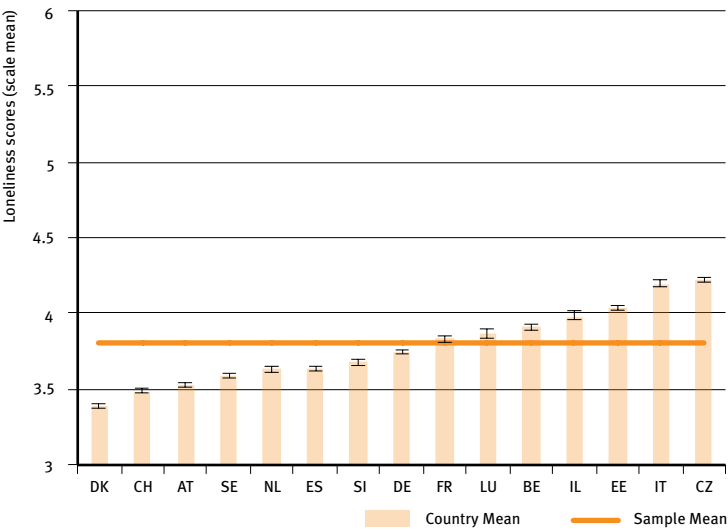


Figure 15.1: Loneliness across Wave 5 SHARE countries

Notes: Excluding respondents aged <50 and respondents with no loneliness data (N=62,384); The loneliness scale range is 3–9, higher score presents greater loneliness

Source: SHARE Wave 5 release 0

Perceived environmental characteristics and loneliness: significant associations between the three dimensions of local environment quality and loneliness were found in the bivariate analysis (not shown), albeit to a varying degree. The strongest association was found between the two items that reflected the social dimension of local area quality, with participants who reported that they don't feel part of their local area tending to report the highest levels of loneliness ($\beta = .30$, $SE = .01$, $p < .001$). The next important aspect was the physical dimension. Older people who reported that their local area is not clean and that perceived vandalism is a major problem in their neighbourhood reported greater loneliness ($\beta = .20$, $SE = .01$, $p < .001$; $\beta = .17$, $SE = .01$, $p < .001$, respectively). Finally, the service environment was also found to be significant, but it was the least important dimension in relation to loneliness among the environment measures ($\beta = .08$, $SE = .00$, $p < .001$).

A very similar picture emerged at the multivariate level, where the adjusted model controlled for socio-demographic and health variables (Figure 15.2). Older people aged 50 and over who reported that they do not feel part of their local area also reported greater loneliness ($\beta = .22$, $SE = .01$, $p < .001$) regardless of their age, gender, country of residence, and health condition. The unhelpful neighbour item that also measured the social aspect of perceived neighbourhood environment was found to be strongly related to loneliness too ($\beta = .13$, $SE = .01$, $p < .001$). Regarding the physical aspect of vandalism, the relationship with loneliness was also significant, but to a lesser degree ($\beta = .05$, $SE = .00$, $p < .001$). However, the other predictor of physical environment quality, cleanness of the local area, was not related to loneliness in the adjusted model. Similarly, the association of service accessibility with loneliness was very weak ($\beta = .03$, $SE = .00$, $p < .001$), but remained significant at the multivariate level. The adjusted model included the three domains of quality of neighbourhood of residence, and the control variables explained 15% of the loneliness outcome variance.

The association between perceived environmental characteristics and loneliness across age groups: in the final stage of analysis, the association between the quality of the local environment and loneliness was tested separately for three age groups (50–64: “young-old”; 65–74: “old”; and 75+: “old-old”). Table 15.1 indicates that the contribution of the quality of the immediate environment to loneliness tends to be stronger in the older age groups. This is particularly relevant to the social dimension of the environment, and specifically to the item indicating whether the individual feels part of the local area. Although the social dimension was the strongest predictor of loneliness among all age groups, its importance increased by age group ($\beta = .21$, $SE = .01$, $p < .001$; $\beta = .23$, $SE = .02$, $p < .00$; and $\beta = .25$, $SE = .02$, $p < .001$, respectively). This finding was not evident, however, for the physical aspect of the local environment. For example, perceived

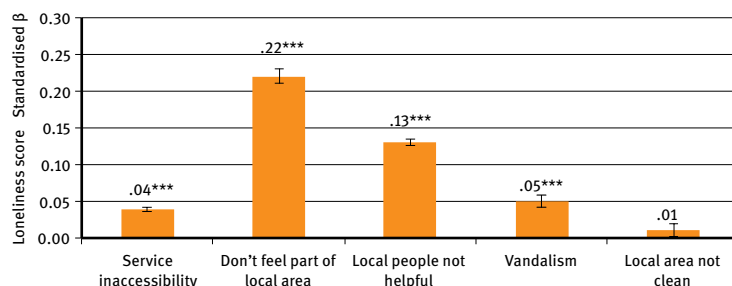


Figure 15.2: Perceived neighbourhood correlates of loneliness: multivariate analysis

Significance: *** = 1 %

Notes: Excluding respondents aged <50 (N=39,411); Model controlled for Sociodemographics (age, gender, country) and Health (self-rated health, disability); Adjusted R-square: 0.15

Source: SHARE Wave 5 release 0

vandalism mainly contributed to loneliness among the “young-old” group of participants (aged 50 to 64). In contrast, the contribution of the service aspect was greater for the two older groups than for the “young-old” group. Furthermore, a larger percentage of the variance in the loneliness outcome was explained by the measures of neighbourhood quality among the older age groups ($R^2 = 13\%$, $R^2 = 14\%$, and $R^2 = 17\%$, respectively).

Table 15.1: Perceived neighbourhood correlates of loneliness across age groups

	Age group 50–64 (n=17,513)	Age group 65–74 (n=12,136)	Age group 75+ (n=9,762)
	β (S.E)	β (S.E)	β (S.E)
Service inaccessibility	.02(.00)***	.04(.00)***	.04(.00)***
Don't feel part of local area	.21(.01)***	.23(.02)***	.25(.02)***
Local people are not helpful	.13(.01)***	.13(.02)***	.15(.02)***
Vandalism	.07(.01)***	.02(.01)	.04(.02)**
Local area not clean	.02(.01)*	.04(.02)**	-.01(.02)
Adjusted R ²	0.13	0.14	0.17

Significance: *** = 1 %; ** = 5 %; * = 10 %

Notes: Models controlled for Sociodemographics (age, gender, country) and Health (self-rated health, disability)

Source: SHARE Wave 5 release 0

15.5 What do we learn from the present study?

Consistent with prior research findings that have shown differences in the prevalence of loneliness across different geographic areas in Europe, the current data revealed that on the whole, loneliness is more widespread in Southern and Eastern Europe than in Northern and Western European countries. This consistent trend was not influenced by the change in the mode of administering questionnaires that was introduced in SHARE Wave 5. As noted, in the current wave of data collection, loneliness was measured by an in-person questionnaire and not by a leave-behind questionnaire as in the previous four waves of SHARE. Because loneliness is a negative feeling, it might be harder for participants to admit to the interviewer that they experience it. This could lead to a social desirability bias, so that a self-administered questionnaire might be more suitable for achieving reliable results. The fact that a similar trend was revealed can be attributed to the use of an indirect measure of loneliness in the current analysis, which aimed to minimise that bias. It is also important to note that including the loneliness measure in the CAPI increased the response rate, so that the findings on loneliness in the current survey are more representative.

The main aim of the current chapter was to examine the associations between a variety of perceived neighbourhood characteristics and the experience of loneliness in later life. Based on the limited research on this topic, it was hypothesised that older adults who negatively evaluate their local neighbourhood would report greater loneliness, and that the social dimension of local area quality would be more closely related to loneliness than the perceived physical environment and services. Both of these hypotheses were confirmed in the current analysis. In the adjusted model, all of the perceived neighbourhood characteristics except one were significantly associated with loneliness, and the association was in the expected direction. Negative perceptions of the local environment in terms of the social, physical, and service dimensions were associated with greater loneliness.

Moreover, of the three dimensions of the perceived quality of the local area, the social environment was the strongest predictor of loneliness. This finding was consistent in both the unadjusted and adjusted models. According to theoretical models of loneliness, the development of these feelings is strongly associated with deficits in the social arena (Perlman & Peplau 1998). Therefore, the present findings that highlight the importance of perceived deficits in the local social environment are consistent with the theoretical perception of loneliness. Similar to previous studies which have found strong associations between the quality of relationships with members of the social network (particularly spousal relationships) and loneliness (Shiovitz-Ezra & Leitsch 2010), the present analysis emphasises the contribution of the quality of the local social environment,

i.e., feeling part of one's local area and perceiving one's neighbours as helpful, to experiencing general feelings of loneliness. This finding is also in line with the results of another study which found that perceived physical environment is most closely related to physical health (Wen et al. 2006). Because the outcome of the present survey is more an indicator of "social health" or social exclusion, the social predictors are of particular relevance. Yet, because the present analysis is restricted to a cross-sectional design we cannot rule out the possibility that feelings of loneliness might have affected the way the participants perceived their local environment. Future waves of SHARE will provide a suitable empirical platform for investigating causal or reciprocal relationships between perceived neighbourhood environment and loneliness in later life.

Finally, the assumption that the neighbourhood environment is more important among older age groups was supported in this study, particularly with regard to the quality of the social environment. This finding is consistent with the theoretical argument that as people age and their functional health and mobility decline, the immediate environment becomes a central arena of activity and social involvement and thus has a greater impact on the well-being of older people (Glass & Balfour 2003). However, here too, only longitudinal analyses using future SHARE waves will provide a means for empirical verification of this theoretical argument, which points to an aging effect.

In sum, the current analysis highlights the important contribution of the quality of the local social environment to the experience of loneliness in later life. Thus, there is a need to develop social policy and programs that put the neighbourhood at the heart of public interventions. Systematic efforts to increase social solidarity and cohesiveness at the local neighbourhood level are required in order to make older residents feel more attached to their neighbourhoods and to promote their greater receipt of assistance from their neighbours. This, in turn, might help to reduce feelings of social exclusion in old age.

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Melanie Wagner and Martina Brandt

16 Loneliness among informal caregivers aged 50+ in Europe

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- ▶ Across Europe, caregivers aged 50+ feel lonelier than non-caregivers of the same age
 - ▶ Caregivers' loneliness is exacerbated due to their increased family responsibilities
 - ▶ The gap between caregivers' and non-caregivers' loneliness differs across countries
 - ▶ The availability of formal care services lessens caregivers' loneliness, on the macro level
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16.1 Caregiving and loneliness in context

This chapter analyses social exclusion in terms of the association between intensive caregiving and the feeling of loneliness. We examine whether caregivers of older people in need of long term care feel lonelier than persons who do not fulfil this role. We also consider the contextual features that mediate the relationship between care giving and loneliness.

Due to rising life expectancy and population aging in Europe, the number of older persons in need of long-term care is rising. Correspondingly, the demand for informal caregivers is also increasing (Colombo 2011). Providing long-term care is “a chronic stressor that places caregivers at risk for physical and emotional problems” (Pinquart & Sörensen 2006: 33). The task is often associated with a reduction in well-being, physical and mental health, and life satisfaction (e.g. George & Gwyther 1986). Caregiving also competes with other time demanding activities and can have a negative impact on the social inclusion of the caregivers (Shiovitz-Ezra & Leitsch 2010).

There is currently a shortage in formal care arrangements, such as institutions and nurses, in many countries (Genet 2012). Moreover, the availability of informal caregivers is expected to decline in the future due to reduced family size, rising childlessness, fewer intergenerational households, rising divorce rates, increasing female labour force participation and potentially decreasing willingness to provide informal care (Pinquart & Sörensen 2001). Thus, debates on adequate support policies for informal caregivers are ongoing in many European countries.

16.2 Hypotheses: links between caregiving and loneliness

In the study reported in this chapter, we assess the association between caregiving and loneliness among people aged 50 and over in Europe. We consider the extent to which the relationship between caregiving and loneliness varies across countries, looking particularly at the role of formal care arrangements in relation to caregivers' loneliness. We hypothesise that caregivers experience more loneliness than non-caregivers. According to role strain theory, care provision leads to a time-based conflict between multiple roles (Greenhaus & Beutell 1985). Caregiving is time and energy consuming and therefore caregivers are restricted in their personal, social and working life. As a result, caregivers experience time pressure and less time spent on activities that generally cause pleasure and joy. We argue that when role strain increases, the caregiver spends less time with social contacts and, thus, he or she feels lonelier.

Regarding country differences, we hypothesise that the association between caregiving and loneliness is mediated by the availability of formal care services. When formal care arrangements are available, the caregiver can make an informed choice as to whether to take over the care himself/herself or to get the needed care from a service provider. Research has shown that the tasks of informal caregiving are less intense when formal services are available (Brandt et al. 2009). Specifically, informal caregivers fulfil the less time consuming help tasks and the formal caregivers perform the more demanding nursing care tasks.

16.3 Caregiving among Europeans 50+

Data from SHARE Wave 5 (release 0) indicates the number of persons aged 50 and older who care for someone living in the same household (informal co-residential care, i.e. non-paid caregivers; single households were excluded). In total, 6.5 per cent of the sample (3,633 persons) provided informal care within the last year (total sample = 50,797). Calculation of weighted estimation shows the following proportions of such informal caregivers in each country (Figure 16.1). As may be seen, the percentages vary from 3.5 per cent to 9.5 per cent.

Studies report that in Southern European countries the ratio of informal caregiving is higher than in other areas (e.g. Haberkern 2009). Our data, which additionally includes Eastern European countries, shows a North-West/South-East divide, (except for Belgium, which has a relatively high percentage of caregivers).

That is to say, the countries in the South and East of Europe maintain higher percentages of informal caregivers than in the rest of Europe.

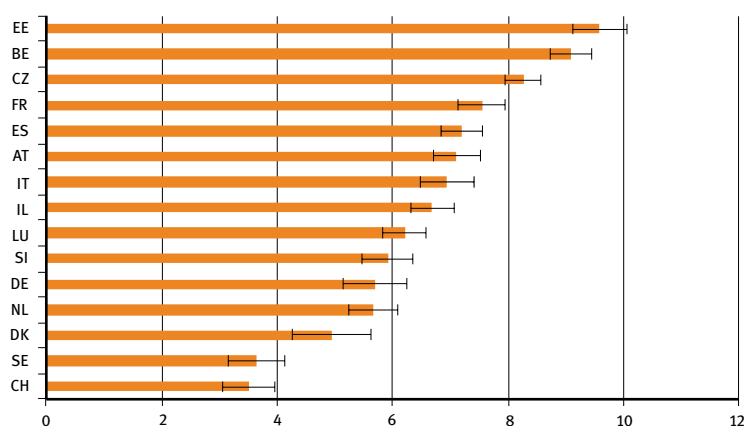


Figure 16.1: Percentage of informal caregivers among Europeans aged 50+, by country (weighted)

Notes: N=50,797

Source: SHARE Wave 5 release 0

A majority of the informal caregivers report that they care for one person in the household (93.5%), and 6.4 per cent care for two persons. Such informal care is given most often to the spouse or partner (65%). 15 per cent care for a parent or step-parent, and another 14 per cent care for a child, including grandchildren (among those who care for more than one person, as we did not consider respondents who care *only* for children). Another seven per cent care for other persons in the household.

16.4 Loneliness among Europeans 50+

Loneliness is the distress that results from discrepancies between ideal and perceived social relationships (Shiovitz-Ezra & Leitsch 2010). Loneliness is linked with several negative outcomes, including depression (Beeson 2003), negative affect (Russell 1980) and social exclusion (see chapter 15 in this volume).

The SHARE Wave 5 data measures loneliness by means of the revised UCLA loneliness scale (Russell et al. 1980), using a shortened three-item version. The respondent was asked how much of the time he or she feels a lack of companionship, left out or isolated from others. The response options were “often”, “some of the time” and “hardly ever or never”. The distribution of loneliness by country

is shown in Figure 15.1 in chapter 15. It shows that respondents in Northern European countries exhibit less loneliness than their counterparts in the Southern and Eastern SHARE countries (see also Sundström et al. 2009). Due to the skewness in the loneliness scale score distributions, the current analysis was based upon logarithmic transformations of the scores.

16.5 Caregiving and loneliness

16.5.1 How is informal caregiving related with loneliness?

We examined the association between informal caregiving and loneliness by means of linear regression analyses (four nested models) that controlled for the effect of other relevant variables as well. Table 16.1 shows the results of this multivariate procedure. In Model 1, loneliness was regressed on caregiving only. The results show a positive relation, indicating that caregivers are lonelier than non-caregivers. The beta coefficient of caregiving retained its statistical significance in the next two models, although the strength of the coefficient diminished somewhat as the additional respective variables were added to the analysis. It remained unaffected by the adding of the country variables (Model 4). These findings provide initial support for our first hypothesis.

Model 2 shows that the variable “family responsibilities” (“How often do you think family responsibilities prevent you from doing what you want to do” – never, rarely, sometimes, often) was positively linked with loneliness. That is, when respondents reported that they were burdened by family responsibilities more often, the likelihood of feeling lonely was also higher. This result further supports our first hypothesis, which is based upon role strain theory.

Model 3 added several control variables, and almost all of them were related to the loneliness outcome in the directions that have been found in previous research. The variable “urban area”, which defines whether the respondent lived in an urban or rural area, was not related to loneliness. However, the regional context might affect the probability of receiving formal care services; the more urban the area, the higher the likelihood that formal care services are available. Praying as a proxy for religious beliefs showed a small but positive link with loneliness. Strong religious beliefs tend to go along with traditional family norms which, in turn, increase the probability of becoming a caregiver (Rossi & Rossi 1990).

Table 16.1: Caregiving and other correlates of loneliness (log)

	Model 1	Model 2	Model 3	Model 4
Caregiver	0.134*** (0.010)	0.101*** (0.010)	0.041*** (0.010)	0.036*** (0.010)
Family responsibilities		0.086*** (0.003)	0.087*** (0.003)	0.083*** (0.003)
Female			0.041*** (0.005)	0.040*** (0.005)
Age (centered/1,000)			-1.070** (0.360)	-0.076** (0.360)
Age (squared/1,000)			0.020*** (0.024)	0.027*** (0.023)
Education (in years/100)			0.176** (0.058)	-0.101* (0.061)
Spouse/partner			-0.158*** (0.008)	-0.152*** (0.008)
Working			-0.082*** (0.007)	-0.074*** (0.007)
HH income (ppp, log) ^a			-0.012*** (0.003)	-0.005** (0.003)
HH size (2+)			-0.011** (0.003)	-0.014*** (0.003)
Poor self-rated health (5 cat.)			0.103*** (0.003)	0.088*** (0.003)
Chronic disease			0.033*** (0.006)	0.043*** (0.006)
Urban area (5 cat.)			-0.002 (0.002)	-0.003 (0.002)
Praying often (6 cat.)			0.009*** (0.002)	0.009*** (0.002)
Constant	0.325*** (0.003)	0.163*** (0.006)	0.094*** (0.028)	0.037 (0.029)
N	37,140	37,140	37,140	37,140
R ² (adjusted)	0.004	0.030	0.113	0.136

Significance: * p<0.1, ** p<0.05, *** p<0.001

Notes: Standard errors in parentheses, ^a purchasing power parities, price level indices and real expenditures for ESA2010 aggregates [prc_ppp_ind].Source: SHARE Wave 5 release 0, http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=prc_ppp_ind&lang=en except Israel

In Model 4 country dummies were included to control for country variation. The inclusion of country dummies raised the explained variance between Model 3 and Model 4 from 11.3 per cent to 13.6 per cent.

16.5.2 To what extent does the relationship between informal caregiving and loneliness vary by country?

Next, we show the country variation concerning the loneliness of caregivers and non-caregivers (Figure 16.2). The countries are ordered by the extent of the difference in loneliness between the caregivers and the non-caregivers. We see that caregivers experienced more loneliness than non-caregivers in all countries, except in Denmark. The difference was highest in Luxembourg, Slovenia and Sweden [but Luxembourg has the lowest number of caregivers in the sample (N=80), so that result should be treated with caution]. On the other hand, the difference in Denmark, Israel and Estonia was almost negligible. We can also see that the differences were not related to the absolute extent of loneliness in a country. Given that, what might explain the country differences in loneliness between caregivers and non-caregivers?

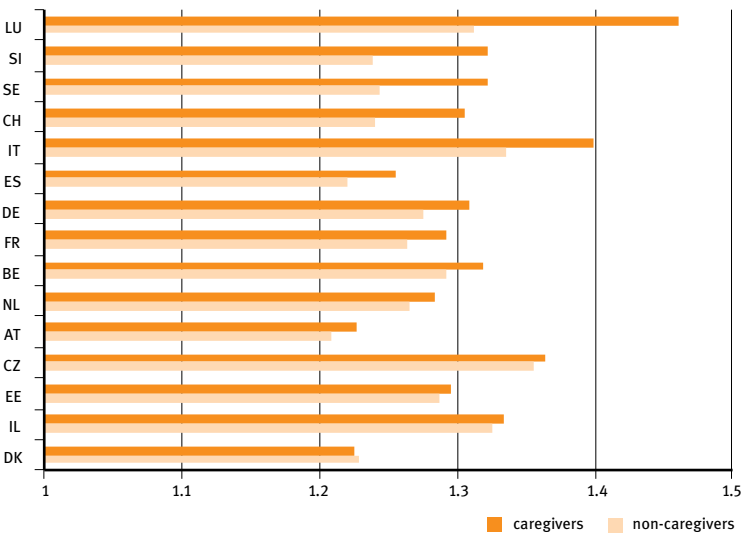


Figure 16.2: Loneliness of caregivers and non-caregivers, controlling for socio-demographic factors (see model 4 plus number of sisters alive)

Notes: N=32,228

Source: SHARE Wave 5 release 0

16.5.3 The moderating role of formal care arrangements explaining caregivers' loneliness

In the next stage of the analysis, we looked at a macro indicator on the country level to control for country-specific variation in the availability of formal care services. We took this step in order to test the second hypothesis, which states that the availability of formal care arrangements reduces the loneliness of caregivers. In order to make the formal care variable comparable across countries, we measured the formal care arrangements by means of an index that was based upon four indicators in 2009, or the closest year (OECD 2011) following the work of Verbakel (2014). These indicators were:

- 1) the proportion of the population aged 65 years and older receiving long-term care;
- 2) long-term care workers as a proportion of the population aged 65 and older;
- 3) long-term care beds in institutions and hospitals, per 1,000 persons aged 65 and older;
- 4) long-term care public expenditure (health and social components), as a proportion of the Gross Domestic Product (GDP).

Israel was excluded from this particular analysis due to missing macro data. These values displayed in Figure 16.3 represent the gap in loneliness between caregivers and non-caregivers.

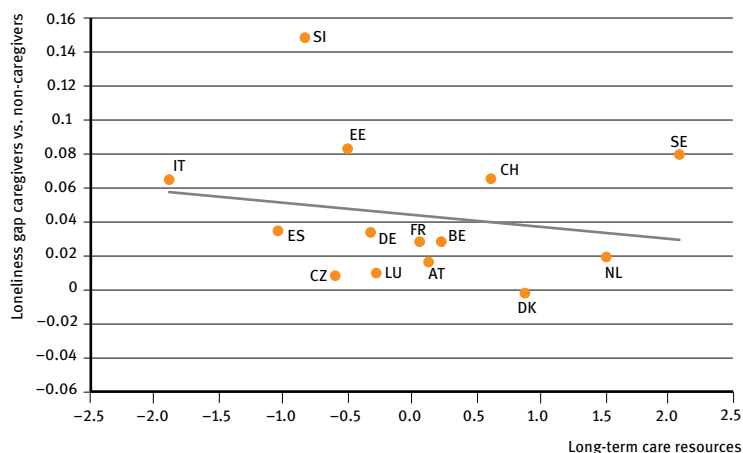


Figure 16.3: The relationship between formal care availability (standardised) and the countries' loneliness gap (log) between caregivers and non-caregivers, controlling for socio-demographic factors (see model 4 plus number of sisters alive)

Notes: N=31,359

Source: SHARE Wave 5 release 0, OECD 2011

Looking at the respective numbers in the figure, we see that the resources spent on formal care services were lowest in Italy, Spain and Slovenia and highest in Sweden, the Netherlands and Switzerland. In an additional linear regression analysis of loneliness in relation to formal care availability controlling for socio-demographic factors (not shown), the beta coefficient of the formal care index was significant ($\beta = -0.054$; $p < 0.001$). That is, the increase in one standard unit of formal care availability reduced loneliness (log) by 0.054 standard units. In other words, formal care arrangements were associated with lower loneliness scores on a macro level.

Figure 16.3 shows a negative association between formal care availability and the loneliness gap; the more formal care was available, the smaller the gap between caregivers and non-caregivers. However, an additional analysis that employed an interaction term in the regression (not shown) was not significant. This means that caregivers from countries with generous formal care services did not differ in their loneliness scores from caregivers who resided in countries having fewer formal care services, all things considered. Based upon these results, we reject our second hypothesis.

16.6 Caregiving and loneliness in Europe: another area of social exclusion?

This chapter examined whether caregivers are lonelier than non-caregivers and if there are contextual features which contribute to this relationship. We found support for our first hypothesis which stated that caregivers experience more loneliness than non-caregivers, due to the reduced availability of social opportunities. Social opportunities were measured in our study as the extent to which family responsibilities prevented the respondent from doing what he or she wished to do. The family responsibilities variable serves as a mediator insofar as caregiving implies increasing family responsibilities which are correlated with greater reported loneliness. This relationship is not self-evident, since one could also argue that family responsibilities imply that people are surrounded by close contacts. It should be remembered, however, that loneliness is a subjective measure. It is not the number of people, per se, that makes people feel lonely or not, but the divergence between expectations and reality (Shiovitz-Ezra & Leitsch 2010: 157).

Our second hypothesis stated that the possibility to make use of formal care arrangements reduces loneliness among caregivers. Although we saw some partial tendencies in the direction of the hypothesis, the data did not ultimately

support this hypothesis in terms of statistical significance. We did find a negative relation between formal care service availability and loneliness, in general. That is, the more formal care services are available in a country, the smaller is the corresponding loneliness score in that country. But, this association does not differ significantly between caregivers and non-caregivers. It could be that the use of macro data on the country level, with only 14 observations, led to this insignificant interaction. Further analysis should use a multilevel design to include macro indicators on the regional or country level.

In order to get a more complete picture of the domain of informal caregiving, it is also recommended to look at the care that is given to someone who resides outside of the household. This would allow extending the field of inquiry to include the informal care of parents who do live in separate households. In addition, it would be helpful to investigate if there are differences in loneliness according to the type of relationship with the care recipient. For example, is care for one's own partner related to more loneliness than is care given to an older parent, or vice versa?

In sum, we have shown that loneliness among people aged 50 and older in Europe is mediated by the extent to which family responsibilities are considered to be burdensome, and that the amount of formal care services provided in a country seems to lessen loneliness among informal caregivers. Thus, formal care availability should be examined closely with respect to its potential to facilitate the role of informal caregivers and, in addition, in respect to its capacity to better promote their social inclusion.

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17 Social exclusion, welfare regime and unmet long-term care need: evidence from SHARE

-
- ▶ Social exclusion contributes to the unmet need for long-term care
 - ▶ Welfare regimes modify the relationship between social exclusion and unmet long-term care
 - ▶ Countries in the Eastern European welfare regime seem to be most at risk on this issue
 - ▶ Policymakers should focus more strongly on the consequences of social exclusion when developing long-term care policy
-

17.1 Social exclusion and unmet need for long-term care

In this chapter we explore the relationship between social exclusion in its different components (economic, social, spatial, health care) and the long-term care of older people. We look specifically at the factors that are related to the extent of unmet care needs. The construct “unmet care need” is defined here as a situation in which people need long-term care, due to disability, but are not in receipt of any care, either formal or informal. Our goal is to clarify whether social exclusion predicts such unmet need and, as such, has an adverse effect on conditions of living in late life.

Long-term care is an emerging key issue in discussing the social inclusion or exclusion of the older population in modern European society. As noted by Theobald (2005), since the 1990s approaches to the care of older people have undergone considerable restructuring processes in most Western European countries. Providing care for older people is increasingly complicated by the aging of the population and by the concomitant changes in the size and the shapes of families (Renner et al. 2006). A further challenge arises from changes in the work arena. First, the retirement age is rising and correspondingly, working life is being extended. Second, more women (the traditional informal caregivers) now participate in the work force, reducing the potential pool of informal carers for dependent older persons. The availability of informal carers is also challenged by the decrease in the average number of children per family and the

increase in the number of single people and reorganised families. Furthermore, formal care and its financing becomes an ever more pressing problem due to the expected increase in the number of people who will need care in the future (see e.g. Motel-Klingebiel et al. 2005). For these reasons, cross-national econometric studies of the relationship between formal and informal care for older adults in Western European countries have become a booming field, as stated by Suanet and colleagues (2012).

Due to the changes mentioned above, the question of receiving high quality care is increasingly relevant. Yet, an important related question that has received much less attention concerns who is excluded from receiving any long-term care at all. Also less studied is the question of what contributes to situations of unmet long-term care need. Of specific interest in this regard is whether social deprivation, or exclusion, is a concomitant of unmet long-term care. Clarification of this issue is difficult because, as stated by Theobald (2005), “despite various attempts to clarify the concept, ‘social exclusion’ is still criticised as incoherent and elusive, which diminishes its analytical capacity”.

A pivotal characteristic of the concept of social exclusion is its assumption of multidimensionality. Kronauer (1997), for example, lists several different dimensions, in which processes of social exclusion may occur: 1) economic exclusion, e.g. problems in attaining a sufficient standard of living; 2) institutional exclusion, e.g. problems of access to public institutions and objects; 3) cultural exclusion, e.g. exclusion due to expectations related to certain groups in a society; 4) social exclusion, e.g. problems with social relationships; and 5) spatial exclusion, e.g. problems with segregation of living spaces. Blackman et al. (2001) have applied the concept of social exclusion to the issue of old age and to the arena of care for older people. The starting point of their analysis is the definition of an ageing process as the interaction of genetic, environmental, cultural and social factors, thus reflecting the multidimensional and cumulative character of the process. Hence, in their definition of social exclusion in old age, they combine a broad range of dimensions, which, as a consequence, leads to a complex and elusive concept.

In the analysis that is reported in this chapter, we use the SHARE Wave 5 dataset to consider the correlation between social exclusion and unmet long-term care. We also take into account the role of the welfare system in the association between social exclusion and unmet long-term care (following the classification of Esping-Andersen 1990), because it is known that levels of social exclusion vary among welfare regimes (Ogg 2005). Specifically, studies have shown that the social exclusion of older people is higher in Mediterranean and Eastern European welfare regimes, whereas sociodemocratic and continental welfare regimes seem to better address the needs of the most vulnerable. We expect these regime

differences to be visible when observing the need for long-term care among older people, despite the fact that Mediterranean and Eastern European countries have higher use of informal care which offsets the relative lack of formal care (Suanet and colleagues 2012).

Drawing upon the explanations presented thus far, our main hypothesis to verify is that people who suffer from social exclusion are more likely to have “unmet needs” for long-term care, unmet needs being defined following Gannon and Davin (2010) as people who need care (e.g. have functional limitations or ADL/IADL problems) yet do not receive either formal or informal care. We also examine whether this relationship depends upon the type of welfare system.

17.2 Description of the study

In our study we use the SHARE Wave 5 dataset which was made available for 15 participating countries (Austria, Germany, Sweden, Netherlands, Spain, Italy, France, Denmark, Switzerland, Belgium, Israel, Czech Republic, Luxembourg, Slovenia, Estonia) and includes interviews of 64,966 participants aged 50+ and their spouses of any age. We limited the sample to respondents aged 65 and older, insofar as we are interested in long-term care needs which arise relatively late in life. The final analytic sample thus numbered 34,357 respondents.

Two dependent variables are addressed and they include the need for long-term care and unmet need for long-term care. Their mode of measurement is described next. “Need for care” is defined as a dummy variable having the value of 1 if the respondent reports having two or more limitations in Activities of Daily Living and/or Instrumental Activities of Daily Living, and a value of 0 if otherwise. “Unmet need” is defined as a dummy variable having the value of 1 if the respondent has need for care (see previous variable) but receives neither formal care nor informal care in any of their forms, and a value of 0 if otherwise.

Key independent variables are related to social exclusion: “material deprivation” is a generated index which measures the extent of material difficulties of households – e.g. affordability of various items, being behind with bills; this variable ranges between 0 and 1. “Social deprivation” is a generated index which measures the extent of social deprivation of households – e.g. local area quality, number of rooms per person, lack of activities; this variable ranges between 0 and 0.89. Finally, “severe deprivation” is a binary indicator for the households which are most deprived (i.e. in the highest/worst quartile) in both dimensions. We will mainly use “severe deprivation” in our analysis as a composite measure for social exclusion.

The main independent variable in the study is “welfare regime”. It encompasses the following categories: 1 – continental (Austria, Germany, Netherlands, France, Switzerland, Belgium, Luxembourg); 2 – social democratic (Sweden, Denmark); 3 – Mediterranean (Spain, Italy); 4 – Eastern European (Czech Republic, Slovenia, Estonia); 5 – mixed (Israel). Dummy variables were constructed for each welfare regime. The Eastern European regime grouping served as the reference category in the multivariate procedure. In addition, we employed terms of interaction between the welfare regime dummies and the severe deprivation variable (see chapter 6 in this volume).

Several socioeconomic control variables were also taken into account. These included: age (4 categories: 65–69 years of age; 70–74 years of age; 75–79 years of age; and 80 or higher years of age); gender (0-male; 1-female); income categories (bottom, middle and upper tertile of income per household member *relative to incomes of other respondents in a given country*); and education (the highest achieved level of education: primary or less; secondary; tertiary). All of the variables with more than two answer categories were recoded as dummies (1.0).

Several functional health variables were also considered. A dummy for functional limitations has the value of 1 if a respondent has two or more functional limitations and a value of 0 if otherwise. A dummy for memory capabilities has the value of 1 if a respondent is ranked in the bottom quartile judging from the number of recollected words (from 10 listed) and a value of 0 if otherwise. We also employed a dummy for depression which has the value of 1 if a respondent has a score of 4 or more on the Euro-D Depression scale 4, and a value of 0 if otherwise.

The main analytical method of our inquiry is regression analysis, namely Heckman’s probit model with sample selection (with reference to its usage in Gannon & Davin 2010). The latter is used as a correction device for sample selection in our two-stage construction of the dependent variable: in the first stage we identify who are the respondents with need for care and in the second stage who are the ones who don’t receive any form of formal or informal care. The validity of our procedure was confirmed by the results of a Likelihood-Ratio test of independent equations which was strongly significant in all specifications.

We begin the presentation with the main descriptive statistics about our two dependent variables: need for care and unmet need for long-term care (Figure 17.1). The graph shows that countries in the Mediterranean, Eastern European and mixed welfare regimes have significantly higher proportions of people with need for care than the countries that belong to the social democratic and several of the countries that constitute the continental welfare regime. Furthermore, countries from the Eastern European (except the Czech Republic), mixed and the Mediterranean welfare regimes are the apparent leaders in percentage of people

with unmet long-term care needs. The highest scoring countries in this regard are Estonia and Slovenia, with the latter being particularly notable insofar as its ratio of people with unmet needs to those with need for long-term care is the largest.

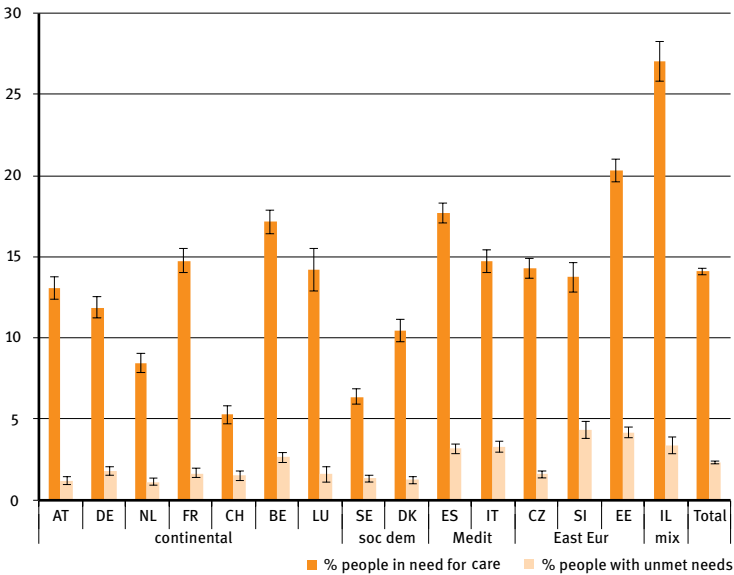


Figure 17.1: Percentage in need and unmet long-term care need by welfare regime and country
Notes: Observations: 34,357; Welfare regimes: soc dem – social democratic; Medit – Mediterranean; East Eur – Eastern European; mix – mixed
Source: SHARE Wave 5 release 0

17.3 Factors related to unmet need for long-term care

In the following section we analyse the relationship between social exclusion and long-term care (need and unmet need) by means of econometric methodology. We present the results of two statistical models. Model 1 examines the correlates of unmet long-term care need among the following variables: age categories, gender, income tertiles, education categories, severe deprivation and additional (functional health and social) variables. Model 2 adds the dummy variables for welfare regimes as well as interaction variables between the welfare regime dummies and the severe deprivation.

The results of Model 1 show that the coefficient of the severe deprivation is significant and positive after controlling for the confounders. This confirms our hypothesis on the significance of social exclusion for the problems of unmet need for long-term care: the more someone is socially excluded, the higher is the probability of not receiving the care he/she needs. Among the health related predictors, both the depression and functional limitations measures emerge as significant: the more that someone is depressed or functionally limited, the higher is the probability of not receiving the needed care. Also, the coefficient on memory is insignificant (a finding robust to many different specifications of the memory variable).

Model 2 adds the welfare regime specifics. The results confirm the findings from Model 1, retaining all the same significant variables in the direction of association that was noted previously. In addition, Model 2 shows that welfare regime differences can be observed. When considering only the basic welfare regime dummies, a significant difference can be seen between the continental and social democratic regime and the reference category – the Eastern European regime. The first two have apparently lower probabilities of problems with unmet needs for long-term care than the latter. The coefficients on Mediterranean and mixed regime are of the same sign, but are not significant. On the other hand, most of the coefficients on the interaction variables are statistically insignificant, with the only exception of the mixed welfare regime, being represented by Israel, which apparently has a lower contribution of severe deprivation to the probability of unmet needs than the reference category – the Eastern European regime. This finding can be explained by Israel having a relatively large percentage of formal care as compared to other countries (see e.g. Litwin & Attias-Donfut 2009) while having also one of the largest percentages of socially excluded respondents (see other chapters in this book). The relationship of social exclusion and unmet needs for long-term care in Israel, therefore, seems different than in other SHARE countries which could explain the significance of the interaction variable.

Table 17.1: Factors associated with unmet long-term care need: Heckman probit models with sample selection

Variables	Model 1		Model 2	
	Coefficient	Standard error	Coefficient	Standard error
Severe deprivation	0.1597**	(0.0683)	0.1902*	(0.1023)
Depression	0.1293**	(0.0651)	0.1495**	(0.0648)
Functional limitations	0.3139**	(0.1471)	0.3323**	(0.1471)
Memory	0.0095	(0.0628)	0.0132	(0.0636)
Welfare regime Continental			−0.2965***	(0.0812)
Social democratic			−0.2502**	(0.1267)
Mediterranean			−0.1015	(0.1081)
Mixed			0.0084	(0.2213)
Continental X sev.dep.			−0.0922	(0.1761)
Social democratic X sev.dep.			−0.4570	(0.5208)
Mediterranean X sev.dep.			−0.2152	(0.1730)
Mixed X sev.dep.			−0.7846**	(0.3569)

Significance: *** = 1 %; ** = 5 %; * = 10 %
Notes: Observations: 21,738; Controlled for age categories (65–69; 70–74; 75–79; 80+), gender, income tertiles and education categories (primary or less; secondary; tertiary).
Source: SHARE Wave 5 release 0

17.4 Social deprivation and unmet need: implications for social policy

In this chapter, we analysed the relationship between social exclusion and unmet needs for long-term care. We were able to confirm both of our initial hypotheses, namely that social exclusion adversely contributes to the probability of having an unmet need and that there are observed effects of welfare regimes on the relationship between social exclusion and unmet long-term care need (with a significant difference between the mixed and Eastern European regime). The literature suggests that social exclusion leads to a higher need for care in old age as a result of the accumulation of various disadvantages and limitations over the life course. In the current study, we show that social exclusion, as measured by severe deprivation, also increases the probability of unmet need for long-term care in old age. This underscores the cumulative character of social exclusion and its importance in all life stages.

The function of the welfare state is to address the needs of all citizens, including the most vulnerable. This includes compensating for the lack of individual resources in order to ensure the provision of long-term care in old age. Based on the results of our study, we see that welfare regimes differ in their ability to mitigate the need for long-term care among the most vulnerable of their older members. More specifically, we show that the countries within the Eastern European welfare regime seem to have the least success in ensuring long-term care for socially excluded older people. In comparison, most of the other welfare regimes seem to address the long-term care needs of vulnerable older people more successfully, irrespective of the different social policy mechanisms used in these particular regimes (Esping-Andersen 1990, Ogg 2005).

We should note that a limitation of the present study is that not all welfare mechanisms are covered in the research design. Further analysis can and should reveal which components of the welfare regimes and their policy mechanism are vital for addressing the need for long-term care of the most vulnerable older members of society.

On the basis of the current study, we suggest that policymakers should be more aware of the different dimensions of social exclusion and their relationship to the long-term care of older people. Insofar as we demonstrated the adverse effect of social exclusion on the receipt of needed long-term care, it is therefore important to monitor the extent of social exclusion in a given country and to try to reduce its effect. Furthermore, special attention should be devoted to problems of social exclusion when forming and adopting the needed older care policies, especially in Eastern European countries.

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18 Growing old abroad: social and material deprivation among first- and second-generation migrants in Europe

-
- ▶ About a fifth of SHARE respondents aged 50 and over have a migration background
 - ▶ Migrants are significantly more deprived materially in late life, and to a lesser extent socially, compared to natives
 - ▶ Migrants are more disadvantaged in late life than those whose parent(s) migrated
 - ▶ SHARE provides an effective means for migration research in the older population
-

18.1 Studying older migrants in SHARE

Over the past 100 years, most European countries have experienced a considerable influx of immigrants from a wide range of countries. As a result, persons with a migration background have become an increasingly important part of society, both culturally and economically. Research on the social integration of young migrants in Europe is already fairly widespread, particularly on such topics as educational attainment and labour market placement. Little is known, on the other hand, about older migrants. Based upon the data from SHARE Wave 5, we know that about 21 per cent of the respondents aged 50 and older either migrated themselves or had at least one parent who migrated. Given the growing representation of people with a migration background within the ageing populations of Europe, studying this particular segment of the population is more and more relevant.

In previous waves of SHARE, respondents were asked where they were born and when they migrated. This facilitated the identification of first-generation migrants, i.e. those who relocated themselves. In order to identify second-generation migrants, that is, persons who were born in the receiving country but whose parents were born elsewhere, SHARE Wave 5 introduced new questions on the country of birth of the respondent's mother and father. The SHARE Wave 5 questionnaire also asked whether the respondent had the survey country's citizenship since birth or, if not, in what year citizenship was obtained. Using these new questions, we report in the *first* part of this chapter on the state of migration and naturalisation among the members of the SHARE sample.

Studying older migrants in a general population survey like SHARE raises the question as to whether such inquiry is, indeed, reliable or biased due to selective participation among potential respondents. Language may be a barrier to participation among migrants (the SHARE survey is administered in all official languages of each country and, in addition, in languages spoken by a considerable proportion of the population). Given this concern, in the *second* part of the chapter we present analyses that examine the coverage of the migrant population in SHARE and the possibility of selective participation. Toward this end we utilise information that was collected during the preliminary contact stage of the SHARE interview.

In the *third* part of the chapter, we compare the extent of deprivation among first- and second-generation migrants in relation to the respective native 50+ populations in each SHARE country. For this purpose, we employ the indices for material and social deprivation that are detailed in chapters 5 and 6 in this volume. Although there is substantial heterogeneity among migrants within each country and across countries, we nevertheless expect to find common patterns, i.e., long-lasting effects of the migration experience. Toward this end, we examine migrant status in relation to deprivation controlling for socioeconomic status and other sources of heterogeneity.

18.2 Identification and classification of migration background in SHARE

We define migration background according to three distinct – though empirically often overlapping – dimensions. The first dimension concerns the *generational status* of the respondents, namely, whether the respondents or their parents migrated. This information is obtained by asking the respondents about their own and their parents' country of birth and relating it to their current country of residence. In the current analysis we focus on this dimension and distinguish between natives, first-generation and second-generation migrants. The second dimension reflects the respondent's *citizenship status* in the survey country. SHARE Wave 5 allows distinguishing those who have citizenship in the survey country since birth, those who became naturalised and those who do not have citizenship in the survey country. Finally, migrants differ according to the *country of origin*, as a third dimension. Specific combinations of sending and receiving countries can be thought of as specific contexts with distinct effects on various outcomes.

Overall, 13,089 SHARE Wave 5 respondents (21.4 %) report a migration background. Only for about one per cent (n=575) of respondents it was impossible

to obtain sufficient information about their migration background. 5,610 respondents (42.9 %) are second-generation migrants, i.e. one or both of their parents were born in a different country. Moreover, about 90 per cent of the SHARE Wave 5 respondents are citizens by birth. A bit more than five per cent obtained their citizenship in the current country of residence by naturalisation. About four per cent of the sample population are non-citizens, i.e. they do not have citizenship in the survey country.

There is large variation between the countries with respect to the size of the migrant population (see Figure 18.1). We can roughly distinguish three different groups of countries in terms of immigration. First, the *Northern and Western European* countries (Sweden, Denmark, the Netherlands, Belgium, France, Germany, Austria, Spain, and Italy) have rather strict immigration rules and nationality laws. Here the proportion of first- and second-generation migrants covers a range from about three per cent in Italy to 21 per cent in Germany. Note that in Germany this includes ethnic German repatriates.

The second group of countries is made up of the *Eastern European transformation states* (Czech Republic, Estonia, and Slovenia). The consequences of the independence of Estonia and the split of Czechoslovakia into the Czech Republic and Slovakia results in high proportions of migrants in these countries, when generational status is defined as having a *different* country of birth. For example, in the Czech Republic more than two thirds of all second-generation migrants describe themselves as Czechoslovakians. The effect is even stronger in Estonia, where the majority of all first-generation migrants and half of all second-generation migrants are of Russian descent. It is debatable to classify these respondents as migrants. The majority, especially in the Czech Republic, did not even have to move to the next town to technically be classified as a migrant. Since this situation applies to some 2,200 respondents in the two countries, we add a binary indicator for these special cases in the multivariate analyses that are reported on later in the chapter.

The third group can best be described as *special cases*: Luxembourg and Switzerland experienced a constant influx of labour migrants in the last two decades, with Luxembourg having the highest rate of non-citizens in the 50 plus population (about 27 %). Finally, Israel is a country the population of which originates from several migration waves since the founding of the state in 1948. Compared to all European countries in SHARE Wave 5, Israel has the highest share of naturalisations (about 55 %). It also has the highest number of second-generation immigrants (about 34 %).

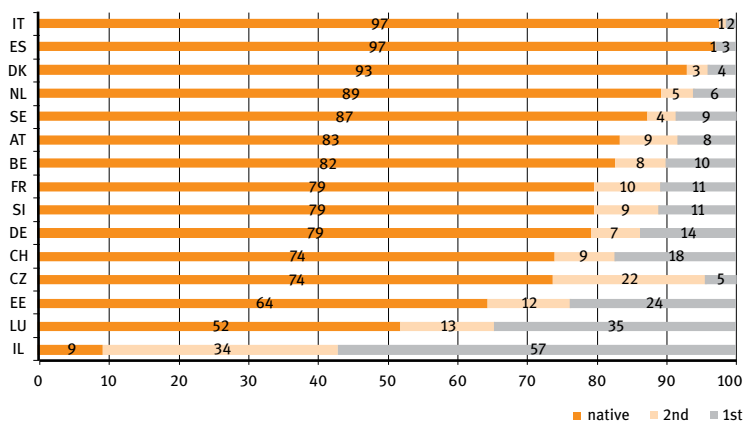


Figure 18.1: Generational status by country (per cent)

Notes: N=61,123

Source: SHARE Wave 5 release 0

18.3 Coverage of the migrant population

As noted, SHARE restricts its sample to respondents who are able to speak the majority language(s) in which the questionnaire is administered in each country. This practice may not only exclude migrants, but it might well lead to underrepresentation of *specific* migrants in terms of their socioeconomic characteristics. Since fluency in the dominant language is important for the labour market integration of migrants (e.g. Rumbaut 1997) one would expect that excluding persons with language barriers will particularly affect migrants of low socioeconomic status. In order to estimate the extent of this potential language bias, we examined data that were collected in the contact phase of the survey. These data, which also include information on households that did not answer the questionnaire, contain information on the type of building the (potential) respondent lives in. The retrieved information can be used as an indicator for socioeconomic status.

Figure 18.2 shows the percentage of households living in a “free standing 1 or 2 family house”, which is the housing category likely reflecting a high socioeconomic status. We limit this part of the analysis to Germany, the Netherlands, Denmark, Belgium, and Luxembourg, i.e. the countries that added new samples of households. We only consider samples in countries with at least five non-participants due to language barriers (DE (95), NL (49), DK (21), BE (69), LU (81)). The dark orange bars show the percentage of natives living in a high status house type; the two grey bars show the percentages for second- and first-generation migrants, respectively. The light orange bar shows the same information among households

that were not interviewed for reasons other than language barriers. Note that this group may also contain migrants. The peach-orange bars represent the households that were defined as ineligible for the interview due to insufficient language skills.

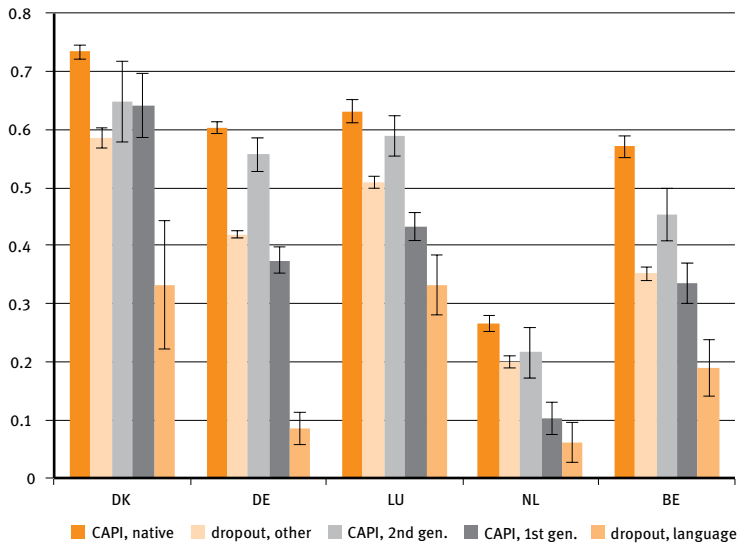


Figure 18.2: Percentage of households living in free standing 1 or 2 family houses by sample

Notes: N=23,982

Source: SHARE Wave 5 release 0

Comparing the peach-orange and dark orange bars in Figure 18.2, we see that non-participant households due to language barriers are significantly less likely to live in a “1 or 2 family house” than the average respondent. More importantly, when comparing the non-participants due to language barriers to those migrants who were interviewed, their housing type indicates significantly lower status (with the exception of first-generation migrants in the Netherlands). This shows that non-participants on the basis of language are a selective group of households with regard to housing status and, thus, probably also in terms of socioeconomic status when compared to migrants.

However, Figure 18.2 also reveals that the whole sample is selective in this respect: In all countries included in this analysis, respondents who participated in the survey (the dark orange bars) live significantly more often in “1 or 2 family houses” than those respondents from households that did not participate for other reasons (the light orange bars). In addition, the peach-orange bars reflect only a very small fraction of the newly sampled households (DE: 0.88%; NL 1.62%; DK: 0.66%; BE 1.98%; LU 1.85%). Although, underrepresentation of

low-status households seems more pronounced among migrants, the number of households actually excluded is so small that it hardly influences the results. Thus, even though SHARE was not designed to specifically survey migrants, we conclude that it is a viable dataset for analysing migrants aged 50 and older both within and across countries.

18.4 Generational status and deprivation

To analyse the extent of deprivation among the migrant populations in the SHARE countries, we use the two multidimensional indices that were developed to measure material and social deprivation. They are introduced in chapters 5 and 6. The material deprivation index measures the extent of material hardships of households with respect to the affordability of basic needs (e.g. foods for a healthy diet, payment of heating costs, or purchase of glasses, etc.) and financial difficulties (e.g. in the payment of rent and mortgages or loans, etc.). The social deprivation index measures the extent to which individuals are limited in socio-culturally “normal” interaction (e.g. live in an area with providing a nearby pharmacy, etc.; and items like number of rooms per person, social participation, loneliness, etc.). We use the hedonic versions of both indices and dichotomised them. Respondents with scores of below 0.3 on the index are considered as not deprived, and those scoring 0.3 and higher as deprived. The main reason to use 0.3 was that within each country and on each dimension this cut-off point is above the median of the distribution. Moreover, it provides reasonably balanced overall and within-country distributions of the resulting binary indicators.

Figure 18.3 provides an overview of the proportion of respondents who live in households that are classified as socially or materially deprived according to our definition. Setting aside the overall country differences in the level of deprivation on both dimensions – which are discussed in more detail in chapters 5 and 6 – the pattern with respect to generational status is surprisingly stable. First-generation migrants are significantly more often classified as deprived than native respondents. This is true on both the social and the material dimension, although the pattern is more pronounced for the latter. The second-generation respondents in some countries score between the natives and the first generation on the material dimension while, in other countries, e.g. Spain or Luxembourg, they are hardly distinguishable from the natives. This pattern only applies to the material dimension. Regarding social deprivation, second-generation migrants are classified significantly less often as socially deprived in some countries, e.g. Slovenia and Spain, in some countries they score even higher than the first gen-

eration, e.g. Belgium and the Netherlands; and there are also several countries in which they seem very similar to the native respondents, e.g. Switzerland and Austria. Respondents from Israel stand out especially on the social dimension. This reflects the low proportion of natives in that country, the concentration of the Arab minority among the natives, and the overall high deprivation scores for Israel.

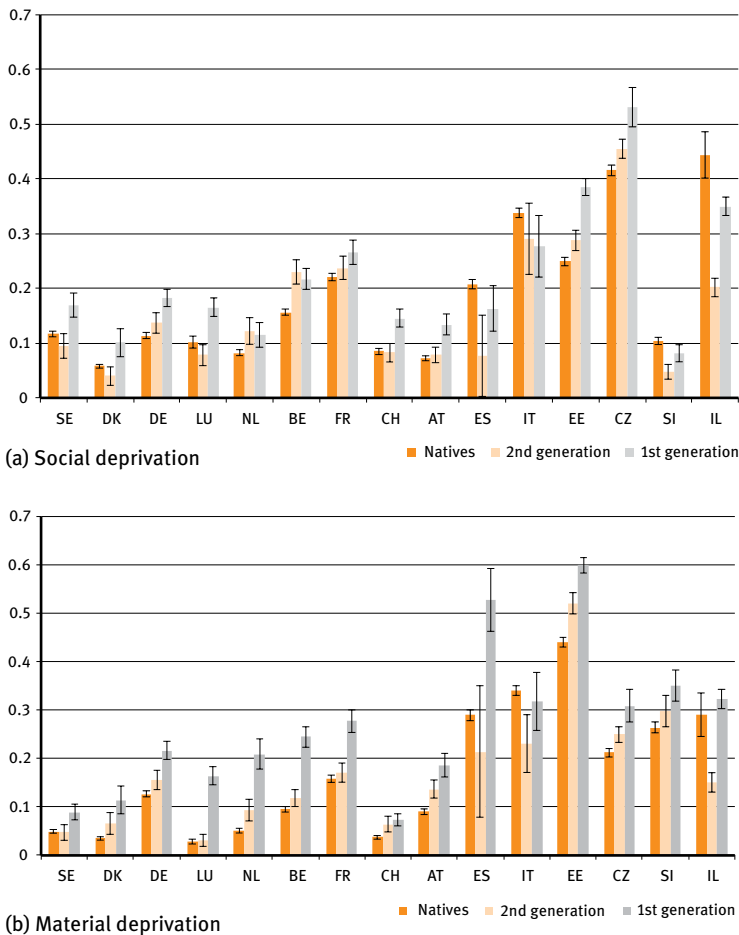


Figure 18.3: Social and material deprivation by country and generational status (percentages)

Notes: Marginal effects and standard errors estimated from logistic regression models with household level clustered robust standard errors (social deprivation: N=54,561; material deprivation: N=54,715). The models include binary country and generation indicators and all possible interactions.

Source: SHARE Wave 5 release 0

Several processes may cause the group and country differences just described and also generate the stable generational pattern in which the first generation usually stands out and the second generation scores much more like the natives. The most prominent explanation for the pattern is that immigrants integrate into the receiving society over time and we observe this in the SHARE sample when comparing the first and second generations (e.g. Rumbaut 1997). The same pattern can be caused, however, by heterogeneity in the influx of migrants over time. On average the first generation has spent less time in the receiving country than the second generation. Differences in average education or other resources may not only explain the generational pattern observed but also the differences between countries. For example, there is considerable heterogeneity with respect to the country of origin of migrants among the SHARE countries: while in Sweden the majority of first- and second-generation migrants originate from Finland, in France most first-generation immigrants are from Algeria and Morocco and most second-generation immigrants are from Italy and Spain. These country differences, and to a lesser extent the generational pattern, might be caused by variation in citizenship and naturalisation rules (e.g. Borjas 1999, Euwals et al. 2010). There is variation with respect to countries limiting the economic opportunities for non-nationals. Moreover, countries also differ with respect to who is eligible for naturalisation. In general, migrants from the second generation more often obtained their current country of residence's citizenship by birth or via naturalisation, which is probably the main reason why they score similarly to natives.

Using multivariate logistic regressions we examine the extent of social and material deprivation, taking into account the observed heterogeneity among migrant generations in the different countries. We control for basic demographics, i.e. age, household size, marital status, number of children and level of education. In addition, we hold citizenship status constant by distinguishing between having the receiving country's nationality since birth or by naturalisation versus those with foreign nationality. Finally, we add controls for health status. Figure 18.4 shows the average marginal effects for generational status based on the logistic regressions.

Model 1 is a summary of the descriptive country patterns shown in Figure 18.3, averaged across all the SHARE countries. As described above, the first migrant generation stands out in relation to social deprivation, while the effects for the second generation vary. The predicted margins based on Model 1 in Figure 18.4 show that, on average, the first generation scores significantly higher while the average effect for the second generation is similar to that of the natives. On the material dimension of deprivation, the generational pattern is more evident. Not only the first- but also the second-generation migrants are significantly more often deprived than the natives on this dimension. In the second model for social

and material deprivation (Model 2), we include the aforementioned controls. After adding these controls, the generational differences attenuate on both dimensions. This suggests that the first generation's disadvantages are partially explained by differences that we now control for. However, first-generation migrants still score significantly higher on both dimensions with the disadvantages on the material indicator still being more pronounced. For the second generation, the differences relative to natives are now statistically insignificant on both dimensions.

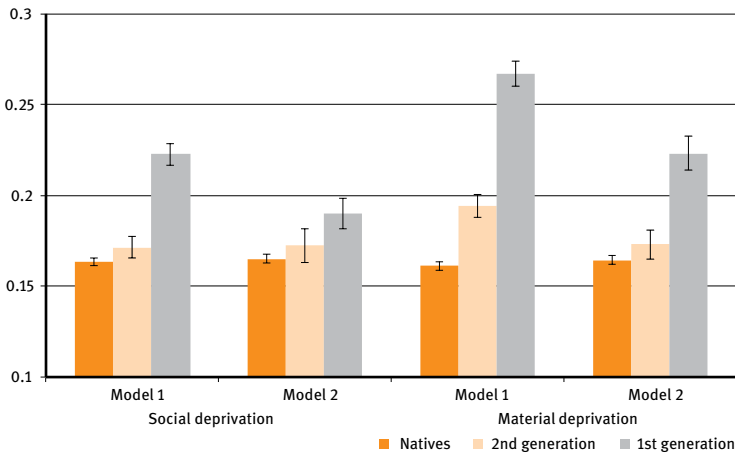


Figure 18.4: Predictive margins of social and material deprivation

Notes: Marginal effects and standard errors estimated from logistic regression models with household level clustered robust standard errors (social deprivation: N=48,749; material deprivation: N=48,779). Model 1 includes country and migration generation as well as an indicator for involuntary migration in Czech Republic and Estonia. Model 2 additionally includes citizenship status, gender, age, age2, household size, marital status, number of children, ISCED level of education, health (maximum grip strength and number of limitations with activities of daily living) and interactions of country and migration generation.

Source: SHARE Wave 5 release 0

18.5 Summary

To sum up, we showed first that the new questions introduced in SHARE Wave 5 allow for an inclusive identification and classification of migration background in terms of generational as well as citizenship status. Moreover, there is no indication for the concern that SHARE respondents had problems reporting their parents' place of birth. Only in a very few cases we were unable to classify generational status.

Second, a potential concern with research on migrants based on a general population survey like SHARE is selective coverage of this specific population. Using data collected by interviewers in the contact phase of the survey, we confirmed this concern to some degree, finding that the non-participants due to language barriers are a selective group of (most probably) migrants who are more likely to be disadvantaged in terms of housing status, and thus, also with respect to socioeconomic status. However, the number and proportion of non-participants due to language barriers in the SHARE Wave 5 baseline samples was very small, which indicates that SHARE can indeed be used for research questions targeting migrants.

Third, we compared natives and migrants on the social and material deprivation indices introduced in this volume and found a robust generational pattern. First-generation migrants appear more frequently amongst the socially or materially deprived, while the second generation's disadvantages are smaller, overall. After controlling for socioeconomic confounders, as well as for citizenship status and health indicators, this generational pattern attenuates slightly. However, the proportion of first-generation migrants classified as deprived on both dimensions is still significantly higher than among the other groups. A second stable pattern that emerged from the analysis reveals that disadvantage is more pronounced on the material dimension. These two patterns are in line with the view that migrants integrate into the host country's society over time and from one generation to the next. In most SHARE countries, it seems that this assimilation process takes longer with regard to material deprivation as compared to social deprivation.

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Liudmila Antonova, Luis Aranda, Enkelejda Havari
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19 Is there a European land of opportunity? Cross-country differences in inter- generational mobility in 14 European countries and Israel

-
- ▶ We explore cross-country variations in intergenerational mobility across Europe in the past half-century using subjective and objective non-monetary deprivation indices
 - ▶ Populations in Spain and Italy are the least socially mobile, independently of the relative poverty measures considered
 - ▶ Using material deprivation as indicator we find that populations in Denmark, Sweden, the Netherlands and Luxembourg are the most socially mobile
 - ▶ In terms of social deprivation, respondents in countries like Denmark and Germany seem to move up the status ladder
-

19.1 Intergenerational mobility in Europe

Intergenerational mobility research analyses the extent to which the earnings, occupational status or educational attainment of individuals are determined by the family of origin (the socio-economic status of the parents) rather than by their own ability, skills, and efforts. There is currently a great deal of literature that analyses patterns of intergenerational mobility of income, especially in the U.S. The renewed interest in this literature is explained in part by an increase in inequality in the past decades and by the availability of better data linking two or more generations (Chetty et al. 2014). Becker and Tomes (1979) were the first to analyse intergenerational mobility from an economic perspective, addressing several aspects of the rise and fall of families that were left unexplained by the sociological approach.

The basic empirical relationship in the literature links the parents' earnings to those of their children, providing an estimate of intergenerational earnings elasticity (Mazumder 2005). Another important aspect of mobility research involves cross-country comparisons. D'Addio (2007) found, for example, that countries with greater economic inequalities (e.g. U.S., U.K.) have lower intergenerational mobility compared with countries with more uniform income distributions, such as Denmark, Sweden and Canada.



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However, studies which examine the effect of parents' incomes on children's income face substantial methodological challenges that stem from the task of measuring permanent income. First, life-cycle bias caused by differences in income dynamics at different stages of life may exist. Second, attenuation bias may emerge due to measurement errors in the income variables. Third, data on income for two or more generations are only rarely available. As a result of these issues, research on mobility has recently started to consider intergenerational transmission of education, social status, and other factors as alternative drivers of social mobility.

In the present article we document patterns of intergenerational mobility in Europe and Israel using an indirect measure of income and/or social status, namely, relative poverty. Individuals at the bottom part of the distribution in terms of standards of living are labeled as "poor." In particular, by means of transition matrices and statistical indices of social mobility, we study whether poverty in the period of childhood persists up to older age and, if so, whether this process differs across countries. The availability of fully comparable data from 15 different countries that participate in the Survey of Health, Ageing and Retirement in Europe (SHARE) makes this inquiry both possible and unique.

In the current analysis, we employ non-monetary proxies available in the SHARE dataset. Furthermore, for each country we break the sample into three birth cohorts, i.e., individuals born before, during, and after World War 2 (WW2) (1920-1938, 1939-1945, 1946-1954). This is a natural classification given the fact that most SHARE respondents might have been exposed to WW2-related events. Following Havari and Peracchi (2014), we do not try to identify causal effects of some policy-relevant parameter (such as the potential effect of compulsory schooling or labour market reforms, or the implementation of some redistributive policy which is likely to affect social mobility). The motivation behind this choice is our focus on cross-country variations in intergenerational mobility across Europe. Since different policy reforms may have occurred at different times in the countries considered, an analysis based solely on a comparison between pre-reform and post-reform groups might lead us to compare social mobility levels of different cohorts, thus biasing the findings.

19.2 Variables of interest

As noted previously, we make use of subjective and objective proxies of poverty both in childhood and adulthood. We describe, first, the variables related to subjective poverty. As a proxy for poverty in childhood, we use the following retrospective probe: *"Think about your family when you were growing up, from birth*

to age 15 included. Would you say your family during that time was pretty well-off financially, about average, or poor?” (variable MC009). As a proxy for poverty in adulthood we consider the respondent’s current ability to make ends meet financially: “Thinking of your household’s total monthly income, would you say that your household is able to make ends meet with great difficulty, with some difficulty, fairly easily, easily” (variable CO007). To investigate the evolution of financial distress from childhood into adulthood we create dichotomous indicators for both questions, classifying the respondents as either “poor” or “not poor”.¹

As for the objective measures of poverty, we consider three continuous indices of material deprivation, one during childhood and two in adulthood. These indices allow us to generate two different transition matrices to study the pattern of poverty from childhood to adulthood. For the childhood measure, we extract the principal component from the following questions: “...how many rooms did your household occupy in this accommodation, including bedrooms but excluding kitchen, bathrooms, and hallways?” (variable MC003, normalised by the number of people living in such household, MC004); and “...approximately how many books were there in the place you lived in when you were 10? Do not count magazines, newspapers, or your school books” (variable MC005). The score on this variable is the first principal component from the two questions. We refer to this variable in this chapter as “Child-poverty”.

The first index of deprivation in adulthood, material deprivation (“Matdeprivation”), is based on questions concerning the affordability of basic needs and consumption habits (for details, see chapter 5 in this volume). The second index, social deprivation (“Socdeprivation”), is based on questions concerning participation in everyday life, social activities and the quality of the neighbourhood (for details, see chapter 6 in this volume). Both indices are constructed using the hedonic weighting scheme that takes into account the relative contribution of each material deprivation item on an overall measure of life satisfaction, accounting for country heterogeneity. For the scope of our analysis, we divided the distribution of all the continuous indices of deprivation, both at childhood and adulthood, into tertiles.

¹ Individuals whose household is able to make ends meet “with great difficulty” are categorised as “poor.”

19.3 Description of the indices

In order to construct the indices, we were guided by the following guidelines.

Let vector $(Y_i; X_i)$ describe the relative level of poverty of individuals from family i during adulthood and childhood, respectively. In this study we are interested in the extent to which the relative level of poverty in adulthood, Y_i , depends on the relative level of poverty in childhood, X_i .

To facilitate cross-national comparisons, the literature has developed a variety of mobility indices which may be divided into three broad classes: a) single stage indices, 2) indices based on transition matrices, and 3) inequality reduction indices (Savegnago 2015). In the current analysis we make use of one index belonging to the second class: the Trace index which is functional of the transition matrix $P_{K \times K}$ between levels of childhood poverty and levels of poverty in adulthood (Shorrocks 1978). The generic element p_{ij} represents the probability that the level of poverty in adulthood falls in the j -th class given that the level of childhood poverty is in the i -th class.

The Trace index of social mobility is defined as

$$m_T = k - \frac{\text{trace}(P)}{k-1}$$

where P is the transition matrix and k is the number of classes ($k=3$ for the objective measures of deprivation, $k=2$ for the subjective measures of financial distress). Note that null mobility would imply $m_T = 0$, while perfect mobility would mean $m_T = 1$.

19.4 Sample selection and descriptive statistics

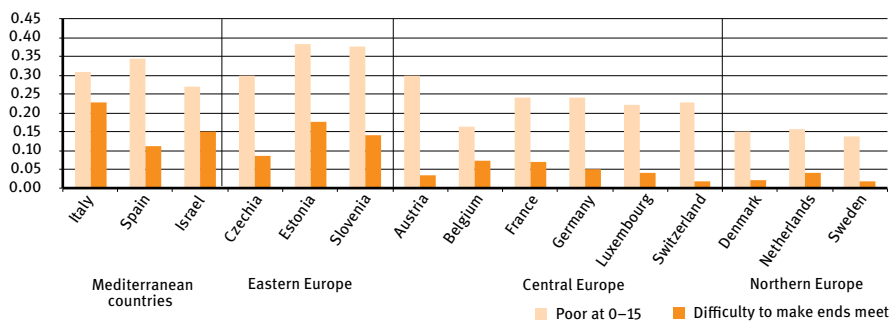
We consider in the analysis respondents from all SHARE countries who were eligible to answer the mini-childhood (MC) section (hence, those who did not participate in the SHARELIFE survey). They represent about 80 per cent of the entire SHARE sample. Table 19.1 displays summary statistics on socio-demographic characteristics for the pooled sample. For instance, nine per cent of respondents indicate that they have great difficulties in making ends meet, while 27 per cent grew up in a family with poor financial conditions.

Table 19.1: Pooled sample statistics

	Mean	Std. Dev.	Min	Max	Obs
Age	66.00	10.00	50	103	46,232
Male	0.45	0.50	0	1	46,913
Married	0.72	0.45	0	1	43,686
Years of education	11.04	4.44	0	25	43,263
1 bookshelf or more at 10	0.66	0.48	0	1	45,493
Rooms/person at 10	0.74	0.45	0.02	16.67	45,964
Poor at 0-15	0.27	0.44	0	1	46,913
Great difficulty making ends meet	0.09	0.29	0	1	46,913
Index of objective poverty in childhood	0.09	0.04	0	1	45,422
Index of Mat. Deprivation	0.15	0.20	0	1	41,921
Index of Soc. Deprivation	0.17	0.13	0	0.83	41,794

Source: SHARE Wave 5 release 0

Moreover, Figure 19.1 provides evidence of differences in financial conditions across countries. A large heterogeneity may be seen: Mediterranean and Eastern European countries display a higher level of financial vulnerability (social exclusion), ranging from 34 per cent to 38 per cent of respondents declaring poor financial conditions in childhood (in Spain and Estonia, respectively). In addition, individuals from Italy, Israel and Estonia are more likely to report having difficulties in making ends meet. On the other hand, the proportion of individuals in poor financial conditions is much lower in Central and Northern Europe (with the lowest values in Sweden and Denmark).

**Figure 19.1:** Percentage of respondents aged 50 + reporting poor financial conditions in childhood and adulthood, by country

Notes: Wave 5 households (n=46,913)

Source: SHARE Wave 5 release 0

Since we are interested in social mobility, in Figure 19.2 we show the proportion of individuals reporting making ends meet “easily”, “fairly easily”, “with some difficulty”, or with “great difficulty”, by self-reported financial situation at childhood.

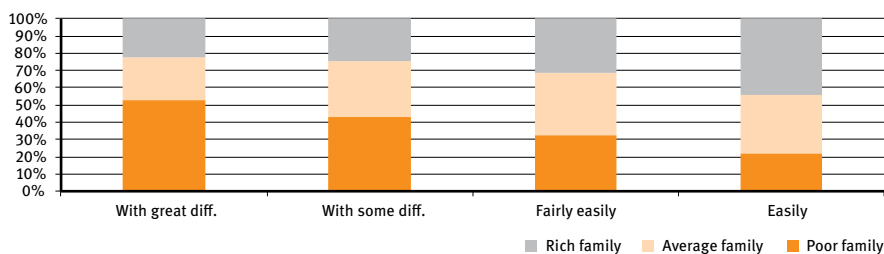


Figure 19.2: Percentage of respondents aged 50+ reporting poor financial conditions in childhood by their current financial situation

Notes: Wave 5 households (n=46,913)

Source: SHARE Wave 5 release 0

A clear gradient emerges from this figure: among those who report making ends meet with great difficulty more than 50 per cent were in a poor financial situation in childhood, as opposed to just 20 per cent of those who report coming from a wealthy family. On the other hand, more than 40 per cent of those able to make ends meet easily come from a wealthy family, while only 20 per cent come from a poor background.

19.5 Patterns of intergenerational mobility in 14 European countries and Israel

In this section we use the Trace index previously elucidated to provide a ranking of social mobility in 14 European countries and Israel. Results based on subjective measures of financial distress are displayed first, followed by those based on the objective measures of material deprivation in childhood and adulthood. For both subjective and objective measures, results are presented: a) for the pooled sample and b) by cohort (individuals born before, during, and after WW2).

19.5.1 Subjective measures of relative poverty: financial distress

In Table 19.2 we rank the countries from the most mobile to the least mobile according to our measures of financial distress in childhood and adulthood. The pooled sample shows that populations in France, Germany, and Czech Republic are the most socially mobile while populations in Luxembourg, Italy, and Sweden are the least mobile.

Table 19.2: Ranking based on the subjective measures of financial distress in childhood and adulthood: Trace index

	Pooled	Pre-WW2	WW2	Post-WW2
Most mobile	France	Switzerland	France	Denmark
2	Germany	Germany	Czech Republic	France
3	Czech Republic	Denmark	Germany	Slovenia
4	Estonia	France	Switzerland	Netherlands
5	Belgium	Austria	Italy	Estonia
6	Switzerland	Belgium	Slovenia	Sweden
7	Austria	Israel	Luxembourg	Austria
8	Netherlands	Estonia	Estonia	Germany
9	Denmark	Spain	Austria	Belgium
10	Slovenia	Slovenia	Netherlands	Czech Republic
11	Spain	Czech Republic	Spain	Luxembourg
12	Israel	Netherlands	Belgium	Israel
13	Luxembourg	Sweden	Denmark	Switzerland
14	Italy	Italy	Israel	Spain
Least mobile	Sweden	Luxembourg	Sweden	Italy

Source: SHARE Wave 5 release 0

When the sample is split by cohort (pre-WW2, WW2, post-WW2), results are fairly mixed:²

- i) Those born before WW2 living in Switzerland, Germany, and Denmark experienced the greatest social mobility with respect to respondents from other countries;
- ii) Those born before WW2 and living in Luxembourg, Sweden, and Italy experienced the lowest social mobility;

² The results for Israel should be interpreted with caution, since this country experienced massive immigration after WW2. Thus, it is likely that individuals classified as “born before WW2” and “during WW2” were born outside of Israel.

- iii) France seems to be the most “stable” country in terms of social mobility pattern, since it appears at or near the top of the ranking in the three sub-samples considered;
- iv) Social mobility in Slovenia and the Netherlands improved: these countries’ ranking of social mobility was “raised” from the low level experienced by those born before WW2 to the relatively high level experienced by those born after WW2.

19.5.2 Objective measures of relative poverty: material deprivation

As already explained, we consider three different objective measures of relative poverty, one during childhood (Child-poverty) and two in adulthood (Matdeprivation and Socdeprivation). The results are summarised in Figure 19.3, in which each country is placed around the center based on its Trace index score. The higher the score (i.e. the higher the level of social mobility) the further away the country is from the center of the figure. Results based on Matdeprivation show that Denmark, Luxembourg, the Netherlands, and Sweden are extremely mobile. This result is in line with the main findings of the literature on income mobility. Nevertheless, the results based on Socdeprivation are not so clear cut.

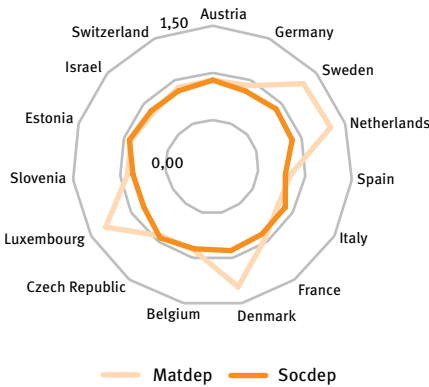


Figure 19.3: Ranking of countries based on different measures of material deprivation in adulthood using the Trace index (pooled sample).

Source: SHARE Wave 5 release 0

Tables 19.3a and 19.3b present the results separately by birth cohort (pre-WW2, WW2, post-WW2) for the Matdeprivation and Socdeprivation measures, respectively. Table 19.3a suggests that individuals in Denmark, Luxembourg, Sweden,

and the Netherlands experienced the greatest levels of social mobility, while individuals in Italy and Spain experienced the lowest social mobility opportunities independently of whether they were born before, during or after WW2.

Table 19.3a: Ranking based on the objective measures of social deprivation in childhood and adulthood using Matdeprivation, by birth cohort (pre-WW2, WW2, post-WW2): Trace index

	Pre-WW2	WW2	Post-WW2
Most mobile	Denmark	Sweden	Netherlands
2	Luxembourg	Netherlands	Switzerland
3	Sweden	Denmark	Sweden
4	Netherlands	Luxembourg	Denmark
5	France	Switzerland	Luxembourg
6	Switzerland	Belgium	Austria
7	Belgium	France	France
8	Estonia	Austria	Germany
9	Slovenia	Czech Republic	Belgium
10	Czech Republic	Germany	Czech Republic
11	Israel	Israel	Slovenia
12	Germany	Estonia	Estonia
13	Italy	Slovenia	Israel
14	Austria	Italy	Italy
Least mobile	Spain	Spain	Spain

Source: SHARE Wave 5 release 0

As far as the results for the index of social deprivation are concerned, Table 19.3b suggests a varied story:

- i) Individuals in the Czech Republic and Estonia experienced the greatest levels of social mobility, independently of whether they were born before, during or after WW2;
- ii) Social mobility in Sweden, Denmark, and Germany improved: these countries' ranking of mobility was "raised" from the low level experienced by those born before WW2 to the relatively high level experienced by those born after WW2;
- iii) Social mobility in Switzerland worsened: this country's ranking of mobility decreased from relatively high level experienced by those born before WW2 to the relatively low level experienced by those born after WW2.

Table 19.3b: Ranking based on the objective measures of social deprivation in childhood and adulthood using Socdeprivation, by birth cohort (pre-WW2, WW2, post-WW2): Trace index

	Pre-WW2	WW2	Post-WW2
Most mobile	Czech Republic	Estonia	Czech Republic
2	Luxembourg	Czech Republic	Sweden
3	Estonia	Italy	Estonia
4	Netherlands	Sweden	Germany
5	France	Switzerland	Austria
6	Switzerland	Denmark	Denmark
7	Slovenia	Austria	France
8	Italy	Israel	Israel
9	Israel	Netherlands	Netherlands
10	Austria	Germany	Italy
11	Spain	Belgium	Slovenia
12	Germany	Spain	Belgium
13	Belgium	Slovenia	Switzerland
14	Sweden	France	Luxembourg
Least mobile	Denmark	Luxembourg	Spain

Source: SHARE Wave 5 release 0

19.5.3 First attempt to investigate mediators of social mobility: compulsory schooling laws

Our previous analysis does not identify causal mechanisms behind social mobility, but we can explore one of its most prominent mediators: education. Findings from the literature suggest that intergenerational educational persistence is a key determinant of wage and income persistence. A natural research question is whether increasing compulsory schooling years can affect social mobility. We consider European countries in which major educational reforms were implemented in the post-WW2 period (Brunello et al. 2009). As in previous studies, we select one reform for each country to avoid blurring the differences between the pre-treatment and post-treatment cohorts. It is important to mention that for most countries compulsory schooling laws have contributed to an increase of individuals' schooling by one year (generally from eight to nine years of schooling). To make the comparison between post-treated and pre-treated cohorts as credible as possible, we restrict our sample to respondents born up to ten years before or after the pivotal cohort, namely the first cohort affected by the education reform.

In Table 19.4 we report the percentage of respondents claiming to be in poor financial situation in childhood and having difficulty making ends meet in adulthood by country and treatment status ($D=0$ if one was born up to ten

years before the pivotal cohort versus D=1 if one was born up to ten years after the pivotal cohort). Although this exercise enables us to consider the evolution of social mobility within countries, it does not allow for cross-country comparisons, which is the main focus of this chapter. For that purpose we report calculations for subjective measures of deprivation in childhood and adulthood, which are two binary indicators of financial distress.

Table 19.4: Percentage of respondents reporting their family to be in poor financial conditions in childhood (columns 1-2) and having some or great difficulty making ends meet at the time of interview (columns 3-4) by country and treatment

	Poor at age 0-15		Difficulty in making ends meet	
	(1) D=0	(2) D=1	(3) D=0	(4) D=1
Austria	35.59	25.00	3.10	5.16
Germany	25.81	15.76	5.48	7.27
Sweden	14.46	10.30	2.42	2.33
Netherlands	25.75	19.42	2.98	2.57
Spain	29.61	21.74	12.34	15.92
Italy	34.89	26.55	18.74	21.31
France	26.33	19.35	8.12	10.09
Denmark	17.80	14.37	3.46	1.89
Belgium	20.13	18.70	5.40	7.72
Czech Republic	40.20	36.07	6.44	7.10

Notes: Treatment: D=1 if born after pivotal cohort +10 years; 0 otherwise. The total number of observations is about 20,000 and varies by country (from 1,400 observations in Denmark to 3,168 in Germany). A reform passed in Austria in 1962 which increased schooling from 8 to 9 years, implies that the treated group is composed by cohorts born between 1947 (first cohort hit by the reform) and 1957.

Source: SHARE Wave 5 release 0

Generally, the percentage of individuals reporting poor financial conditions in childhood is higher for the pre-reform group in almost all countries. On the contrary, changes in the percentage of respondents having difficulty making ends meet pre- and post-reform do not have a clear pattern. One possible interpretation is that increasing compulsory schooling by one year can lead to short-term improvements (these reforms constrained 14-year-olds to stay one more year in school), with apparently no significant direct effects on poverty in adulthood. The data at hand allow us to describe intergenerational mobility of older cohorts (individuals born before 1954), although it would be interesting from a policy point of view to study more recent cohorts who were exposed to a stream of reforms implemented in the 1970s and 1980s.

19.6 Conclusions

In this chapter we explored cross-country variations in intergenerational mobility in 14 European countries and Israel in the past half-century using non-monetary subjective and objective proxies of poverty during childhood and older age. The results suggest that Southern European countries (Italy and Spain, in particular) are the least advantageous in terms of social mobility, independently of the measures of relative poverty considered (financial distress and material deprivation in childhood and adulthood). Previous empirical evidence has shown that the low level of intergenerational mobility in Italy, where family background is important for labour market success, may be due to a centralised and egalitarian tertiary education which hinders poor children from competing with richer children (Checchi et al. 1999). Empirical evidence for Spain (Cervini-Plà 2014) suggests that a potential cause of the low intergenerational mobility in that country is the late age at which children leave the parental home, a phenomenon also prevalent in other Southern European countries. This may negatively reinforce the influence of parents on children. Furthermore, in Spain there is little occupational mobility and many jobs are filled through social referral.

Much more variability is encountered at the top of the social mobility ranking. The objective measures of material deprivation show that Denmark, Luxembourg, the Netherlands, and Sweden are the most intergenerationally mobile societies in Europe. These results are in line with previous findings in the literature. In contrast, our subjective measures of financial distress put Sweden at the bottom of the ranking distribution, positioning the Netherlands and Denmark as mid-level countries. This partially contradicts the evidence found using the more objective measure; further research is needed to solve this inconsistency.

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20 Coping with risks during the Great Recession

-
- ▶ The aggregate proportion of 50+ households in financial distress has been stable between 2011 and 2013 but individual circumstances have changed for many households
 - ▶ Financial assets have been used as a buffer, in particular by low income households hit by health shocks
 - ▶ Greater social inclusion, proxied by the size of the social network, reduces the probability of falling into financial distress
-

20.1 The protective role of assets and social networks during the crisis

According to a recent report (OECD 2013), the current economic crisis has severely hit the OECD area, which has registered, as a whole, a decline by almost 2.5 per cent of the real GDP per capita per year. Even if between 2010 and 2011 the same aggregate measure has increased by one per cent, economic recovery is still feeble, especially in some countries.

Among OECD countries, in fact, the effects of the Great Recession have differed both in terms of timing and magnitude: overall, since 2008, the largest declines in real household disposable incomes have been registered in Southern European countries, such as Spain and Italy.

The persistence of adverse economic conditions has jeopardised the ability of many households to cope with negative shocks. In a majority of OECD countries, though, lower-income older people did relatively well thanks to the role played by the pension system (OECD 2014).

In this chapter we investigate the role played by assets to support the living standard of the (more affluent) older population. We analyse whether and how those households who were financially distressed in Wave 4 coped with their financial problems by liquidating their assets, real and financial, between Waves 4 and 5. We also focus on the role of social networks, as providers of informal support, in preventing or escaping financial distress. In our analysis we consider having a large social network an indicator of higher social inclusion.

The chapter is organised as follows. We first analyse which characteristics trigger financial distress in Wave 5 – conditional on being not financially dis-

tressed in Wave 4 – or help escape it. We then focus on assets liquidation, and investigate whether financially distressed households in Wave 4 are more likely to sell their house, their financial or other real assets between Waves 4 and 5.

20.2 Transitions into and out of financial distress

In order to understand transitions into and out of financial distress, we select households belonging to the longitudinal sample, that we observe in Waves 4 and 5 with no missing information regarding household income and financial wealth. Financial distress is defined as in Cavasso and Weber (2013) where the household is considered financially distressed if two conditions are met: (1) financial wealth, net of non-mortgage debt, is less than three months' income and (2) household equivalent income is not in the top third of the country specific distribution.

In Figure 20.1 we report the fraction of households in financial distress by country and wave: differently from what Cavasso and Weber (2013) find when looking at transitions between Waves 2 and 4 for 65+ individuals, we notice that the proportion of financially distressed households does not change dramatically between Waves 4 and 5. In fact, it is rather stable in all countries except Sweden, Denmark, the Netherlands, Belgium and France (where it increases), and Switzerland and Austria (where it decreases).

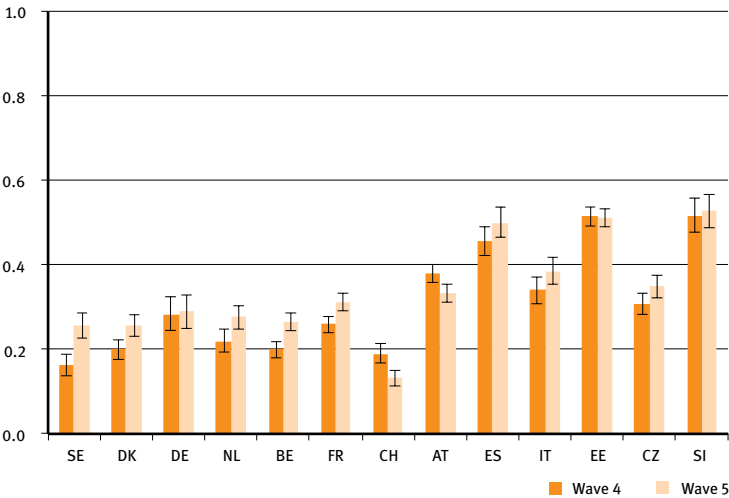


Figure 20.1: Fraction of households in financial distress – longitudinal sample, Wave 4 and Wave 5
Notes: 15,645 observations
Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

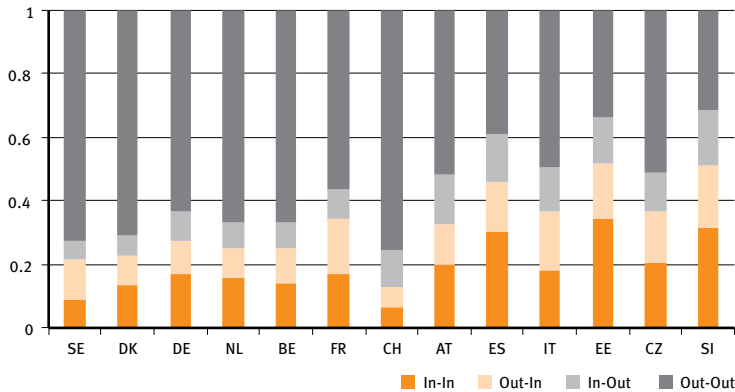


Figure 20.2: Transitions in and out financial distress between Wave 4 and Wave 5

Notes: 15,645 observations

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

Even if the fraction has remained generally stable between waves, we can see from Figure 20.2 that there has been reshuffling of households between the financially distressed or non-distressed groups.

We estimate transition probabilities in and out of financial distress as a function of demographics, health, homeownership and household income. In addition we consider also participation in financial markets and the size of social network (standardized with respect to country means). The last variable should capture the role of informal support in preventing or escaping financial distress.

We report in Table 20.1, column (1), probit estimates when the outcome is the probability of falling into financial distress in Wave 5, given that the household was not in financial distress in Wave 4. We estimate a protective role of education, employment, income, and homeownership. We also find that greater social inclusion, proxied by the size of the social network in Wave 4, significantly reduces the probability of entering financial distress.

Participation in the financial market and better health conditions in Wave 4 are also associated to a lower probability of falling into financial distress in Wave 5. The same table reports, in column (2), estimates for the probability of leaving financial distress by Wave 5, given that the household was in financial distress in Wave 4. We find that income, homeownership and financial market participation help recover from financial distress. We do not find statistically significant effects for the size of social network.

Table 20.1: Probit estimates for transition probabilities in and out of financial distress, Wave 4 and Wave 5

Variables	(1) IN		(2) OUT	
	Marginal effects	Standard error	Marginal effects	Standard error
Female	0.034***	(0.008)	−0.016	(0.015)
Foreign	0.071***	(0.013)	−0.101***	(0.021)
Education (ISCED 0-2)	0.128***	(0.011)	−0.127***	(0.022)
Education (ISCED 3-4)	0.081***	(0.010)	−0.100***	(0.022)
Employed	−0.069***	(0.013)	0.191***	(0.023)
Retired	0.003	(0.013)	0.034	(0.021)
Age	−0.013*	(0.005)	0.006	(0.009)
Age squared	0.007	(0.004)	−0.001	(0.006)
Partner	−0.013	(0.009)	0.077***	(0.017)
Household size	0.004	(0.005)	−0.010	(0.008)
Poor health	0.079***	(0.014)	−0.066***	(0.020)
HH equiv. income (log)	−0.030***	(0.004)	0.017**	(0.006)
Homeowner	−0.067***	(0.009)	0.103***	(0.015)
Financial market part.	−0.079***	(0.009)	0.060***	(0.018)
Social network size	−0.013***	(0.004)	0.001	(0.007)
N. Obs.	10,627		4,718	
Pseudo R-squared	0.1090		0.0676	

Significance: *** = 1 %; ** = 5 %; * = 10 %

Notes: Controlled for country dummies. Employment status, age, having a partner, household size, poor health, income, homeownership, financial market participation and social network size are relative to Wave 4

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

20.3 Assets liquidation: housing, real and financial assets

We now turn to assets liquidation as a strategy to cope with negative shocks.

We focus on financial assets (including bonds, stocks, mutual funds, individual retirement accounts, contractual saving and life insurance policies, but excluding cash and deposit accounts), home (the main residence), and other real assets (including secondary dwellings, investment homes, other real estate, cars and own business).

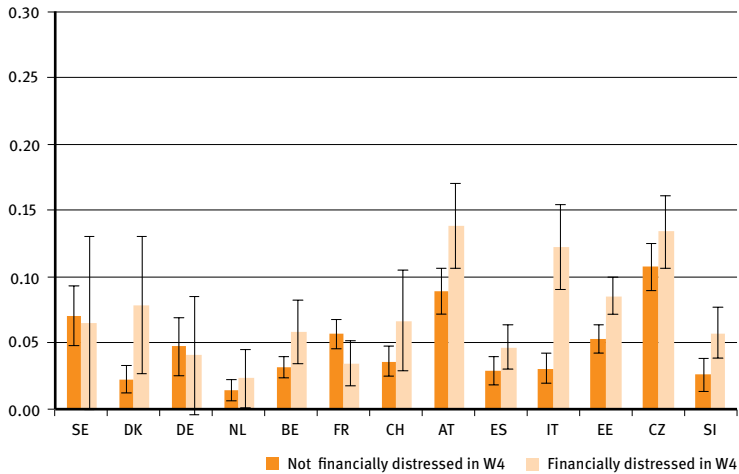


Figure 20.3: Liquidation of the main residence, by financial distress in Wave 4

Notes: 18,869 observations

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

We investigate whether households, who were financially distressed in Wave 4, liquidated their assets, real or financial, between Waves 4 and 5. We analyse separately cases in which a household owned a particular asset in Wave 4 and sold it between waves. Our outcomes therefore will be the liquidation of each group of assets separately, conditional on possessing them in Wave 4. By liquidation we mean the complete sale of a certain asset category, so that the outcome is a binary variable denoting the change in ownership. This definition ruled out changes in asset value due to its partial sale or to price variations. Our analysis provides descriptive evidence about important decisions, such as leaving the financial market, selling the main residence or other real assets, that can be adopted in the face of a reduction in available resources and lack of support.

In Figure 20.3 we show the fraction of individuals who owned their home in Wave 4 and sold it between waves by country and financial distress in Wave 4. We can see generally low percentages of households who sold between waves. Statistically significant differences between financially distressed households and those who are not in financial distress can be noticed only in Austria, Italy, Estonia and Slovenia.

Figure 20.4 instead shows the fraction of households who owned financial assets in Wave 4 and sold them entirely between waves. Compared to the previous figure, we can see that much higher proportions of households liquidated this type of asset. Also, the figure suggests that financially distressed households

were more likely to liquidate all financial assets between waves compared to not financially distressed households, except in few countries (where confidence intervals overlap).

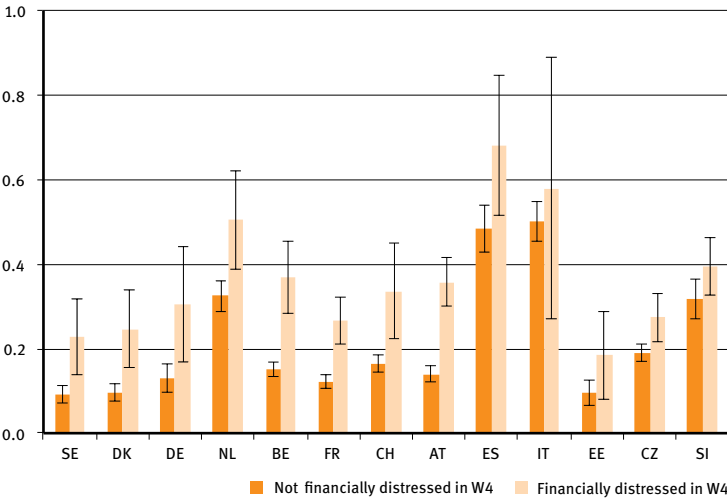


Figure 20.4: Liquidation of financial assets, by financial distress in Wave 4

Notes: 12,985 observations

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

Finally Figure 20.5 shows the fraction of households who owned other real assets, such as secondary or investment homes, other real estate, cars and own business, in Wave 4 and sold them entirely or partly between Waves 4 and 5. The fraction of households who sold this type of assets between waves is in general somewhere in between the previous two cases.

In Table 20.2 we report probit estimates for the probability of liquidating all assets (column 1), financial assets (column 2) or other real assets (column 3).

Estimates show that being in financial distress in Wave 4 is associated to a higher probability of liquidating assets, especially financial assets. The size of the social network plays a (significantly) protective role, particularly when we consider the probability of financial assets liquidation. The newly retired, as expected, are more likely to liquidate assets; bad shocks, such as health worsening or drops in the household size, are also predictive of asset liquidation. Being female or having low education is associated to a higher probability of liquidating assets, especially financial assets. The sale of the main residence, not shown in the table for the sake of brevity, is associated mainly to changes in the family size. This may reflect the reluctance to sell the main residence but may also signal

high transaction costs associated to the downsizing of housing equity (Angelini et al. 2014). The liquidation of other real assets, that increases with age and is positively correlated to household size drops, seems to be linked more to a rebalancing of household portfolios or to the desire to transfer wealth to the offspring, rather than to a situation of financial difficulty.

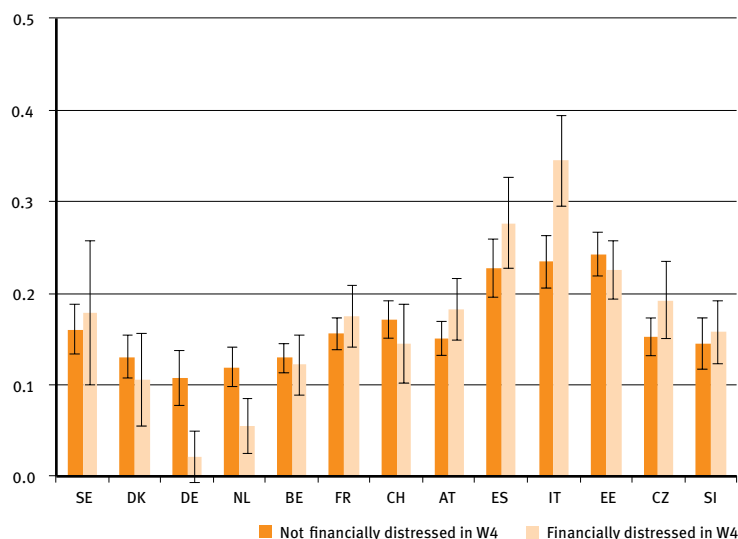


Figure 20.5: Liquidation of other real assets, by financial distress in Wave 4

Notes: 19,035 observations

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

Table 20.2: Probit estimates of assets liquidation between W4 and W5

Variables	(1) All assets		(2) Financial assets		(3) Other real assets	
	Marginal effects	Standard error	Marginal effects	Standard error	Marginal effects	Standard error
Financial distress	0.036***	(0.008)	0.088***	(0.010)	0.008	(0.007)
Female	0.019**	(0.006)	0.027***	(0.007)	0.012*	(0.006)
Foreign	0.013	(0.011)	0.035**	(0.013)	-0.002	(0.010)
Education (ISCED 0-2)	0.073***	(0.009)	0.078***	(0.010)	0.014	(0.008)
Education (ISCED 3-4)	0.038***	(0.008)	0.041***	(0.009)	0.009	(0.007)
Employed	0.003	(0.010)	-0.036**	(0.012)	0.034***	(0.010)
Retired	0.002	(0.011)	0.002	(0.013)	-0.014	(0.011)
Age	-0.008*	(0.004)	0.003	(0.005)	-0.020***	(0.004)
Age squared	0.009**	(0.003)	-0.000	(0.004)	0.016***	(0.003)

Table 20.2 (continued)

Variables	(1) All assets		(2) Financial assets		(3) Other real assets	
	Marginal effects	Standard error	Marginal effects	Standard error	Marginal effects	Standard error
Partner	-0.011	(0.007)	0.005	(0.008)	-0.005	(0.006)
Household size	0.022***	(0.004)	-0.004	(0.004)	0.028***	(0.003)
Poor health	0.050***	(0.014)	0.089***	(0.019)	0.050***	(0.014)
HH equiv. income (log)	-0.003	(0.003)	-0.015***	(0.004)	0.011***	(0.003)
Social network size	-0.011***	(0.003)	-0.012***	(0.003)	-0.004	(0.003)
Homeowner	0.047***	(0.007)	-0.039***	(0.008)	0.002	(0.007)
Financial market part.	0.217***	(0.007)			-0.007	(0.007)
Other assets ownership	0.149***	(0.008)	-0.030**	(0.010)		
Newly retired	0.040***	(0.012)	0.047***	(0.014)	0.030**	(0.011)
Household size increase	0.014	(0.014)	-0.008	(0.018)	0.009	(0.014)
Household size drop	0.082***	(0.012)	0.026	(0.014)	0.081***	(0.010)
Health improvement	0.013	(0.019)	-0.018	(0.025)	-0.010	(0.020)
Health drop	0.070***	(0.013)	0.074***	(0.017)	0.077***	(0.013)
N. Obs.	21,320		12,412		17,190	
Pseudo R-squared	0.0828		0.1060		0.0430	

Significance: *** = 1 %; ** = 5 %; * = 10 %

Notes: Controlled for country dummies. Financial distress, employment status, age, having a partner, household size, poor health, income, homeownership, financial market participation, other real assets ownership and size of social network are relative to Wave 4

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

In Table 20.3 we report estimates for the probability of liquidating assets by age subgroups, in particular we look separately at households whose head is below or above 65, the most common retirement age. For both groups we observe that the liquidation of assets is a strategy used to alleviate financial distress. Household size drops and poor health conditions are important determinants of liquidation in both groups but, notably, a larger role of social inclusion emerges for the 65+: the presence of a partner and the size of the social network are significant protective factors only for the older group.

Table 20.3: Probit estimates of assets liquidation between Wave 4 and Wave 5, by age group

Variables	(1) 64–		(2) 65+	
	Marginal effects	Standard error	Marginal effects	Standard error
Financial distress	0.047***	(0.013)	0.028**	(0.010)
Female	0.007	(0.010)	0.031***	(0.008)
Foreign	0.041*	(0.016)	–0.015	(0.014)
Education (ISCED 0-2)	0.059***	(0.014)	0.088***	(0.011)
Education (ISCED 3-4)	0.037**	(0.012)	0.042***	(0.011)
Employed	–0.012	(0.013)	0.085***	(0.021)
Retired	–0.008	(0.017)	0.029	(0.015)
Age	0.005	(0.024)	–0.014	(0.010)
Age squared	–0.004	(0.022)	0.013	(0.007)
Partner	0.001	(0.011)	–0.020*	(0.009)
Household size	0.016**	(0.005)	0.026***	(0.005)
Poor health	0.062*	(0.027)	0.044**	(0.016)
HH equiv. income (log)	–0.001	(0.004)	–0.005	(0.004)
Social network size	–0.008	(0.005)	–0.012**	(0.004)
Homeowner	0.012	(0.012)	0.074***	(0.009)
Financial market part.	0.186***	(0.012)	0.238***	(0.009)
Other assets ownership	0.168***	(0.016)	0.139***	(0.010)
Newly retired	0.029	(0.017)	0.046*	(0.018)
Household size increase	–0.009	(0.021)	0.034	(0.019)
Household size drop	0.082***	(0.015)	0.091***	(0.020)
Health improvement	0.021	(0.034)	0.010	(0.023)
Health drop	0.094***	(0.026)	0.062***	(0.015)
N. Obs.	8,825		12,495	
Pseudo R-squared	0.0680		0.1050	

Significance: *** = 1%; ** = 5%; * = 10 %

Notes: Controlled for country dummies. Financial distress, employment status, age, having a partner, household size, poor health, income, homeownership, financial market participation, other real assets ownership and size of social network are relative to Wave 4

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

20.4 Concluding remarks

In this chapter we investigate the role played by assets to support the living standards of the older population during the Great Recession.

Focusing on the longitudinal sample, we observe that the fraction of households in financial distress has remained stable in most European countries between Waves 4 and 5. However, non-negligible proportions of households entered and exited financial distress. Looking at transitions into financial distress, we estimate a significant protective role of education, employment, income, homeownership, participation in the financial market. We find that the larger the size of social network in Wave 4, the lower is the probability of falling into financial distress. Leaving financial distress is associated to higher education and income, employment, having a partner, being homeowner and participating in the financial market. Poor health increases the probability of going into financial distress and makes it more difficult to escape it.

Looking at households who liquidated assets between Waves 4 and 5, we find that a large fraction of financially distressed households (above 50 % in Southern European countries) sold completely their financial assets. The role of financial assets as buffer wealth is confirmed in estimation results. We find also that the size of the social networks plays a protective role, reducing the probability of liquidating financial assets, particularly for individuals aged 65+. The sale of the main residence and other real assets instead appears to be mainly associated to changes in household size and other demographic factors that change over the life cycle.

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21 Reverse mortgage: a tool to reduce old age poverty without sacrificing social inclusion

-
- ▶ Homeownership is widespread, in Europe, particularly among older people, with even low-income households holding a significant amount of housing wealth
 - ▶ Because of the low liquidity of housing wealth, homeownership can create a mismatch between disposable income and capital. We argue that reverse mortgages – which convert housing wealth into a stream of income flows – could represent a powerful device against income vulnerability in old age
 - ▶ This argument is supported by our (first) estimates that show that reverse mortgages could indeed play an important role in protecting older households against consumption shortfalls without displacing them from their home, thus contributing to their social inclusion. This is especially true for countries like Spain, Belgium, Italy and France
-

21.1 Reducing the mismatch between income and wealth

Major reforms of European pension systems have aimed at redressing their financial and intergenerational imbalances, while avoiding a cutback of provisions mainly through an increase in retirement ages and an improvement of their efficiency. This restructuring is meant to induce changes in households' working and saving behaviour and in staff management, without which reforms could increase the risk of income vulnerability in old age.

It is standard practice to define and measure poverty in terms of income and to consider individuals as poor when their income falls below a certain threshold. These “standard” measures, however, do not include streams of income derived from owned wealth. Although the search for more comprehensive measures of poverty is rapidly expanding (see for example Cavasso & Weber 2012, d'Addio 2015), official statistics measuring old-age poverty rates (Eurostat 2014) typically consider only income and omit wealth. However, income alone is not necessarily a good indicator of consumption possibilities. Consumption-based poverty indicators are better measures of households' welfare, but their use is not free from drawbacks

either. Both habits and social environment affect households' expenditures, with the consequence that the link between expenditure-based measures and effective resources available to the household may be weak, even considering long run variables and the possibility of a bequest motive for saving (Rossi et al. 2014).

Households may own durables and assets which could enhance their living standards. Among these assets, a primary role is played by the house, homeownership being widespread, especially among older people (as shown by SHARE and European Central Bank data, see section 2). Apart from pride of ownership and the sense of belonging, homeownership provides more secure housing services and a shelter against rental fluctuations. On the other hand, home ownership exposes the households to the risk of unfavourable price variations and to the risk of illiquidity.

Our point is to show that a more efficient use of this wealth would protect a relevant segment of the older population from the risk of an unwarrantedly low level of consumption. Among the instruments that could be used to convert (part of) the housing equity into cash flow, the reverse mortgage stands prominent. Its main advantage, at least for those households whose housing wealth is considerable relative to their income, is that it allows the elderly to continue to live in their home thus maintaining the familiarity, memories and affective links, which are essential elements of social inclusion.

The use of reverse mortgage could be also important from a social perspective, since it could release public resources to be allocated, for example, to improve the job perspectives of the young.

Economic theory has often implicitly or explicitly assumed the existence and the superiority of annuity type of products, able to convert assets into consumption flows. The empirical evidence, however, shows a lower rate of wealth depletion among older households than predicted by the theory (Lydall 1995). While there is a remarkable reluctance of older people to downsize their wealth (Feinstein & McFadden 1989, Angelini et al. 2010), consumption tends to drop at retirement (Banks et al. 1998, Borella et al. 2014).

Various explanations have been provided for this behaviour. In the case of reverse mortgages, in particular, a reason that is often advocated is the worry of leaving a debt to their offspring (Fornero et al. 2015). This probability is however rather low as these instruments usually contemplate a non-negative equity guarantee, ensuring that the sale of the property will always be able to cover the cost of the loan. Moreover, previous evidence has shown that people having signed a reverse mortgage contract may still leave substantial inheritance to their children (Coda Moscarola et al. 2013).

Looking at the supply side, adverse selection and moral hazard are likely to play a role in making financial institutions extremely prudent: it's possible that

people asking for a loan own houses that are less likely to increase in value and that are less likely to spend money to maintain the house value once they have obtained the loan.

Although we are aware of these weaknesses of both demand and supply, we are convinced that they can be overcome, for example by good market regulation that could reduce the mistrust from both sides and facilitate their matching. However, many countries still do not have an explicit regulation or (as is the case in Italy), only recently introduced it (March 2015).

In this chapter, we only aim at highlighting the potential gain that could be obtained from the development of a reverse mortgage market. Using the SHARE Wave 5, which refers to the year 2012, we consider a broader measure of the resources that people aged 65 and over could use to finance their consumption, by including in their income the annuity value derived from a reverse mortgage. The exercise rests on rather strong hypotheses: it does not consider any behavioural responses; it assumes a perfectly elastic supply of reverse mortgages and a demand for reverse mortgages for the whole house value or for 70 per cent of it. Indeed, its main purpose is just to open a discussion on a financial tool – the reverse mortgage – that could have an important role, together with targeted policy measures, in reducing income vulnerability among older people. In the analysis we focus on population aged 65+ as reverse mortgage can normally be subscribed by individuals no younger than 65.

21.2 Homeownership across European countries

Data from SHARE Wave 5 suggest that in European countries homeownership among older people is widespread, although with significant variations. In our exercise, we focus on EU15 countries included in SHARE, but we exclude Luxembourg. These countries have indeed comparable income and wealth levels and a similar development of welfare state and financial markets, all features that enhance comparability. Among households with respondents aged 65 and above, homeownership ranges from 47 per cent in Austria to 92 per cent in Spain (see Figure 21.1). In general, homeownership is more widespread in Mediterranean countries than in Northern European countries.

The high property rates signals a potential under-consumption due to the high degree of illiquidity of housing wealth. Figure 21.2 shows the mean value and the standard deviation of self-assessed housing wealth owned by older people in the countries we analysed. All (gross) real estate assets are included, except for houses in cooperatives. The mean value ranges between 200,000 and 300,000

euro (pps). Of course the self-reported values might not reflect the actual market values. However, a comparison between values declared in SHARE Wave 4 and in the Eurosystem Household Finance and Consumption Survey for the same year shows only minor differences, although the latter are systematically higher (a similar evidence is also reported in Mathä et al. 2014).

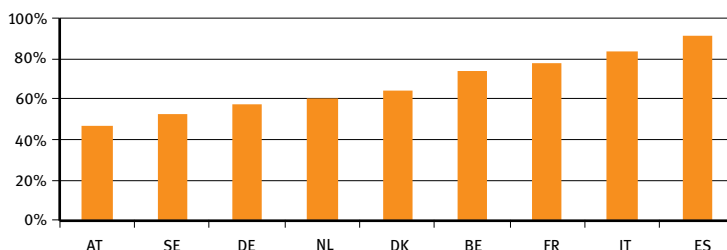


Figure 21.1: Homeownership rates among older people (65+) across European countries

Notes: 14,715 observations, sample of households answering to the question H0002_Owner-Tenant: “Your household is occupying this dwelling as: 1. Owner; 2. Member of a cooperative; 3. Tenant; 4. Subtenant; 5. Rent free”. We do not consider Members of a cooperative as Owners. Source: SHARE Wave 5 release 0

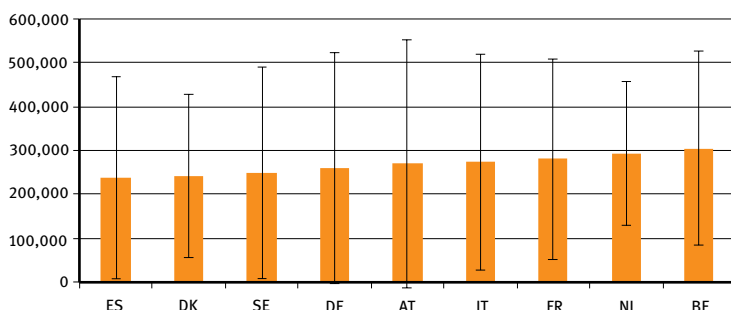


Figure 21.2: Gross housing wealth across European countries (pps units): mean and standard deviation

Notes: 6,823 observations, sample of the respondents to question H0024_ValueH – “In your opinion, how much would you receive if you sold your property today?”. We have excluded all observations with house values missing or outlier (i.e. lower than 1,000 euro or greater than 1,500,000) or with ownership percentage missing or lower than ten per cent. Values are in pps reported by Eurostat for the year 2012.

Source: SHARE Wave 5 release 0

People generally buy houses borrowing money from banks through a mortgage. However, at the age of 65, the large majority of households has already fully repaid the debt or is left with small residual loans. From SHARE Wave 5, we

observe the following percentages of homeowners aged 65+ with loans on their main home: Austria 10.4 %; Germany 13.2 %; Sweden 50.1 %; Netherlands 49.7 %; Spain 6.1 %; Italy 1.3 %; France 3.5 %; Denmark 42.1 % and Belgium 2.7 % (based on the sample of respondents to the question ho015: *“How much do you [or/or/or/or] [your/your/your/your] [husband/wife/partner/partner] still have to pay on your mortgages or loans, excluding interest?”*). Only three countries show a percentage higher than 15: Sweden, the Netherlands and Denmark. One of the reasons for the three exceptions may be the existence of mortgage formulae that allow the beneficiary to repay only the interest, thus leaving the debt and the house to the offspring.

Furthermore, the residual loan is usually relatively low: the mean value for all countries is below 10,000 euro, while the highest mean amount (observed in the Netherlands) is about 45,000 euro (see Figure 21.3).

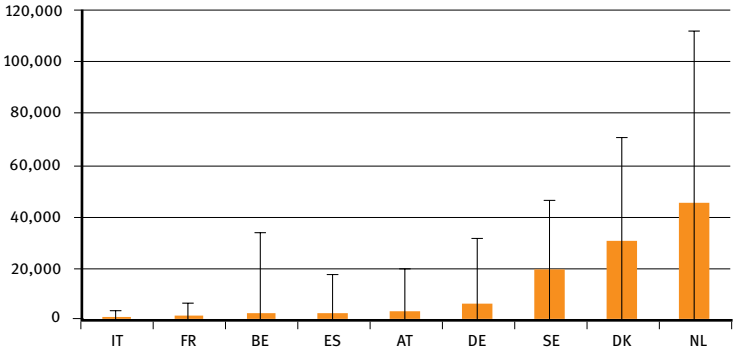


Figure 21.3: Residual loans on housing wealth across European countries (pps units): mean and standard deviation on the sample of owners

Notes: 6,823 observations, sample of respondents to the question ho015: *“How much do you still have to pay on your mortgages or loans, excluding interest?”*. Individuals reporting positive and non-missing values are 1,340 out of 6,823.

Source: SHARE Wave 5 release 0

21.3 Economic vulnerability among older people

SHARE data provide detailed information about individual income and allow us to elaborate a simple index of economic vulnerability. To identify the economic vulnerability condition of people 65 and over, we consider an income threshold equal to 60 per cent of the median disposable income. Disposable income has been calculated as after taxes per-capita total income, plus the imputed rent con-

verted in pps. The index is not a measure of poverty and is thus not comparable to the official statistics on poverty. It simply highlights, within each country, the relative position of a group of (older) individuals with respect to the economic condition of the overall (older) population. Put differently, this analysis aims at detecting how wealth conversion into an income stream could take some of the older households out of the lowest tail of income distribution, relative to the sub-sample of the older people (65+).

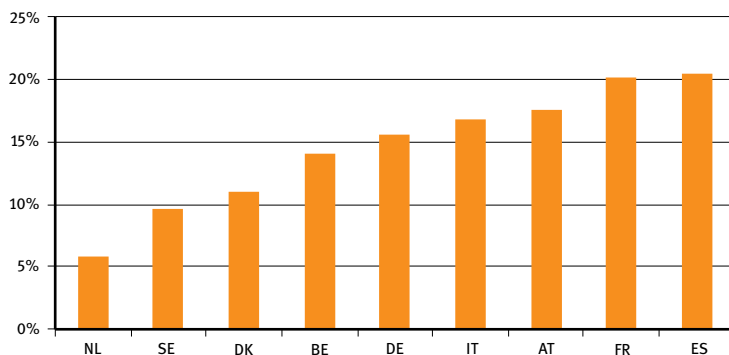


Figure 21.4: Economic vulnerability index among individuals aged 65+ in 2012

Notes: Economic vulnerability rates are calculated on the 60 per cent of the household disposable income (question HH017_TotAvHHincMonth - “How much was the overall income, after taxes and contributions, that your entire household had in an average month in [STR (Year - 1)]?”*12) plus imputed rent divided by the household size on the sample of individuals 65+ respondents to the question about homeownership. 9,390 observations weighted with households weights (chw_w5)

Source: SHARE Wave 5 release 0

Economic vulnerability ranges from six in the Netherlands to 20 per cent in Spain. It is higher in France and Spain and lower in Northern European countries such as in Sweden and in the Netherlands. It is more widespread among non-homeowners but the data reveal that some low income households, albeit few, hold a substantial amount of housing wealth, suggesting that a possible mismatch between income and wealth could be of relevant magnitude, making people *house-rich* and *cash-poor*. This is where reverse mortgages could help to solve a problem.

21.4 Reverse mortgage

By taking out a reverse mortgage, homeowners can convert the value of their house (or part of it) into an annuity (or a lump sum). The annuity and the lump sum are computed taking into account their life expectancy and the market interest rate. It is worth remembering that under the reverse mortgage contract, the property stays with the owners until death and goes to the heirs on condition that the outstanding debt is repaid. Heirs can opt for repaying the debt with their own resources or selling the house. Reverse mortgages usually have a non-negative equity guarantee, which ensure that the amount of the loan will never exceed the house value. Due to the non-negative guarantee, if the value of debt at subscriber's death is higher than the value at which the house is sold, the heirs don't have to bear the difference. This obviously implies that the loan value is lower than the potential maximum.

In our exercise, annuities have been computed using the following simplified equation:

$$Annuity = House_value * \frac{r}{(1 + r)^{(\max\ age - age)} - 1}$$

Where r is the interest rate applied by the financial providers, age is the current age of the individual and $\max\ age$ is the maximum age the individual can reach. The house value is the self-perceived value of the house and it is assumed to be constant over time. In reality, housing markets have experienced divergent paths throughout OECD countries. Prices have been increasing in half of OECD countries— such as Germany, Switzerland, the United Kingdom, Denmark, the Netherlands, Ireland and Sweden (see d'Addio 2015). By contrast, in other countries (e.g. in France, Greece, Italy and Spain) real house prices continue to decline. According to the European Mortgage Federation housing prices in Europe overall have returned in 2014 to 2006 levels. Heterogeneity in prices is also reported within the same country with capitals and large cities registering the largest increases, while rural and remote regions often experience the largest declines. Given this high heterogeneity and the absence of a clear time trend, we assume constant prices.

Among the risks faced by credit institutions (besides those related to the dynamics of interest rates and house prices) would be the possible longevity of mortgagors and the moral hazard related to the maintenance of the house. Davidoff and Welke (2007) ignore the issue of moral hazard related to home maintenance and concentrate on adverse selection by comparing the mobility of the borrowers and non-borrowers. Their findings point to a sort of “advantageous” selection, i.e. reverse mortgage borrowers have a higher probability of selling

their houses and repaying the mortgage earlier. Davidoff (2006) showed that homeowners over 75 spend less on routine maintenance relative to younger ones. However, he also suggested that this problem is mitigated in practice by the fact that “borrowers are residual claimants of the house”.

Lenders in any case may take these additional factors into account by charging high insurance fees, which in conjunction with the commissions they apply and the mechanism of compound interest, makes reverse mortgages very expensive in practice. To deal with these problems, in our exercise, given its main purpose, we use some strong simplifications. First, we assume that all individuals in the sample have the same longevity, i.e. they will die at age 100 (which rules out differences in mortality/longevity). Second we consider a relatively high interest rate, which is meant to include the mark-up and various costs faced by the bank also in relation to adverse selection and moral hazard. In addition, we have considered two scenarios: an optimistic one, in which all respondents aged 65 or more are able to convert 100 per cent their housing equity into an annuity by means of a reverse mortgage; a more realistic one, in which they can convert only the 70 per cent of it.

Table 21.1 shows for each country the median house value (net of loans) for owners, along with the median values of the income flows (computed using, respectively, an interest rate of four, seven or ten per cent) resulting from the reverse mortgage and the associated percentage reduction in vulnerability rates of the older population.

The table shows that, at least in some countries, the reduction of economic vulnerability among older people would be remarkable. For example, in Spain the use of reverse mortgages could offset a substantial fraction (about 27 per cent if 100 per cent of the house value is converted, which becomes 24 per cent if we convert only the 70 per cent of the house value) of the economic weakness of older households. Reductions would be substantial also in Belgium, Italy and France. For some other countries (such as Sweden, Austria and the Netherlands) however, this instrument would be of little effect in reducing income vulnerability, as property values are not high enough to guarantee a significant stream of income flows.

Given these results, it is surprising that the debate about how to release housing wealth has been so limited in Europe, up to now. We are aware of the high psychological value homeownership still has for many people, particularly among older generations, in many European countries and we are convinced that being able to continue to live at home is an important element of social inclusion. However, we are also aware of an increasing number of older individuals who are facing difficulties in financing an adequate flow of consumption because of the illiquidity of their housing wealth.

Table 21.1: Household income increase per year and vulnerability rates reduction in percentage points in case of reverse mortgage

	Net housing wealth of owners	Additional income from reverse mortgage for owners			Percentage reduction in vulnerability among 65+ in case of reverse mortgage (obs. weighted with household weights)					
	(median, euro pps)	(releasing 100 % of housing value; per year)			100 % of the housing wealth			70 % of the housing wealth		
		r=4 %	r=7 %	r=10 %	r=4 %	r=7 %	r=10 %	r=4 %	r=7 %	r=10 %
Spain	174,950	3,948	2,561	1,602	27.0 %	22.9 %	20.3 %	24.8 %	20.7 %	16.1 %
Belgium	239,804	5,492	3,469	2,048	25.3 %	18.1 %	15.7 %	17.9 %	16.9 %	15.0 %
Italy	209,331	4,274	2,746	1,657	16.4 %	13.4 %	7.9 %	13.7 %	7.9 %	6.9 %
France	208,945	4,752	2,958	1,810	13.8 %	11.1 %	7.4 %	11.1 %	7.7 %	7.4 %
Denmark	156,964	3,171	1,958	1,197	8.1 %	6.0 %	5.5 %	6.0 %	5.5 %	5.5 %
Germany	180,019	3,668	2,216	1,282	5.7 %	4.4 %	3.0 %	4.4 %	3.0 %	2.5 %
Nether-lands	193,536	3,822	2,267	1,321	4.6 %	3.4 %	3.4 %	3.4 %	3.4 %	3.4 %
Austria	193,532	3,679	2,216	1,302	4.1 %	2.2 %	1.5 %	3.3 %	1.5 %	0.8 %
Sweden	155,257	3,099	1,915	1,116	2.6 %	1.8 %	1.8 %	1.8 %	1.8 %	1.8 %

Note: 9,390 observations (owners in the age range 65–100) weighted with households weights (chw_w5). Calculations are done under the hypothesis that individuals reach the maximum age of 100.

Source: Authors’ own calculations using SHARE Wave 5 release 0 data

The calculations presented in this paper show that reverse mortgages could help those households who have enough housing wealth and are ready to use it to finance consumption without losing the house and without burdening their children with debt. There seems to be a “missing market” here that could improve welfare and also help avoiding that the consequences of a too illiquid portfolio be left to the community. Recognising the problem, Nobel Prize laureate Robert Merton (2011) has advocated a “complete revamp and efficient placement of reverse mortgages” to enhance the role of the house as a retirement-funding asset.

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Mauro Mastrogiacomo and Michele Belloni

22 Becoming self-employed at ages 50+: true entrepreneurship or exclusion from (wage-)employment?

-
- ▶ Job satisfaction of shifters into self-employment informs us about their risk of social exclusion
 - ▶ Those who shift into self-employment are the more motivated wage-employed seeking higher job satisfaction
 - ▶ Social exclusion is not a likely outcome to those who shift into self-employment
 - ▶ Institutional features, such as the differential inclusion of self-employed and wage-employed into unemployment insurances and the level of employment protection, also explain these shifts
-

22.1 Entrepreneurship choice among older workers

Social inclusion and work are closely related. Those who work in an organisation, firm or institution, are typically more socially included than those who do not (Morgana 2010). However, many (older) workers decide or are forced to leave employment. In many cases, the reinclusion into wage-employment (WE) is difficult, mostly at later ages. In that case, transitions into self-employment (SE) are a good option to go back into work. However, not all those who shift into SE do so out of necessity to avoid social and economic exclusion, it is often a conscious occupational choice. In this chapter, we look at shifts into SE of individuals in their working careers' later stage. We investigate whether shifts stem from a conscious planning/choice or whether they are taken out of necessity because older workers tend to be excluded from the labour market. We search for indications of the exclusion hypothesis using job-satisfaction data, as we want to test whether shifters were dissatisfied with their previous job.

This is a very important question to answer, because SE may hide unemployment for a large fraction of the population. This would imply that the increase in SE, which is observed in many European countries, is not motivated by entrepreneurship but rather testifies to the rigidities and difficulties of re-entrance in the labour market for older workers that get dismissed, possibly highlighting the higher cost of WE relative to SE. The policy reactions to these two options are evi-

dently completely different. For instance, many observers claim that SE is partly responsible for the limited participation in unemployment insurance (UI) programmes of the older people (Kautonen et al. 2010).

In this study, we examine job satisfaction data included in SHARE before the shift into SE (Waves 4 and 5). Schnalzenberger et al. (2008) have previously investigated the relationship between job satisfaction and transitions into retirement. They use SHARE data 2004-2006 and report that subjective overall job-satisfaction is a strong predictor for early retirement. In the same vein, we look at transitions into SE using fresher data. The numerous questions about perceived job quality and satisfaction included in SHARE should reveal whether those who are less satisfied with their current job are more likely to shift.

22.2 Empirical set up and sample description

22.2.1 Employment and occupation

The first step in the analysis is the definition of the employment status (work or not) and occupation (WE or SE). We define the labour market status and occupation combining the information reported in two questions included in the 4th and 5th wave of SHARE. The first concerns the self-reported current job situation (“In general, which of the following best describes your current employment situation? 1. Retired, 2. Employed or self-employed (including working for family business), 3. Unemployed, 4. Permanently sick or disabled, 5. Homemaker, 97. Other (Rentier, Living off own property, Student, Doing voluntary work)”) and the second requests respondents to describe their current main occupation (“In this job are you an employee, a civil servant, or self-employed?”). The answers to these two questions allow for the definition of four mutually exclusive labour market states: SE, WE, retired (RE), Unemployed (UI). RE is defined as fully retired, i.e. it excludes semi-retired and partially retired. Fully retired are individuals who answer “Retired” to first question and do not declare to be either an employee, a civil servant, or self-employed when answering the second. WE includes both employees and civil servants. It also includes semi-retired and partially retired. UI includes unemployed, permanently sick or disabled, homemakers and others.

Before using the data, we carry out some necessary selection to the sample. First, as we study shifts, we only keep those observed both in Waves 4 and 5. Also, we only keep those reporting valid information in the aforementioned questions concerning employment and occupation. As we concentrate on mature workers, we also limit the sample to those aged 50 to 70 in Wave 4. The resulting sample

counts 24,423 individuals. Table 22.1 reports the distribution of labour market states in our sample. Obviously, when getting older, workers and UI retire.

Table 22.1: Distribution of labour market status of SHARE panel components in Wave 4 and Wave 5

Labour market status	Wave:		Total
	4	5	
WE	37 %	33 %	35 %
SE	7 %	6 %	7 %
RE	39 %	46 %	43 %
UI	16 %	14 %	15 %
Total	100 %	100 %	100 %

Notes: Number of observations: 24,423

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

Table 22.2 shows the transition matrix among labour market states between Wave 4 and 5. The table shows observed frequencies and percentages by row (in italics).

Table 22.2: Transitions among labour market states between Wave 4 and 5: frequencies and percentage (in italics)

Labour market status		Wave 5				Total
		WE	SE	RE	UI	
Wave 4	WE	7,323 <i>80.35</i>	198 <i>2.17</i>	1,134 <i>12.44</i>	459 <i>5.04</i>	9,114 <i>100</i>
	SE	228 <i>12.68</i>	1,217 <i>67.69</i>	244 <i>13.57</i>	109 <i>6.06</i>	1,798 <i>100</i>
	RE	233 <i>2.43</i>	97 <i>1.01</i>	8,965 <i>93.53</i>	290 <i>3.03</i>	9,585 <i>100</i>
	UI	335 <i>8.53</i>	62 <i>1.58</i>	888 <i>22.62</i>	2,641 <i>67.27</i>	3,926 <i>100</i>
	Total	8,119 <i>33.24</i>	1,574 <i>6.44</i>	11,231 <i>45.99</i>	3,499 <i>14.33</i>	24,423 <i>100</i>

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

Table 22.2 shows high state dependence, which is visible along the diagonal. About two per cent of WE shifts to SE between waves. The opposite transition from SE to WE is much more likely, roughly 13 per cent. Retirement on the contrary is (almost) an absorbing state: 94 per cent of RE in Wave 4 remained RE

in Wave 5. About 3.5 per cent returned to work either as WE or SE. One should keep in mind that partial retirees are defined as workers and included in WE or SE. Especially for this type of transitions (RE to WE/SE) there might be a sizable country heterogeneity induced by different rules on accumulation of pension income with earnings (Börsch-Supan et al. 2009). Frequencies are unfortunately too low for disaggregating transitions by country.

22.2.2 Job quality and satisfaction

The analysis of job quality and job satisfaction should provide the answer to the question concerning what has possibly motivated the shift into SE. To this end, we use job satisfaction data from Wave 4, i.e. prior to the shift, which we describe in this paragraph. We prefer not to carry out the analysis of satisfaction indicators after the shift due to the following reasons. Questions on job quality in SHARE Wave 5 are asked only to those panel individuals who (have continuously worked and) have experienced a change in job since the last interview; those who stayed in their previous occupation are no longer asked about their current job satisfaction. To face this routing issue, we should assume that perceived job quality remains unchanged for those whose job did not change.

Besides, our baseline approach avoids explaining transitions across states by means of self-reported variables at the destination state that induce a self-justification bias (Kapteyn et al. 2011). This means that switchers may “justify” their change in labour market status by declaring that the quality of their new status is particularly good. We use the following ten questions on perceived job quality:

1. All things considered I am satisfied with my job
2. My job is physically demanding
3. I am under constant time pressure due to a heavy workload
4. I have very little freedom to decide how I do my work
5. I have an opportunity to develop new skills
6. I receive adequate support in difficult situations
7. I receive the recognition I deserve for my work
8. Considering all my efforts and achievements, my [salary is/earnings are] adequate
9. My [job promotion] prospects [for job advancement] are poor
10. My job security is poor

While the first question is about an overall judgment of work satisfaction, the others concern more specific aspects. The last two questions are only asked to WE

or SE. Respondents must choose any of the following answers: “Would you say you 1. Strongly agree, 2. Agree, 3. Disagree, 4. Strongly disagree”. The response rate to these questions is very high.

Figure 22.1a shows a comparison of the mean of the job quality measures for those who shift from WE to SE and for wage-employed that do not shift. We report a series of t-tests. They show whether there is a statistically significant difference in the means of several job-satisfaction variables, when we look at these two different groups. Significance is evaluated at 95 per cent confidence level. The figure shows that those who shifted found that they had the opportunity to develop their skills, had enough freedom to decide how to do their work and had prospects for job advancements. This suggests that those who shift into SE can be seen as being relatively satisfied about their previous job, compared to those who did not shift.



Figure 22.1a: Mean of job quality measures in Wave 4: wage-employed (Wave 4) to self-employed (Wave 5) *versus* wage-employed to wage-employed

Significance of the difference between means: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Notes: Number of observations: about 7,000 (varying with question); 1 = Strongly agree, 2 = Agree; 3 = Disagree; 4 = Strongly disagree

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

In Figure 22.1b, we look at shifters from WE to SE and compare them to those who stay into SE. For six questions, we cannot reject the hypothesis that job satisfaction significantly differs between groups. Relative to longer term SE, the new self-employed were less satisfied with their previous job, had little opportunity to develop new skills, found the previous job not (physically) demanding, received little recognition and had poor prospects of job advancement relative to longer term SE.

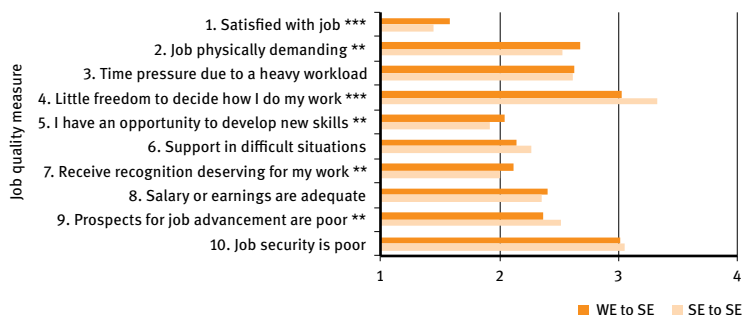


Figure 22.1b: Mean of job quality measures in Wave 4: wage-employed (Wave 4) to self-employed (Wave 5) *versus* self-employed to self-employed

Significance of the difference between means: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Notes: Number of observations: about 2,000 (varying with question); 1 = Strongly agree, 2 = Agree; 3 = Disagree; 4 = Strongly disagree

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

One way to interpret these two figures is that those who shift into SE are more satisfied about their previous job relative to those who remained in WE. However, when compared to the rest of the self-employed, the recent shifters find their old employment worse than those who have been already self-employed for longer. This finding is compatible with the idea that shifters are the most motivated among the wage-employed and moved into SE in order to achieve a higher level of satisfaction, enjoyed by the longer term self-employed. This in turn suggests that for those workers shifting into SE should not result in problems of social exclusion.

22.3 Multivariate analysis

In the descriptive analysis, we have discussed the possibility that shifters from WE to SE are typically those who are more motivated in their job and that shift possibly to realise a larger level of job satisfaction enjoyed by the longer term self-employed. However, we cannot exclude that switches into SE might also be affected by other (confounding) factors. To account for them, we perform a multivariate analysis. This is a model to estimate the hazard into SE, when WE is the common lagged state. We select the subsample of 7,521 individuals defined as WE in Wave 4: 198 of them switched into SE in Wave 5 (see Table 22.2). The dependent variable is a binary indicator equal to one if the individual switched to SE, and 0 otherwise. From the original answers (ranging from one to four of the job quality questions described earlier), we build corresponding binary indicators equal to

1 if the individual responded either “1. Strongly agree” or “2. Agree”, and 0 if he/she responded “3. Disagree” or “4. Strongly disagree”. Our main variables of interest are these binary indicators of perceived job quality. They could be included in the model altogether since we do not find evidence of multicollinearity.

Figure 22.2 summarises the results of this multivariate analysis. The results look similar also if we estimate separate models for each job quality dummy (along with the background characteristics, whose results are omitted from Figure 22.2). The figure shows the coefficients of a linear probability model and the 95 per cent confidence interval. When we correct for other confounding factors, it appears that the hazard into SE is significantly related only to three job satisfaction characteristics. Those who agree with the statement that they have an opportunity to develop new skills are more likely to shift into SE. At the same time, agreement concerning the lack of prospects for job advancement is negatively correlated to the probability of shifting into SE (significant at ten per cent level). Finally, the hazard is negatively correlated to those who agree with the fact that in WE support in difficult situations would be offered. Overall, these results confirm descriptive findings (the only exception being given by question 6) and are consistent with the interpretation reported above.

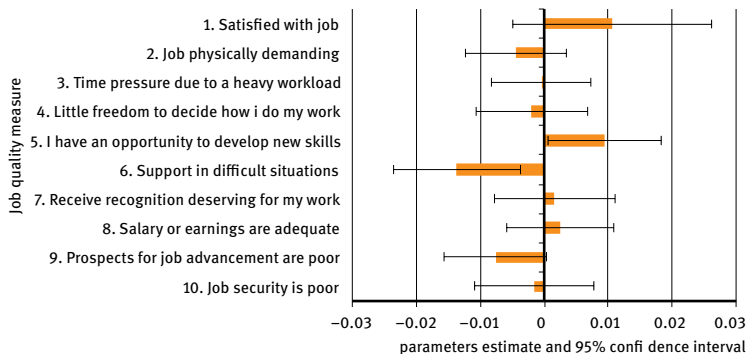


Figure 22.2: Job quality measures and transition into self-employment (Linear Probability Model)
 Notes: Number of observations: 6,778; Additional controls: dummies for age, civil servant, gender, being married, country, and being in good health; years of education, tenure and total earnings.

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

In Figure 22.2 we do not show the other controls. In this paragraph, we briefly discuss their effect. We have included dummies for age, civil servant, gender, marriage, country, and being in good health. Also the years of education, tenure and total earnings were included. The estimation results, even after a number of

specification tests, show that being in good health, and highly educated is positively correlated with the probability of shifting into SE. Again, this suggests that social exclusion should not be expected by those leaving WE in order to enter SE. Further, earnings and being a civil servant are negatively correlated with the hazard into SE. Finally, the age dummies do not show any specific age-trend. What appears to be very interesting is the presence of statistically significant spikes around age 65. This is an institutionally relevant age in different countries, for instance because of the entitlement to old-age programs. This suggests that, next to the intrinsic satisfaction described above, there is room for explaining the transitions into SE using institutional features (Börsch-Supan et al. 2009), such as statutory retirement ages or different levels of social insurances.

We have, therefore, estimated a set of additional specifications in which such institutional details are accounted for. We have summarised several institutional features in a number of indicators, representing either a differential treatment between SE and WE in the different countries, or report of specific institutions that change by country (and individual characteristics) with different levels of employment protection. This means that some indicators are country-specific, thus in our last specification we omit the country dummies in order to avoid spurious correlations (see Table 22.3, specification 2).

Table 22.3: Institutional factors and transition into self-employment (Linear Probability Model)

Variable	(1)	(2)
Age	0.001** (0.001)	0.001*** (0.0005)
Old age	0.037*** (0.012)	0.035*** (0.012)
UI does not cover SE		0.019*** (0.005)
Employment protection index		-0.015*** (0.005)
Country fixed effects:	Yes	No

Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: Number of observations: 6,778; standard errors in brackets; additional controls: dummies for ten job quality measures, civil servant, gender, being married and being in good health, years of education, tenure and total earnings

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

The legal retirement largely differs across countries (MISSOC 2012). It also differs by gender (e.g. Austria), year of birth (e.g. France) and family composition (Czech Republic). We report in the estimation (Table 22.3) an indicator *Old age* that is equal to 1 if the respondent is observed being as old as the legal retirement age (standard pension). The effect of age on the transition into SE is modelled with a linear function. In specification (2) we additionally include an indicator *UI does not cover SE* that is equal to 1 if in the analysed country unemployment insurance covers WE but not SE. Furthermore, we include the OECD employment protection index for regular workers (OECD 2014). Finally, some institutions that could potentially be relevant – such as disability insurance and the presence of an earnings test – cannot be studied here, as these do not differ much across country or between WE and SE.

The results in Table 22.3 show that the variable that picks up a differential treatment of social insurances, where the self-employed are excluded from the payment of premiums but also from coverage, has a positive effect on the hazard into SE (*UI does not cover SE*: 0.019). This suggests that when SE is less expensive (for instance because lower premiums for unemployment insurances have to be paid) it is also more common. A similar finding is confirmed by the variable *Old age* that returns a positive, sizable and significant coefficient, robust across the different specifications (0.037–0.035, cf. with the effect of age which is positive but very weak: 0.001). This means that the probability to become self-employed increases substantially when respondents reach the statutory retirement age. This is consistent with the view that at that age it is profitable to shift (or outsource) as in most countries labour costs reduce after that age if one enters SE. Further still, the employment protection index, which is closely related to the costs of dismissal, is negatively related to the probability of becoming self-employed.

In sum, the institutional variables, that in the literature have been documented to affect labour market shifts, play a significant role also in our case. In our study, these all suggest that when institutions make SE less costly, transitions into SE are observed more often. Parameters estimates for the job quality measures do not change once variables capturing institutional factors are included in the model.

22.4 Job satisfaction and institutional factors drive entrepreneurship choices

In this study, we related job satisfaction indicators to shifts into SE, as we wanted to gain a better understanding of what motivates employees to change occupation. Shifts into SE could be motivated by entrepreneurial decisions, or at the same time be the result of a lack of other options on the labour market. As we look at older workers, relevant concerns could arise. For instance, if older employees are pushed into SE this could result in social exclusion.

Our results suggest that those who shift into self-employment are the more motivated wage-employed. Their job satisfaction is larger than that of those who do not shift. However, compared to those who were already self-employed, their job satisfaction is lower. This indicates that shifters are actually seeking higher job satisfaction. This in turn suggests that social exclusion is not a likely outcome to those who shift into self-employment. In a sense, they are the more content with their previous job, and possibly will end up at a higher level of satisfaction after the shift.

These results also hold when we include institutional parameters in the estimating equation, such as the legal retirement age, the differential participation into unemployment insurance and the employment protection index. These institutional characteristics are all significant determinants of shifts into self-employment.

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23 Does training help retaining older workers into employment? Evidence from the SHARE survey

-
- ▶ Training helps keeping older workers in employment, by reducing human capital depreciation
 - ▶ There is a clear nexus between lower pensions and/or early retirement and material and social deprivation in old age. Therefore, it is only by making it feasible to retain older workers in the labour market that we can ensure higher well-being
-

23.1 Training and employment of older workers

The long-term increase in longevity, coupled with the progressive compression of morbidity experienced in Europe in the last decades, improved the well-being of many older individuals. However, a failure to adjust the retirement age has exposed poor households to financial distress (Angelini et al. 2009).

Staying longer in the labour force may be a solution to preserve an adequate level of resources and limit the risk of economic deprivation, it is also an effective mean to maintain social ties and foster an active life. However, working longer requires investment in human capital over the life cycle (Mahyew & Rijkers 2004), as acquired skills become obsolete as time goes by. The rapid technological progress prevailing in many sectors makes training the older workforce the only effective policy to prevent skills obsolescence (Bishop 1997, Belloni & Villosio 2014).

The aim of this chapter is to investigate whether participation in training helps keeping older workers (aged 50–65) in employment. In particular, we use Wave 4 and Wave 5 of SHARE to test the effect of training participation in 2010 (Wave 4) on changes in labour market status between 2010 and 2012 (Wave 5), controlling for a rich set of observable individual characteristics. Information on self-reported current economic status allows us to distinguish between six labour force states: employed or self-employed, unemployed, permanently sick or disabled, retired, homemaker and “other”. To measure training participation we exploit a question in Wave 4 (part of the module “Activities”) which asks respondents whether they attended any educational or training course in the last twelve months.

The main result of this chapter is that individuals who took part in training activities in the year prior to the 2010 (2009 for Estonia) interview are significantly less likely to leave the labour market. Training older workers may therefore prevent them from being exposed to the risk of poverty and social exclusion. This chapter is organised as follows: the next section reports the descriptive evidence regarding labour market status in the last two waves of SHARE and participation in training activities. The following section presents the results of a multivariate analysis, which aims at capturing the effect of training on the probability of exiting the labour market. The last section concludes the chapter, providing some policy implications of our analysis.

23.2 Descriptive analysis

Table 23.1 reports aggregate labour market status by wave and age group. Figures referring to the total sample (“Wave 4: Total; Wave 5: Total”) are very similar across waves: around 30 per cent of the sample reports to be in the labour force (either employed, self-employed or unemployed), 57 per cent to be retired, 3.6 per cent to be disabled and nine per cent are in “other” status (which includes homemakers). The labour force participation rate among individuals aged 50–65 was 55 per cent in Wave 4; this figure is similar to what found using previous waves of SHARE (see Meschi et al. 2013, Brugiavini et al. 2008). The fraction of people in the labour force in Wave 5 in the same age range is instead higher (60 per cent). As regards the age 65+ category, numbers are very similar between waves (2.6 % in Wave 4; 3 % in Wave 5). Finally, it is worth mentioning that the sample size is higher in Wave 5 than in Wave 4 due to the way in which refresher samples have been collected in the different countries. In this chapter, we aim at analysing the determinants of transitions out of employment between 2010 and 2012, devoting special attention to the role of training. Therefore, we focus on the subsample of 16,028 individuals aged 50–65 and in labour force in 2010.¹

¹ We exclude 706 individuals aged 65+ in Wave 4 since statutory retirement age across Europe is generally lower than 67, i.e. their age in Wave 5. In any case, we repeated the analysis on the full sample and results are virtually unchanged.

Table 23.1: Labour market status by age groups (Waves 4 and 5)

		Wave 4			Wave 5		
		age 50–65	age >65	Total	age 50–65	age >65	Total
Retired	N	8,828	23,687	32,515	7,661	28,213	35,874
	%	30.11	87.22	57.57	25.03	87.01	56.91
In labour force	N	16,028	706	16,734	18,239	963	19,202
	%	54.66	2.6	29.63	59.58	2.97	30.46
Disabled	N	1,855	225	2,080	1,945	309	2,254
	%	6.33	0.83	3.68	6.35	0.95	3.58
Other	N	2,610	2,539	5,149	2,766	2,940	5,706
	%	8.9	9.35	9.12	9.04	9.07	9.05
Total	N	29,321	27,157	56,478	30,611	32,425	63,036
	%	100	100	100	100	100	100

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

Table 23.2 shows labour market status in Wave 5 of individuals who were in the labour force in Wave 4, distinguishing between those who attended training activities in 2010 and those who did not. About 6,000 selected individuals interviewed in Wave 4 did not participate in Wave 5: this leads to a final sample of 10,725 individuals aged 50–65 in Wave 4 for which we observe labour market status in both waves. About 27 per cent of them (2,912) took part to training activities. The following facts emerge from the table: 79 per cent of those who did not undertake training were still in the labour force, whereas this percentage is equal to 86 per cent for those who did undertake training. Conversely, the percentage of new retirees is equal to 15 per cent between the non-trained and to ten per cent between trained workers.

Table 23.2: Labour market status in Wave 5 by training participation in Wave 4: individuals aged 50–65 in labour force in Wave 4

Labour market status in Wave 5					
	Retired	In labour force	Disabled	Other	Total
Participation in training: NO					
In labour force in Wave 4	1,186	6,172	211	244	7,813
	15.18	79	2.7	3.12	100
Participation in training: YES					
In labour force in Wave 4	313	2,498	39	62	2,912
	10.75	85.78	1.34	2.13	100

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

Figure 23.1 reports the wide variability of training incidence by country and Figure 23.2 shows the relationship between training incidence in Wave 4 and the percentage of individuals aged 60 or more who are in employment in Wave 5. *Prima facie* evidence suggests a clear positive association between participation in training programmes and labour force participation, as well as a wide cross-country heterogeneity in the incidence of training. In order to control for other determinants of labour force mobility we carry out a multivariate analysis.

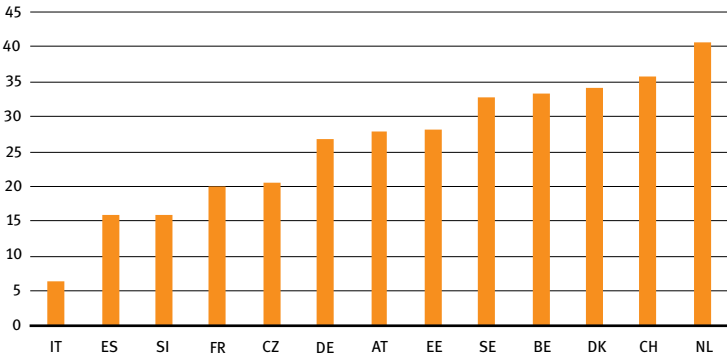


Figure 23.1: Training participation by country (percentage of people that attended an educational or training course in the twelve months before the interview)

Notes: The figure is based on individuals who were in employment in Wave 4

Notes: 14,385 observations

Source: SHARE Wave 4 release 1.1.1

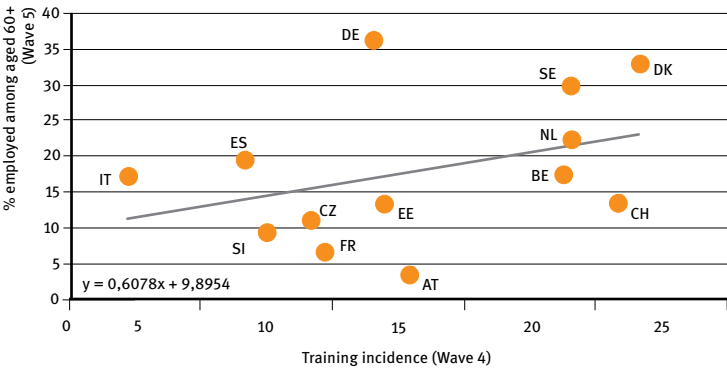


Figure 23.2: Training participation in Wave 4 and percentage of employed among people aged 60 or more in Wave 5, by country

Notes: 47,248 observations

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

23.3 Multivariate analysis

Table 23.3 reports the results from several specifications of a Linear Probability Model. All individuals included in the analysis were employed in Wave 4 and took part to both waves. The dependent variable takes value “1” if the individual is not employed in Wave 5, value “0” otherwise. Our variable of interest (*Attended an educational or training course*) is a dummy equal to “1” if the individual took part to a training activity in the year prior to the interview in Wave 4, value “0” otherwise.

Column (1) only includes a basic set of control variables, i.e. a full set of dummies for age, educational attainment (ISCED categories), gender, marital status and self-reported health status, plus family composition variables and the logarithm of total household income. In column (2), we additionally control for a full set of occupational dummies (9 variables referring to 1-digit ISCO codes, see ILO (2012)), while in column (3) we also add country fixed effects.

Table 23.3: Linear probability model. dependent variable: transition out of employment between Wave 4 and 5

VARIABLES	(1) OLS	(2)	(3)	(4) IV	(5) (first stage)
Attended an educational or training course	-0.042*** [0.008]	-0.037*** [0.008]	-0.027*** [0.008]	-0.431* [0.231]	–
Dummy ISCO	No	Yes	Yes	Yes	Yes
Dummy countries	No	No	Yes	Yes	Yes
Exclusion restrictions:					
firm size class	–	–	–		0.021*** [0.007]
Wu-Hausman Ho: variables are exogenous (p-value)				0.0577	
Observations	9,472	9,331	9,331	8,260	8,260

Notes: Robust standard errors in brackets; IV first stage: clustered standard errors; *** p<0.01, ** p<0.05, * p<0.1. Basic controls: dummies for age, female, educational attainment (ISCED groups), being single, self-reported health status (scale 1 to 5); number of grandchildren; number of children; log of total household' income. All regressions include a constant. In the IV regression, the instrument is the median firm size by country and industry (computed from the EU-LFS). In columns (4) and (5) observations from Switzerland are excluded since the instrument is not available for non-EU countries.

Source: SHARE Wave 4 release 1.1.1, Wave 5 release 0

Looking at column (1), we can see that the effect of training is statistically significant, precisely estimated and sizeable: those who undertook training activities have a 4.2 per cent lower probability to move out of employment. Other variables (not reported) have the expected sign: older and less healthy individuals are more likely to move out of employment; there is a clear and statistically relevant gradient between education and labour market attachment, while income is not statistically significant, perhaps because the education dummies already capture the effect of economic resources. Pension eligibility rules are country specific, but in most European countries, they depend on the type of occupation. This is also true for professional training: in fact, once we control for a full set of occupational dummies in column (2), the coefficient of interest decreases to -0.037 , i.e. taking part in a training activity reduces the chances of being out of employment in 2012 by 3.7 percentage points. Managers, professionals, technicians and clerks are less likely to be out of employment in 2012 compared to those employed in elementary occupations. It is worth noting that the question about training does not allow to distinguish between on-the-job training and training individuals undertook while unemployed, e.g. as part of an active labour market policy. Respondents were asked whether they took part to a training activity in the previous 12 months, without any reference to their labour market status at the time of the training. Still, the vast majority of people reporting being employed in Wave 4 (95 %) also report to have been continuously working in the previous year. As we already pointed out in the previous section, there are stark differences in participation in training programmes across countries. This means the coefficient of the training dummy may reflect institutional differences in training policies rather than on differences in individual decisions. In column (3) we therefore include a full set of country dummies. In this specification, the coefficient of interest further reduces to -0.027 : an important fraction of the association between training participation and labour force participation can be explained by institutional differences across countries, but still we can observe a statistically significant association even controlling for country differences.

Specifications (1)–(3) provide estimates of the potential effect of training based on the method of ordinary least squares (OLS), which measures the associations between training participation and later employment net of the effect of a number of confounding factors. However these estimates do not necessarily identify a causal relation as they may suffer of endogeneity due to reverse causality: rational individuals plan their retirement well in advance, accounting for their preferences and policy incentives to anticipate or postpone retirement. The decision to work beyond a given age requires that skills are preserved for a longer period. Therefore, engagement in training activities by older workers may be induced by their retirement plans.

In order to tackle this issue, we run an instrumental variable (IV) analysis. A valid instrument must correlate with the regressor of interest, which is participation in training in our case, but must be unrelated to unobservable determinants of employment participation. In other words, a valid and informative instrument should affect employment participation in 2012 only through its effect on training in 2010. The chosen instrument is the median firm size class by industry and country. This instrumental variable is constructed using data from the 2009 Wave of the European Union Labour Force Survey (EU-LFS), which is a large cross-sectional household sample survey coordinated by Eurostat. EU-LFS contains information on firm size, aggregated in the following four classes: 1 to 10 persons; 11 to 19 persons; 20 to 49 persons; 50 persons or more. Firm size is likely to affect the probability of participating in training: on the one hand, larger firms have more structured human resource management policies and relatively more resources to devote to personnel development and might find less difficult to replace a worker who temporarily leaves for training (see for example Bassanini et al. 2005). On the other hand, the European Union adopted in June 2008 the “Small business Act for Europe”, a document that reflects the Commission’s political will to put into place a comprehensive SME policy framework for the EU and its Member States. Professional training and human capital development were central topics in the Competitiveness and Innovation Framework Programme and other EU funding programmes.

Columns (4)–(5) of Table 23.3 present the result of the IV estimates. The Hausman test reported at the bottom of column (4) confirms the need for an IV approach: it is not possible to exclude the endogeneity of training at the 95 per cent significance level. Once estimated with the IV procedure, the coefficient of training is positive and bigger than in the OLS estimation (see column 4). One could expect OLS estimates to be upward-biased due to reverse causation. Still, caution is required in the interpretation of the magnitude of the coefficient of interest because of the low precision of the estimates. Note, however, that the lack of precision cannot be imputed to a “weak instrument” problem: the first stage estimation reported in column (5) shows that the instrument has strong significant explanatory power. Finally, results are virtually unchanged if we consider the mean rather than the median size in order to classify firms into small, medium and large.

One potential threat to the validity of the proposed analysis comes from the fact that in none of the regressions we control for the industry sector. The sector correlates with firm size and is one of the sources of variability of the instrument we propose: results are valid if the sector does not have an independent direct effect on the employment decision. In order to test this assumption, we run an OLS regression similar to (3) but also including a set of dummies accounting for

the economic sector (according to NACE coding) in which the respondent was employed in Wave 4. The training coefficient changes only at the third decimal figure. This result is backed up by results of F-tests on no joint significance of the NACE sector dummies (F-statistic in OLS specification 0.0107, p-value 0.80; F-statistic in IV specification 0.0619, p-value 0.67). We run a number of further robustness checks and different specifications: we re-run the analysis by including first broader age-ranges and then narrower age-ranges, compared to the 50–65 age-range of the baseline. We used a less data demanding linear and polynomial specification in age rather than a full set of dummies. Finally, we excluded individuals who were working in 2010 and reported to be homemakers or disabled in 2012. In all those cases, the estimated coefficient for participation in training is virtually unchanged.

23.4 Older workers' training policies and well-being

In this chapter, we investigated whether participation in training helps keeping older workers in employment. We relate participation in training activities in 2010 (SHARE Wave 4) to changes in labour market status between 2010 and 2012 (SHARE Wave 5). We find that workers engaged in training are more likely to remain in employment two years later.

Our results provide evidence that continuous education reduces human capital depreciation and increases employability of older workers. Since there is a clear nexus between lower pensions and/or early retirement and material and social deprivation in old age, we argue that the risk of falling into poverty in old age would be reduced thanks to the adoption of training policies, which help to retain older workers in the labour market.

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24 Early retirement for the underprivileged? Using the record-linked SHARE-RV data to evaluate the most recent German pension reform

-
- ▶ This paper demonstrates the potential power of linking SHARE survey data with administrative data
 - ▶ Administrative records from the German public pension provider identify those workers who benefit from the new early retirement pathway “retirement with 63” while SHARE data describe their socio-economic and health status
 - ▶ The beneficiaries of the reform are not the underprivileged as claimed by the government – they actually have a higher average net household income
 - ▶ There is no evidence that the beneficiaries are more often ill than non-beneficiaries. In fact, the opposite appears to be the case
-

24.1 Introduction

As opposed to most other papers in this “First Results Book”, this paper is not based on international comparisons across the SHARE countries but advertises a special feature of the SHARE data in some countries which SHARE wants to expand in the future, namely record linkage to administrative data. Such data is produced by internal processes, e.g. in social insurances, especially public pension systems. Administrative data carry very precise information on employment and contribution histories. This permits the identification of eligible retirement pathways and the computation of pension claims. In turn, SHARE offers data on socio-demographics not available in administrative data. For retirement analyses, for instance, SHARE obtains information about the household context, rich socio-economic characteristics, education, and very detailed health measures. The resulting record-linked data sets thus combine the best of both data worlds.

As an illustration of the potential power of such record-linked combined data sets this paper analyses the most recent pension reform in Germany, based on the German “SHARE-RV” data which links German SHARE data with the employment and earnings records of the German public pension system. One of the main insights of the economics of aging is that longer life times need to be accompa-

nied by longer working lives in order to keep pension systems sustainable and to maintain living standards for the entire aging economy. Indeed, in most aging countries, reforms have increased the statutory retirement age, closed early retirement pathways, and/or reduced other incentives to retire early (Börsch-Supan 2013). Recently, however, several countries have experienced backlashes to such reforms – among others Germany. In 2014, Germany re-introduced early retirement at age 63 without actuarial adjustments (down from age 65) for workers with 45 years of contributions to the pension system (Deutscher Bundestag 2014). This very popular move by the new government was motivated by the desire to help underprivileged workers who are more likely to be worn out by long work histories, typically in less well-paid and physically demanding jobs.

The subject of this paper is whether the reform achieved this aim. The administrative data are crucial to identify the eligibility for the new early retirement pathway. In turn, SHARE data is needed to assess the health and socio-economic status of eligible workers. Only the combined data set can answer the question whether the eligible workers are indeed underprivileged.

24.2 Retirement pathways in Germany

Since 2007, Germany has three pathways to receiving old-age pensions (in addition to disability pensions):

- A. Normal retirement in Germany is at age 65 which is being gradually increased to age 67. Workers are vested for normal retirement benefits once they have contributed five years to the system. This includes contributions on behalf of the worker during unemployment and child care.
- B. Workers with at least 35 years of contributions can retire up to two years earlier but their benefits are reduced by 0.3 percent for each month of earlier retirement. Actually, years of education and years which have been spent for raising children (up to ten years) are counted even if no contributions were paid.
- C. Workers with at least 45 years of contributions are exempt from the increase of the normal retirement age to 67. However, those contribution years have been defined much more narrowly than the 35 years in the preceding paragraph: they neither include times of child raising nor of unemployment.

The reform in 2014 introduced a fourth pathway which is substantially more generous:

- D. Workers with at least 45 years of contributions can receive full pension benefits at age 63 without actuarial deductions. These 45 contribution years are

defined much broader than previously and include periods of child raising, schooling and short-term unemployment (periods up to two years, except if immediately before retirement). The new pathway's eligibility age of 63 will increase gradually to 65 in parallel to the increase of the normal retirement age (65 to 67). Hence, the main advantages of this new pathway apply to the cohorts born between 1952 and 1964, with decreasing attractiveness.

The intention to introduce this new pathway was to compensate individuals who worked especially long and hard during their life, and consequently suffered from extra burdens. Accordingly, times of long-term unemployment were not counted toward the 45 years as these do not reflect burdensome employment.

24.3 Linking SHARE to administrative data

SHARE-RV stands for the German subsample of SHARE that is linked to administrative records of the German public pension system. It is now integrated as a standard module of the German SHARE questionnaire. The combination of accurate administrative data and profound information about different aspects of the respondents' lives in SHARE-RV provide a wide range of research possibilities. Funding for this subproject was provided by the VolkswagenStiftung and the Forschungsnetzwerk Alterssicherung (FNA). (For more information on SHARE-RV, see <http://www.share-project.org/data-access-documentation/record-linkage-share-rv.html>).

SHARE-RV is based on direct linkage, meaning that the records of exactly the same SHARE respondents were linked using the respondents' Social Security Number (SSN) as a unique identifier. Respondents are asked for written consent during the interview on a form which also collects the respondent's SSN and some basic demographics to identify persons if the SSN is erroneous. Since not all respondents give consent and not all Germans are enrolled in the public pension system, SHARE-RV is a subset of the German SHARE data. The linkage rate in Wave 5 is 61.3 per cent, resulting in 3,485 individual observations. We use a preliminary version of this dataset with 3,339 linked observations and hence a linkage rate of 59.4 per cent. The administrative data base covers all insured employees with information about respondents' working history until the end of 2012. From the administrative data base, a large scientific use file with around 60,000 individuals is drawn yearly, which has been used in previous research (e.g. Börsch-Supan et al. 2014). Figure 24.1 shows the various samples and their overlaps.

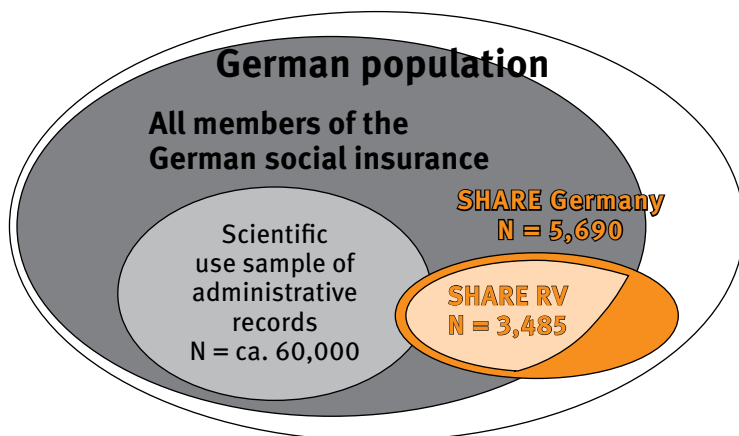


Figure 24.1: Samples drawn from administrative records and SHARE
Source: Authors' own figure

24.4 Results from the administrative data

A recent paper by Börsch-Supan et al. (2014, referred to as BSCR-2014) employs the large scientific user file of the administrative records in order to analyse who is eligible for the new early retirement pathway. These records provide almost exact information on income subject to social security taxation, time spent in employment, therefore pension entitlements, and time spent on sickness leave. These data do not, however, include other income sources, especially in a household context, and direct health data.

The BSCR-2014 paper shows that those employees who are eligible for the new “retirement at age 63” have, on average, higher pension entitlements as well as more continuous and stable working histories, higher incomes, but shorter periods of employment with social insurance contributions than those not eligible. Moreover, there is no evidence that eligible employees are more likely to be sick at the end of their working life – at least when measured by the days reported as sick leave. Rather, the contrary is the case. These are surprising results which contradict the originally claimed purpose of the legislation, namely to help the underprivileged who worked especially long and hard during their lives and consequently suffered from extra burdens. A drawback of the analysis by BSCR-2014 is that it is based solely on administrative data and no direct information on health and the household context is available to evaluate the overall effectiveness of the reform. In this paper we aim to fill this gap.

24.5 Results from SHARE-RV

SHARE-RV has a much richer data set than the administrative records of the German Social Security system. In particular, SHARE data include other income sources than those subject to social security taxation, measure income also in the household context, and feature a very broad set of health measures. SHARE data also identifies education and type of job in more detail than the administrative data. The sample size, however, is relatively small.

Our analytical sample includes individuals born between 1942 and 1952. These are not exactly the cohorts who are potentially eligible for the new retirement path. However, the eligible cohorts have not completed their employment histories until age 63 yet. Thus, our assumption is that employment patterns between these slightly older cohorts and the eligible cohorts do not differ fundamentally. The resulting sample size is 1,200 individuals.

We also need to overcome a major glitch in the German legislation which introduced the new early retirement pathway. The historical records of the German social security system did not systematically distinguish between short- and long-term unemployment. This is due to the fact that during most times, it was neither necessary nor legally allowed to store this information. Hence, employees who apply for “retirement at age 63” have to provide such data themselves in a written statement which is legally equivalent to a statement under oath. To determine eligibility for the new retirement path, we follow the approach by BSCR-2014 and distinguish four sets of assumptions in handling unemployment spells. We bracket possible outcomes with two extreme assumptions and present two intermediate sets of assumptions:

- a. No unemployment spells are counted as contribution years.
- b. Unemployment spells in which the administrative data cannot differentiate between short- and long-term unemployment are subtracted from the contribution years.
- c. Unemployment spells in which the administrative data cannot differentiate between short- and long-term unemployment are counted until the end of 1997; only spells explicitly coded as short-term unemployment are counted as contribution years from January 1998 onwards.
- d. All unemployment spells are counted as contribution years.

In the following figures, we denote individuals eligible for the new early retirement pathway as “WZ45x” where x refers to one of the four assumptions above. These individuals represent the “treatment group”.

As comparison (or “control”) group, we choose all individuals who are eligible for early retirement after 35 years of contributions with actuarial deductions (see Pathway B in section 24.2). This group of individuals is termed “WZ35”.

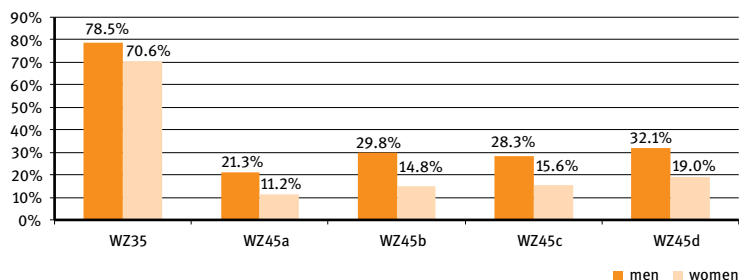


Figure 24.2: Eligibility for early retirement by gender and for different eligibility assumptions

Notes: n = 1,200

Source: Authors' own calculations, SHARE Wave 5 release 0

Even when using a conservative definition of eligible periods of unemployment, Figure 24.2 shows that the new pathway is relevant for a substantial share of employees. Around 30 per cent of male employees aged 60 and older could take early retirement without actuarial adjustments, either in three years or even sooner, depending on their current age. This corresponds to about 40 per cent of those who could draw pension benefits only with actuarial deductions before the reform. The share of female employees eligible for the new pathway is much lower – about 15 per cent of those in the chosen age range or about 22 per cent of those eligible to Pathway B.

Figure 24.3 replicates the finding of BSCR-2014 on the only health indicator available in the administrative data. Contradictory to the originally claimed intent, those eligible for the new early retirement pathway appear healthier, at least measured in terms of months of sickness leave between age 50 and 59. However, and opposed to the results derived from the much larger scientific use file of the administrative records, the estimates derived from SHARE-RV have large standard errors and the differences between treatment and control groups are not significant.

As opposed to the administrative records, SHARE-RV has a large number of health indicators. In the sequel of this paper, we select four health measures: the most generous and the most salient indicator with respect to labour force participation, and the most subjective and the most objective health measure available in the SHARE data.

We begin with the general health indicators. The most subjective health measure available in the SHARE data is self-assessed health (on a scale ranging from 1 – “excellent” to 5 – “poor”); its most objective counterpart is the number of chronic illnesses which the respondents have been told by their doctors.

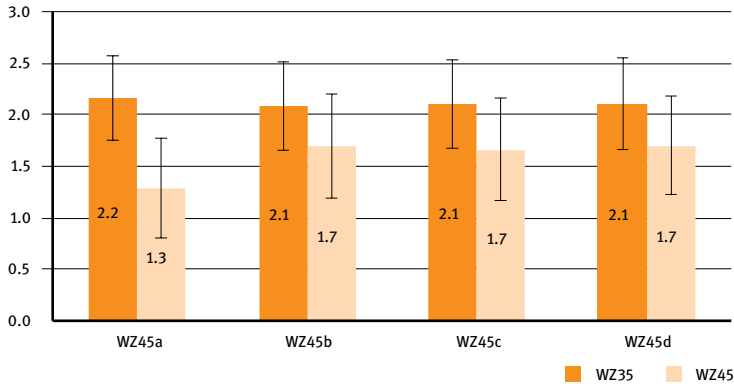


Figure 24.3: Months with sickness leave between age 50 and 59

Notes: $n = 848$

Source: Authors' own calculations, SHARE Wave 5 release 0

There are no substantive differences in terms of self-assessed health, measured in the left panel of Figure 24.4 as the share of individuals reporting only fair or poor health. The more unemployment years are counted towards the 45 contribution years, the worse is self-assessed health. Our interpretation is that this reflects the correlation between unemployment and health that has been found in earlier analyses, e.g. Schröder (2013). The differences, however, are neither statistically significant nor meaningful in substance.

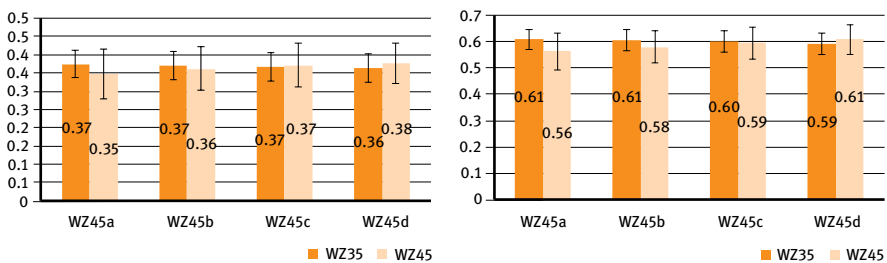


Figure 24.4: Share of individuals with self-assessed fair or poor health (left panel), and share reporting at least one chronic condition (right panel)

Notes: $n = 825$

Source: Authors' own calculations, SHARE Wave 5 release 0

A similar finding holds for chronic illnesses. The right panel of Figure 24.4 shows the share of individuals with at least one chronic illness that a doctor has told them about. Taking a very generous assessment of which unemployment spells

are counted against the 45 years of contributions, we find that those eligible for “retirement with 63” are slightly more likely to report at least one chronic condition.

While the general health measures show essentially no difference between treatment and control group, the more salient measures with respect to work ability produce very different results. We begin with the subjective measure. The left panel of Figure 24.5 shows that less than a quarter of those eligible for early retirement at age 63 self-report a health problem which limits the type or amount of work they are doing. This percentage is lower than for the individuals in the comparison group. While the difference between treatment and control group is large in substantive terms and robust across all four assumptions on unemployment duration, it is not statistically significant (probably due to the small number of 185 observations in the treatment group).

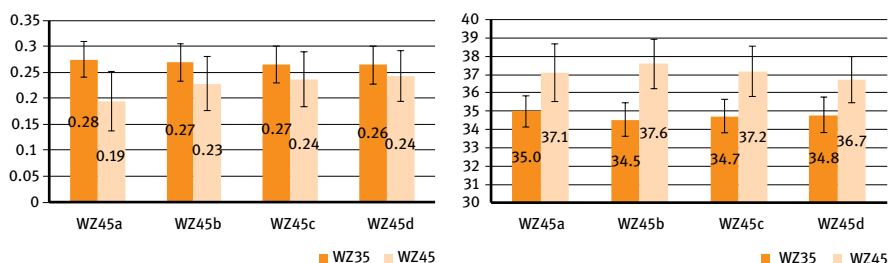


Figure 24.5: Share of respondents with limitations in the type or amount of work they can do (left panel), and grip strength in kilogram (right panel)

Notes: $n = 825$ (left panel), $n = 795$ (right panel)

Source: Authors' own calculations, SHARE Wave 5 release 0

This finding is even stronger for the objective measure. The left panel of Figure 24.5 shows grip strength, measured in kilogram. Grip strength is much stronger for those eligible for the new early retirement pathway, and the results are not only substantive in terms of kilogram but also statistically significant for the two less extreme assumptions about unemployment duration. We conclude that those individuals who are eligible for the new early retirement pathway are actually healthier, at least as it concerns their ability to work, than the control group.

They also live in households with a higher monthly household net income as the left panel of Figure 24.6 documents. The difference is about €2,000 or about 50 per cent, hence rather large in economic terms, but the variance in the treatment group is very large; hence, none of the differences is significant.

Finally, we try to identify “Facharbeiter” (specialists), i.e. highly qualified workers without a university education. This group of workers has attracted much attention in recent discussions about labour market shortages in Germany. Some

have advised to make additional efforts to increase migration by such workers; others have pointed out that they are most likely to enjoy early retirement by the new legislation. In an attempt to test the latter hypothesis, we have identified those individuals who have no university degree (measured by their ISCED code being below 5) but have a highly skilled occupation (measured by their ISCO code being below 4). The right panel of Figure 24.6 confirms that the share of such individuals is higher among those eligible for the new early retirement pathway as compared to the control group.

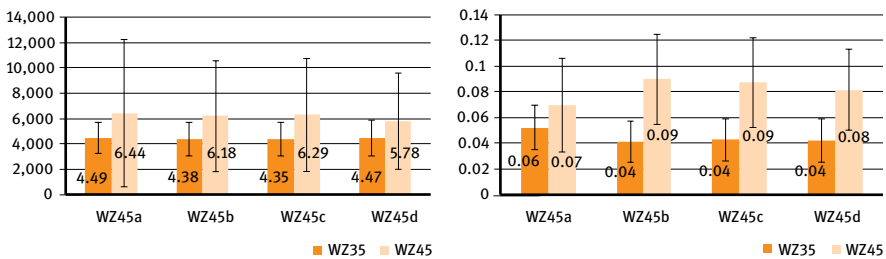


Figure 24.6: Monthly net household income in Euro (left panel) and share of workers with special qualification (right panel)

Notes: $n = 534$ (left panel), $n = 838$ (right panel)

Source: Authors' own calculations, SHARE Wave 5 release 0

24.6 Multivariate analysis

Since health is correlated with age, gender and socio-economic status, the final step in our analysis is to correct for these potentially confounding factors. Table 24.1 shows that the main conclusions from the bivariate comparisons in Figures 24.3 through 24.6 hold in a multivariate regression analysis. Our preferred specification is WZ45b. Those eligible for the new early retirement pathway had significantly fewer sick days when they were between age 50 and 59, and significantly fewer of them report work limitations. These results are robust with respect to linear, logit and probit specifications.

Table 24.1: Multivariate analysis of eligibility for retirement at 63

	WZ45a		WZ45b		WZ45c		WZ45d	
	Coeffi-	t-stat	Coeffi-	t-stat	Coeffi-	t-stat	Coeffi-	t-stat
	cient		cient		cient		cient	
Age	0.001	0.22	0.005	1.07	0.001	0.25	0.007	1.29
Female	-0.135	-4.56	-0.200	-6.23	-0.175	-5.44	-0.179	-5.39
HH net income	0.000	0.75	0.000	0.82	0.000	0.85	0.000	0.53
Specialist	-0.017	-0.26	0.095	1.36	0.075	1.06	0.056	0.77
ISCED	-0.064	-4.47	-0.094	-6.05	-0.095	-6.04	-0.117	-7.27
Sickdays 50–59	-0.007	-2.46	-0.006	-1.96	-0.007	-2.00	-0.008	-2.44
Work limitations	-0.079	-2.31	-0.067	-1.83	-0.050	-1.34	-0.045	-1.18
Constant	0.491	1.59	0.417	1.25	0.668	1.99	0.453	1.31
N	817		817		817		817	
R2	0.0513		0.0857		0.0729		0.0890	

Source: Authors' own calculations, SHARE Wave 5 release 0

24.7 Conclusions

Record-linked data sets such as SHARE-RV try to combine the best of both worlds: administrative data have very precise information on employment history and resulting pension claims while SHARE offers data on socio-demographics which are not available in administrative data, has income information on the household context and a broad set of very detailed health measures. In the illustrative example of this paper, the administrative data are crucial to identify the eligibility for the new early retirement pathway in Germany. In turn, SHARE data are needed to assess the health and socio-economic status of eligible workers. Only the combined data set can answer the question whether the eligible workers are indeed underprivileged.

The paper shows that SHARE cannot afford much smaller sample sizes, especially when targeted at a special group of individuals such as those eligible for a new early retirement pathway or similar targeted policy reforms because this would make it even more difficult to establish statistically significant results.

In terms of substance, the results taken together produce quite a clear picture. If the aim of the new German early retirement pathway was to target the underprivileged with bad health, then the SHARE-RV data provides no evidence that the policy achieved that aim – rather, the contrary appears to be the case.

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25 The use of PC at work and job satisfaction

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- ▶ There is a strong association between the use of PC at work (and PC literacy) and the overall job satisfaction and intended early retirement, particularly for white collar workers
 - ▶ The analysis shows that individuals with high PC skills and having a job that requires the use of a computer are more satisfied with their jobs and less keen to retire early
 - ▶ Over-skilled women (who have PC skills but do not need them for their jobs) are more satisfied with their jobs and less likely to desire to retire as soon as possible
-

25.1 Early retirement and job quality

Understanding the determinants of early retirement has been a long standing focus of socio-economic literature, given the low participation rates of the young old in most OECD countries (OECD 2011). Population ageing is challenging the sustainability of the social security system; therefore, increasing the participation of older workers is placed at the core of the policy agenda. Together with sustainability concerns, discouraging early exit from the labour market reduces the risk of enduring consequences on individual and household well-being later in life (Angelini et al. 2009). Furthermore, the psychological literature identifies work as a positive contributor to social inclusion and well-being, since it typically provides opportunities for social interactions and it helps retaining social ties (Spelten et al. 2002).

A strand of the literature has identified poor quality of work as an important determinant of early exits from the labour market. These are observed in employees with physically demanding jobs and with monotonous repetitive work (Henkens et al. 1994). Poor quality of work is frequently associated with an increase in the intention to leave and a reduction in performance and motivation, as shown among others by Siegrist et al. (2006) and Dal Bianco et al. (2015). The role of poor work quality may become particularly important when either working conditions cannot be adapted to the changed needs of the employees or when older workers are not able to adapt their skills to the new needs of the firms.

The skill-biased technology change literature has shown that observed and unobserved workers' skills are among the most important determinants of workers' wages and employment status (Dostie et al. 2010). The high diffusion, in

the last decades, of Information and Communication Technologies (ICTs) across sectors and professions has required workers to update constantly their skills. In this context, older workers with poor technological skills tend to become less and less productive, leading to lower expected wages, worse expected job conditions and job quality. This makes their early retirement more likely (Biagi et al. 2013) or at least more desirable.

In this chapter we investigate how the use of Personal Computer (PC) at work and PC literacy interrelate with job satisfaction and the intention to take early retirement. We consider a sample of employees aged between 50 and 60. To measure the technology skills of workers we take advantage of the new variables on the use of computer at work and the self-reported PC literacy included in the Wave 5 questionnaire. Our estimates show that individuals who have high PC skills and a job that requires the use of PC are more satisfied and less likely to desire to retire as soon as possible compared to workers with low PC skills whose job requires using a PC. This is true for both men and women. Also, over qualified female workers (i.e. women with high PC skills whose job does not require the use of a PC) are more satisfied and less keen to retire as soon as possible. Once our analysis is conducted separately for white collar and blue collar workers, we find that our results are driven by the former group.

25.2 The use of PC in Europe and the relation with job satisfaction and intended early retirement

Despite the large diffusion of ICTs around the world, the use of PC at work and technology skills show a large variability among the European countries participating in SHARE. Figure 25.1 shows the percentage of employees, aged 50–60, using the PC at work by country (left panel), and the level of PC literacy (right panel).

The common distinction between Northern and Southern countries can be observed also in the use of computer at work. For Sweden, Denmark and the Netherlands (and for Switzerland) more than 80 per cent of workers use a PC at work, while this percentage goes down to 50–60 per cent for Mediterranean countries (such as Spain and Italy) and Eastern countries. An analogous pattern arises when looking at the cross-country differences in PC literacy. Denmark has also a large share of workers with advanced computer knowledge and very few individuals declare to have never used the computer. Spain shows the largest share of workers who have basic or poor PC skills.

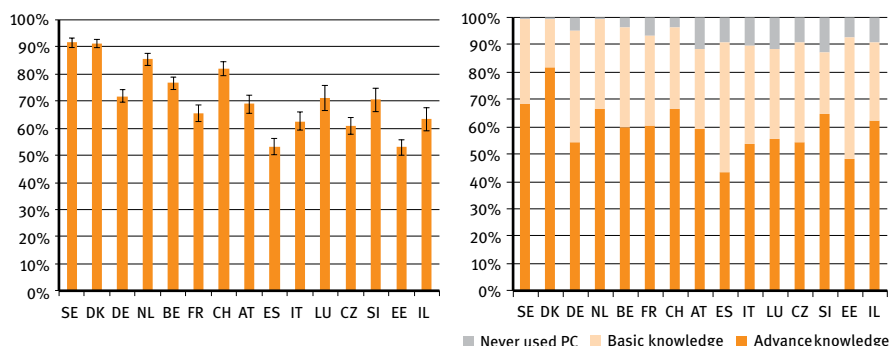


Figure 25.1: Percentage of workers using PC at work (left panel) and distribution of PC literacy levels among workers (right panel)

Notes: n=11,745

Source: SHARE Wave 5 release 0

Figure 25.2 shows the relation between the level of job satisfaction and the use of computer at work. In Estonia, Italy and Slovenia less than 30 per cent of the respondents declare to be strongly satisfied with their job. This percentage approaches 60 per cent for Switzerland, Denmark and Sweden.

The figure shows that the relation between job satisfaction and the use of computer at work is positive. In other words, in countries where there is a higher share of workers using a PC at work there is a higher share of individuals who are satisfied with their job. This finding is consistent with the literature assessing the positive effect of PC use at work and PC literacy on the labour market attachment of the young old. As in the previous figure, a clear cross-country differential arises. Nordic countries are positioned in the upper-right part of the graph (high share of PC users and high share of highly satisfied workers), while Mediterranean countries and Eastern countries are in the bottom-left corner of the figure.

In the same way, Figure 25.3 shows the relation between intended early retirement and the use of computer at work. The graph shows a clear negative relationship between the desire to retire as soon as possible and the use of PC at work. Again we can detect a North-South gradient.

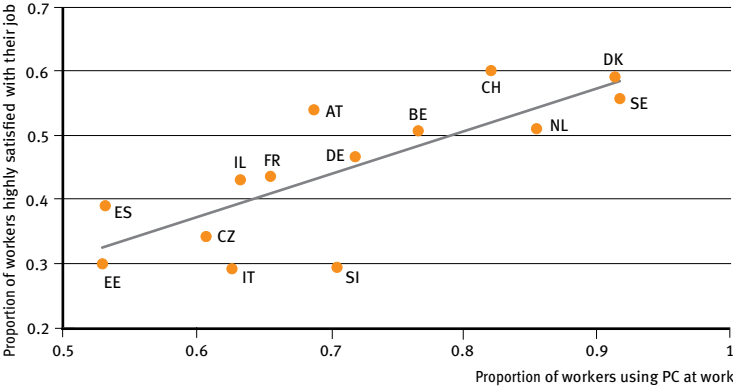


Figure 25.2: Correlation between the level of job satisfaction and the use of PC at work

Notes: n=5,965

Source: SHARE Wave 5 release 0

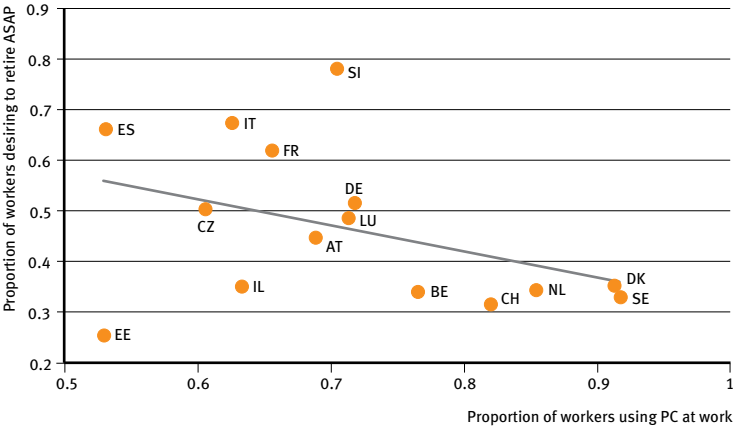


Figure 25.3: Correlation between the desire to retire as soon as possible (intended early retirement) and the use of PC at work

Notes: n=5,965

Source: SHARE Wave 5 release 0

25.3 How do PC use and PC literacy relate to job satisfaction and intended early retirement?

To investigate the relation between the use of PC at work (combined with the PC skills level) and the workers' well-being, we estimate a linear probability model (LPM) where the outcome variables are overall job satisfaction (being highly satisfied with own job) and the desire to retire as soon as possible respectively. As before, our estimation sample includes male and female employees aged between 50 and 60 years of age. Additionally, in the analysis we control for individual characteristics, including age, age squared, education, having children, verbal fluency, numeracy and health, job characteristics (public/private sector, white/blue collar and industry) and country dummies. We add a control to capture the institutional characteristics of the pension system, i.e. the number of years to minimum retirement age. We run separate analyses for men and women and for white and blue collar workers. Once missing values for relevant variables are dropped, we are left with a sample of about 2,400 males and 3,200 females.

To capture the effect of the ICT we define four groups. The first group is composed by workers having high PC skills in jobs that require the use of a PC; to the second group belong workers with high PC skills and jobs that do not require the use of a PC; the third group is composed by workers who do not know how to use a PC and do not need to use it at work. Finally, the fourth group is composed by the most disadvantaged workers: they do not have PC skills but have to use a PC at work. In our regressions, these groups are identified by a set of dummy variables. The fourth group is used as reference group.

Table 25.1 presents the estimation results for overall job satisfaction for men and women. The results show that workers who have a good level of PC literacy and have a job requiring the use of a PC are more likely to be highly satisfied with their job than workers who do not have PC skills but have to use it at work. This is true for both men and women, with stronger effect for men (a nine percentage points increase for men versus a five percentage points increase for women). Only for women, the group of workers having good PC skills but not using the PC at work has a significantly higher probability to be highly satisfied than the workers belonging to the control group (+ ten percentage points). This effect might be due to the fact that women in this group are over-skilled with respect to the job tasks they are required to carry out, thus they are probably less stressed. Instead, men are more satisfied when their skills match the job they are doing.

Table 25.1: Linear Probability Model estimation results of the probability to be highly satisfied with own job, by gender

	Male			Female		
	coef	s.e.		coef	s.e.	
PC required, high PC skills	0.085	0.030	***	0.052	0.024	**
PC not required, no PC skills	0.037	0.034		0.031	0.029	
PC not required, high PC skills	0.036	0.046		0.107	0.041	***
Country dummies	YES			YES		
Observations	2,353			3,195		

Significance: *** = 1 %; ** = 5 %; * = 10 %

Note: Controlled for age, age squared, education, having children, numeracy, verbal fluency, health status, public or private employee, ISCO (white or blue collar), NACE (primary, manufacturing, services, other industry), years to minimum retirement age, country dummies.

PC required at work and no PC skills, public sector employee, high education, poor health, blue collar, other industry and Germany are used as baseline

Source: SHARE Wave 1, Wave 2 release 2.6.0, Wave 4 release 1.1.1, Wave 5 release 0

In the interpretation of the results, we should take into account that women who are working past age 50 are, particularly in some countries, a selected group and they may have unobservable characteristics related to work attitude that can influence their level of job satisfaction. Additionally, for both genders, there might be a problem of sorting. Individuals with higher job skills sort themselves into jobs requiring the use of PC. Since we do not know the initial level of ICTs knowledge of the individuals when they started their job, we cannot directly control for the problem of sorting. However, we try to attenuate this effect controlling for the type of occupation and industry, using these job characteristics as covariates and running separate analysis for white and blue collar workers.

Tables 25.2a and 25.2b present the estimation results for the overall job satisfaction by gender and type of occupation. We find that the significance of the relationship between PC use, PC literacy and job satisfaction vanishes for the blue collar group, whereas our previous results are overall entirely confirmed for white collars. This evidence is probably driven by the difference between blue collar and white collar jobs in terms of requirements of ICTs knowledge on the workplace.

Table 25.2a: Linear Probability Model estimation results of the probability to be highly satisfied with own job, by type of occupation – Men

	White Collar			Blue Collar	
	coef	s.e.		coef	s.e.
PC required, high PC skills	0.086	0.035	**	0.058	0.058
PC not required, no PC skills	0.032	0.049		0.020	0.049
PC not required, high PC skills	0.058	0.070		0.037	0.064
Country dummies	YES			YES	
Observations	1,571			782	

Significance: *** = 1 %; ** = 5 %; * = 10 %

Note: Controlled for age, age squared, education, having children, numeracy, verbal fluency, health status, public or private employee, NACE (primary, manufacturing, services, other industry), years to minimum retirement age, country dummies. PC required at work and no PC skills, public sector employee, high education, poor health, other industry and Germany are used as baseline

Source: SHARE Wave 1, Wave 2 release 2.6.0, Wave 4 release 1.1.1, Wave 5 release 0

Table 25.2b: Linear Probability Model estimation results of the probability to be highly satisfied with own job, by type of occupation – Women

	White Collar			Blue Collar	
	coef	s.e.		coef	s.e.
PC required, high PC skills	0.065	0.025	**	-0.042	0.079
PC not required, no PC skills	0.040	0.033		-0.035	0.070
PC not required, high PC skills	0.128	0.051	**	0.031	0.081
Country dummies	YES			YES	
Observations	2,651			544	

Significance: *** = 1 %; ** = 5 %; * = 10 %

Note: Controlled for age, age squared, education, having children, numeracy, verbal fluency, health status, public or private employee, NACE (primary, manufacturing, services, other industry), years to minimum retirement age, country dummies. PC required at work and no PC skills, public sector employee, high education, poor health, other industry and Germany are used as baseline

Source: SHARE Wave 1, Wave 2 release 2.6.0, Wave 4 release 1.1.1, Wave 5 release 0

The second outcome we analyse is the probability of intended early retirement. Table 25.3 presents the estimation results by gender for the relevant variables.

Both male and female workers with high PC literacy and using the computer at work are less likely to desire to retire as soon as possible (this probabil-

ity decreases by seven percentage points for men and six percentage points for women). Again, as for the overall job satisfaction, the over skilled women (i.e. women with high PC skills doing a job for which PC use is not required) are less likely to desire to retire as soon as possible (– ten percentage points).

When distinguishing between white and blue collar workers (see Tables 25.4a and 25.4b), the effect is again detected only for the white collar group.

The OLS estimation method we use in all our specifications (the Linear Probability Model) allows us to analyse the associations between the use of PC at work (and the related PC literacy) and the outcomes of interest net of the effect of a set of observable characteristics. However, our analysis does not identify a causal relation and our estimates might suffer from endogeneity due to reverse causality or the omission of relevant factors. More specifically, individuals who are more satisfied of their job and have a higher labour market attachment might invest more on their human capital and end up with higher PC skills. In addition, workers who are keen on their jobs and plan to retire later might be more willing to invest in their PC skills since they face a longer time horizon over which the costs of such investments can be recouped. Therefore, our OLS estimation procedure is likely to produce upward biased estimates of the causal effects of PC skills on job satisfaction and the desire to retire as soon as possible.

Table 25.3: Linear Probability Model estimation results of the probability to desire to retire as soon as possible, by gender

	Male			Female		
	coef	s.e.		coef	s.e.	
PC required, high PC skills	–0.073	0.029	**	–0.064	0.023	**
PC not required, no PC skills	0.011	0.034		0.035	0.029	
PC not required, high PC skills	–0.056	0.045		–0.093	0.040	**
Country dummies	YES			YES		
Observations	2,353			3,194		

Significance: *** = 1 %; ** = 5 %; * = 10 %

Note: Controlled for age, age squared, education, having children, numeracy, verbal fluency, health status, public or private employee, ISCO (white or blue collar), NACE (primary, manufacturing, services, other industry), years to minimum retirement age, country dummies. PC required at work and no PC skills, public sector employee, high education, poor health, blue collar, other industry and Germany are used as baseline

Source: SHARE Wave 1, Wave 2 release 2.6.0, Wave 4 release 1.1.1, Wave 5 release 0

Table 25.4a: Linear Probability Model estimation results of the probability to desire to retire as soon as possible, by type of occupation – Men

	White Collar			Blue Collar	
	coef	s.e.		coef	s.e.
PC required, high PC skills	-0.075	0.035	**	-0.015	0.056
PC not required, no PC skills	0.042	0.050		0.020	0.049
PC not required, high PC skills	-0.050	0.070		-0.054	0.063
Country dummies	YES			YES	
Observations	1,571			782	

Significance: *** = 1 %; ** = 5 %; * = 10 %

Note: Controlled for age, age squared, education, having children, numeracy, verbal fluency, health status, public or private employee, NACE (primary, manufacturing, services, other industry), years to minimum retirement age, country dummies. PC required at work and no PC skills, public sector employee, high education, poor health, other industry and Germany are used as baseline

Source: SHARE Wave 1, Wave 2 release 2.6.0, Wave 4 release 1.1.1, Wave 5 release 0

Table 25.4b: Linear Probability Model estimation results of the probability to desire to retire as soon as possible, by type of occupation – Women

	White Collar			Blue Collar	
	coef	s.e.		coef	s.e.
PC required, high PC skills	-0.062	0.024	**	-0.090	0.090
PC not required, no PC skills	-0.034	0.032		-0.065	0.077
PC not required, high PC skills	-0.105	0.050	**	-0.077	0.084
Country dummies	YES			YES	
Observations	2,650			544	

Significance: *** = 1 %; ** = 5 %; * = 10 %

Note: Controlled for age, age squared, education, having children, numeracy, verbal fluency, health status, public or private employee, NACE (primary, manufacturing, services, other industry), years to minimum retirement age, country dummies. PC required at work and no PC skills, public sector employee, high education, poor health, other industry and Germany are used as baseline

Source: SHARE Wave 1, Wave 2 release 2.6.0, Wave 4 release 1.1.1, Wave 5 release 0

25.4 The importance of being trained

In this chapter we investigate the relation between the use of PC at work (and the related PC literacy) with the overall job satisfaction and the intended early retirement.

We make use of the new questions available in the Wave 5 questionnaire regarding the use of computer at work and the self-reported PC skills. We find that having high PC skills and having a job that requires the use of a PC is associated with higher job satisfaction and lower probability to desire to retire as soon as possible for both genders, particularly so for white collar workers. Only for women, we find that over-skilled workers (i.e. those who have high PC skills but are not required to use a PC at work) are more satisfied and less keen to retire as soon as possible. These results suggest that the use of a PC on the job combined with good ICT skills helps to increase the self-perceived quality of work and reduce the intention to retire early. In a policy perspective, our findings call for active labour market policies aimed at training older workers who typically have more difficulties to adapt their skills.

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26 Forgone visits to the doctor due to cost or lengthy waiting time among older adults in Europe

-
- ▶ Close to five per cent of older Europeans forwent a visit to the doctor in the previous year due to its cost
 - ▶ More than six per cent did without such visits because of lengthy waiting time
 - ▶ Forgone healthcare is related to one's sociodemographic background, social networks, health and financial situation
 - ▶ Forgone healthcare is related, first and foremost, to having limited financial means
-

26.1 The healthcare funding problem

Social exclusion is a process by which individuals or entire communities are systematically blocked from rights, opportunities and resources that are normally available to members of society and which are necessary for their well-being. Healthcare is one of the main pillars of well-being. In international law, healthcare is a basic entitlement that is defined as the right of all individuals and members of their households to a standard of living that suffices to assure their health and welfare, including essential medical care and security in the event of illness. Violation of this entitlement is, in essence, social exclusion. The age-related increase in morbidity and the rising price of available medical care may cause more and more households to relinquish needed healthcare (OECD 2014). The current chapter examines the extent and the correlates of forgone healthcare by older adults, as one example of healthcare-related social exclusion.

The healthcare system is funded by two sources: public and private (out-of-pocket). Public funding is comprised of all sources that originate in the state budget and/or stem from earmarked taxation, including health insurance premiums. Private funding is household expenditure for the purchase of healthcare services, whether covered by public health insurance or not (Bremer 2014). Healthcare systems that are largely publicly funded are central in all welfare states, and the expenditures on them increase with each passing year (Hacker 2004). A healthcare system that is exclusively publicly funded is susceptible to a moral hazard, that is, a situation in which some people take more risks because others bear the burden of those risks. It may also impose an excessive burden on the tax-

payers, as well as constituting a disincentive to family support of elders who need long-term care (Mayhew et al. 2010). In contrast, a healthcare system that relies solely on private funding may marginalise socioeconomically challenged population groups. Such systems tend to widen the disparities in health, in general, and in the access to healthcare services, in particular. They also may erode human capital, an important factor in economic growth (O'Donnell et al. 2007).

According to De Nardi et al. (2010), out-of-pocket (OOP) medical expenses rise in tandem with age. In an analysis based on the American Health and Retirement Study (HRS), McGarry and Schoeni (2005) found that out-of-pocket spending is especially large toward the end of life and claims a particularly large share of income among older persons with low-incomes. According to Goda et al. (2011), the extent of out-of-pocket expenditure increases by 29 per cent, on average, after one is widowed, and much of this outlay accrues to home nursing care.

It should also be noted that morbidity rates rise with age (Kavé 2014). Moreover, elders' consumption of healthcare services is unique in the kinds of illnesses diagnosed and the level of expenditure required due to the frequency of need for prolonged medical and inpatient care. According to Cavanaugh and Blanchard-Fields (2011), the incidence of chronic illnesses rises with age, recovery is uncommon, and the illnesses are often accompanied by functional disabilities.

Forgone care is related to variables in four key areas: sociodemographic background, social network, health and economics. In terms of background, forgone care differs by age, gender and education (Wei et al. 2006). Individuals may also decide whether or not to continue treatments that they should be receiving depending upon their perceptions of the informal support that they may have access to, i.e. their social networks (Diamant et al. 2004). Health is also related; for example, people with multiple morbidities may forgo part of the prescribed treatments (Piette et al. 2004). Finally, the economic burden of OOP medical expenditures may be crucial in the decision as to whether or not to continue making the expenditure (Litwin & Sapir 2009).

Two key reasons for forgone healthcare are cost and waiting time. Difference in OOP payments and the proportion of one's income devoted to OOP payments may lead to cost induced relinquishment of healthcare services. In addition, the increasing demand for medical care that accompanies population aging, along with a lack of growth in the supply of healthcare, may result in longer waiting times for receipt of needed services. Long waiting time may also encourage older adults to relinquish needed care.

26.2 How forgone doctor visits were studied

The research that is at the core of this chapter is based on data from the 5th wave of SHARE among all respondents aged 50+, and focuses on two questions that directly address the issue of forgoing care: “Was there a time in the past 12 months when you needed to see a doctor but could not because of cost?” (HC114) and “Was there a time in the past 12 months when you needed to see a doctor but could not because you had to wait too long?” (HC115).

Independent variables in the analysis reflected the four key groupings that were addressed in the Introduction: sociodemographic background, social networks, health and economics. The sociodemographic variables include age, gender and education. The social network characteristics include marital status, household size, child contact, presence or non-presence of grandchildren, and social network support. We note that the “social network support” variable has two values as follows: (1) “received social network support” reflects if the individual reports having received, in the past twelve months, some form of assistance from a family member/friend/neighbour or a material gift or some form of support from any person in or out of the household; (0) “did not receive social network support” reflects no such assistance.

The *health* variables include several indicators: difficulties in Activities of Daily Living (ADL), difficulties in Instrumental Activities of Daily Living (IADL), mobility limitations, chronic illnesses, and number of medical symptoms. The variable “supplementary health insurance status”, represents whether the respondent has auxiliary health insurance that pays for services not covered by basic health insurance, for example in-patient services, examination, visits, dental care, other treatments, and/or drugs. Two measures of quality of life were also addressed as health indicators: the CASP index and a global measure of life satisfaction. The *economic* variables addressed were as follows: work status, total household income (on a quartile distribution basis) and the extent of the household’s perceived ability to meet its economic needs (“make ends meet”).

Separate models were estimated for each outcome: forgone care due to cost and forgone care due to waiting time. The country variable was controlled in estimating each set of correlations. The main results of the respective models are shown in Figures 26.2–26.5. Each figure presents the odds ratios of significant variables that are related to the likelihood of postponing meeting with a doctor due to cost or the need to wait.

26.3 What explains forgone doctor visits?

An initial analysis of the observations shows that 4.5 per cent of respondents aged 50+ forwent a visit to the doctor in the twelve months preceding the survey due to its cost. The phenomenon was hardly evident in Denmark, Sweden, the Netherlands, Switzerland, Slovenia and Austria, in which the rate of affirmative responses ranged from 0.4 per cent to 1.5 per cent. In contrast, a relatively higher proportion of those aged 50+ in Israel, Italy and Estonia reported having had to forgo a visit to the doctor due to its cost (Figure 26.1). Furthermore, a gender disparity was found in relation to such forgone doctor visits; women were 50 per cent more inclined to forgo care for this reason than men (5.3 per cent vs. 3.5 per cent, respectively).

As for doctor visits that are forgone because of lengthy waiting time, it was found that 6.4 per cent of those aged 50+ did without such visits for this reason in the year preceding the survey. The phenomenon was rare among older adults in the Netherlands and Switzerland (0.8 % on average) and relatively more frequent among those in Israel, Italy, and Estonia, who reported average rates of 13.1–19.1 per cent, respectively (Figure 26.1). Here too, a gender disparity was found, with women 33 per cent more likely to forgo care than men due to waiting time (7.2 per cent vs. 5.5 per cent, respectively).

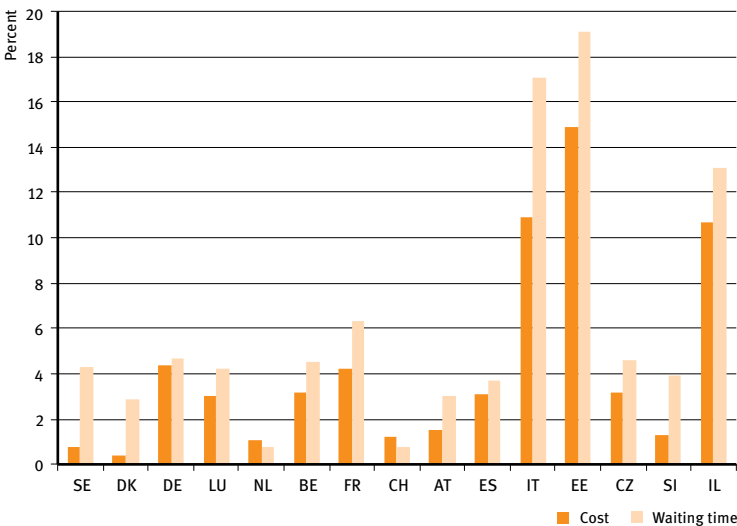


Figure 26.1: Forgone healthcare – postponing meeting with a doctor due to cost or need to wait – by country (per cent)

Notes: n = 46,327 (cost), 46,331 (waiting)

Source: SHARE Wave 5 release 0

In general, among all older Europeans who forwent a visit to the doctor, some 30 per cent did so because of cost, 51 per cent due to waiting time, and the remainder (slightly less than a fifth) for both reasons. These results are consistent with findings from an OECD investigation of the proportion of persons who forwent a medical examination due to cost, waiting time, or travel distance (OECD 2011 & 2014). We note in this regard, however, that the OECD findings relate to the population at large, whereas the current SHARE findings pertain solely to the extent of forgone care among older adults (50+).

We turn next to the multivariate analysis of forgone care. In regard to forgone visits to a doctor due to cost, the econometric analysis showed that older-old adults were less likely to have this outcome than their younger-old counterparts (Figure 26.2). Men were less likely than women to forgo a visit to the doctor due to its cost, while education was found to be unrelated. Married people were less likely than those who did not live with a spouse to forgo a visit to the doctor due to its cost (Figure 26.3). Household size and the presence of grandchildren were positively related to forgone doctor visits. Social network support was found to lessen the likelihood of older adults to forgo a visit to the doctor on the grounds of its cost.

As for the effect of the health indicators, the results were uneven (Figure 26.4). The number of chronic illnesses, symptoms and medical constraints strengthened the likelihood to forgo a visit to the doctor while IADL limitations weakened it. In addition, having supplementary health insurance, greater satisfaction with life, and higher CASP scores mitigated the likelihood of avoiding the doctor due to its cost. Participation in the labour force was related to more missed doctor visits, while generally greater income and greater perceived household ability to meet economic needs decreased this tendency (Figure 26.5).

Gender comparison of these same independent variables in relation to forgoing a doctor visit due to its cost yields some additional insights (not shown in figures). The forgone visits rise commensurately with years of education among men, but not among women. Having weekly contact with one's child reduces the likelihood of forgoing among men, while the presence of grandchildren strengthens older women's likelihood to forgo a doctor visit because of cost. IADL limitations weakened the likelihood to forgo a visit among women, while a higher number of medical constraints among women increased their predisposition to forgo. The likelihood of avoiding the doctor was greater among employed men compared to employed women, while greater income dampened men's tendency to forgo a visit to the doctor on account of its cost.

Next we examine the correlates of forgone visits to the doctor because of lengthy waiting time. We found that forgone care for this reason increased along with years of education (Figure 26.2). In addition, older adults with social

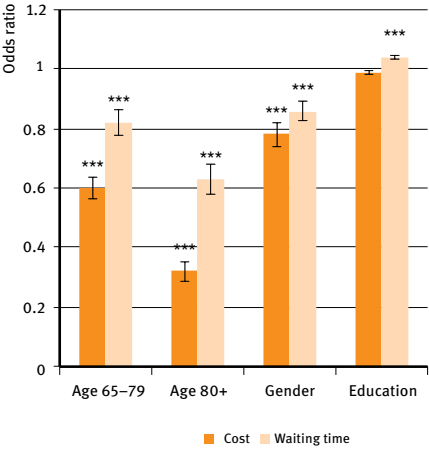


Figure 26.2: Likelihood of postponing meeting with a doctor due to cost or need to wait – by sociodemographic factors

Significance: * = 10 %; ** = 5 %; *** = 1 %

Notes: n = 46,327 (cost), 46,331 (waiting); odds ratios and standard errors; age (reference group: age 50–64); gender (female=0, male=1); education (number of years of education, range 0–25)

Source: SHARE Wave 5 release 0

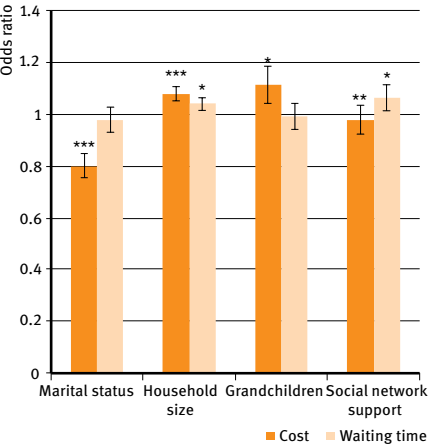


Figure 26.3: Likelihood of postponing meeting with a doctor due to cost or need to wait – by social factors

Significance: * = 10 %; ** = 5 %; *** = 1 %

Notes: n = 46,327 (cost), 46,331 (waiting); odds ratios and standard errors; marital status (0=no spouse, 1=spouse); household size (number of members living at household, range 1–12); grandchildren (0=no grandchildren, 1=having grandchildren); social network support (0= received social network support, 1=not received social network support)

Source: SHARE Wave 5 release 0

network support were more likely to refrain from seeing the doctor due to long waiting time (Figure 26.3). As for the effect of the health indicators, having supplementary health insurance increased the likelihood of avoiding the doctor due to long waiting time (Figure 26.4). Household income had the same effect (Figure 26.5).

Gender comparison (also not seen in figures) shows that women aged 65–79 were less likely to forgo a visit to the doctor due to lengthy waiting time than men in the same age bracket. In addition, household size strengthened older male’s likelihood to forgo a visit to the doctor. This same outcome increased with ADL among women (not shown in the figure), while IADL weakened it. In addition, an increase in women’s income mitigated the likelihood of forgone care due to waiting time, while there was no significant effect among older males.

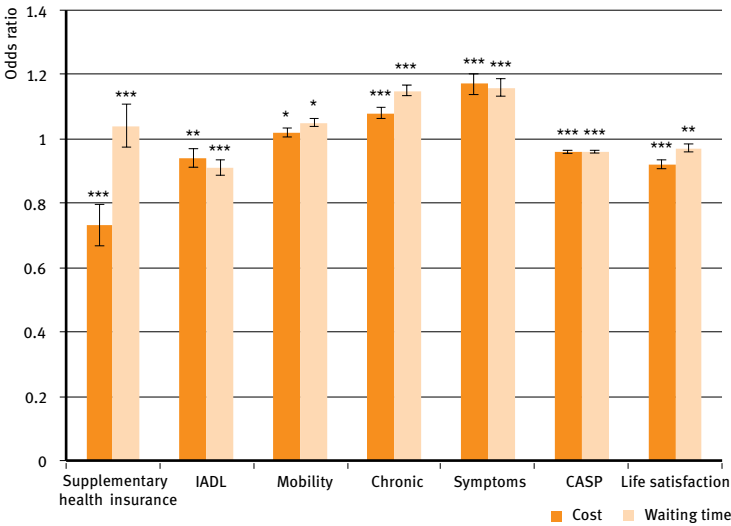


Figure 26.4: Likelihood of postponing meeting with a doctor due to cost or need to wait – by health and quality of life factors

Significance: * = 10 %; ** = 5 %; *** = 1 %

Notes: n = 46,327 (cost), 46,331 (waiting); odds ratios and standard errors; supplementary health insurance (0=not having supplementary health insurance, 1=having supplementary health insurance); IADL (number of difficulties in Instrumental Activities of Daily Living, range 0–7); mobility (number of mobility limitations, range 0–10); chronic (number of chronic diseases, range 0–14); symptoms (number of medical symptoms, range 0–4); CASP (CASP index, range 12–48); life satisfaction (range 0–10)

Source: SHARE Wave 5 release 0

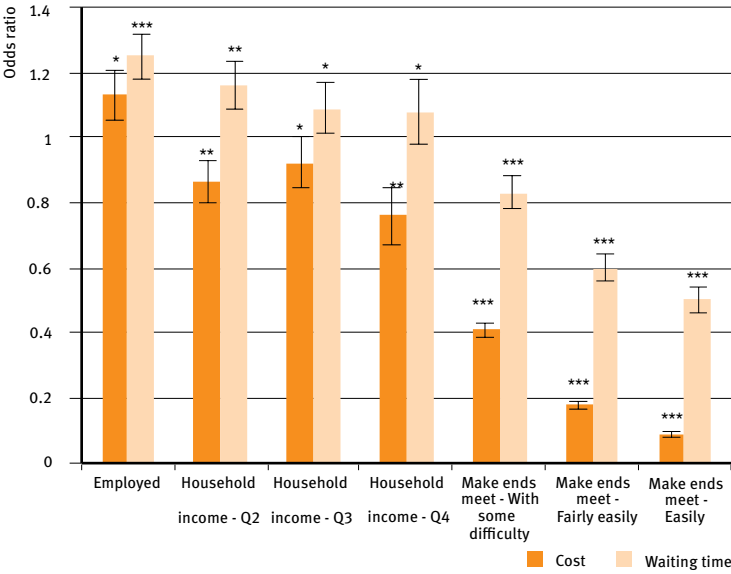


Figure 26.5: Likelihood of postponing meeting with a doctor due to cost or need to wait – by economic factors

Significance: * = 10 %; ** = 5 %; *** = 1 %

Notes: n = 46,327 (cost), 46,331 (waiting); odds ratios and standard errors; employed (0=not employed, 1=employed), house income (reference group: quartile 1); makes ends meet (reference group: with great difficulty)

Source: SHARE Wave 5 release 0

26.4 Forgone doctor visits and exclusion

The importance of medical care for the older adult population is undisputed. Some aspects of healthcare are entrusted to government-budgeted healthcare systems; others rest in the hands of the individual. With the increase in life expectancy and the decline in the proportion of publicly funded types of care, it is important to understand the proportion of the older European population that is currently excluded from receiving a needed health treatment – meeting and consulting with a doctor – and to understand the social and economic correlates of such exclusion.

The findings in this chapter show that four key grouping of indicators are related to the propensity to forgo a visit to the doctor due to cost or waiting time – sociodemographic background, social networks, health and economics. Each indicator has a marginal effect on the individual's predisposition; together,

however, they create a complex and detailed web of considerations that motivate people over time. As this chapter shows, the tendency to forgo doctor visits is related to a variety of factors.

The main finding showed that generally greater income lessened the likelihood of avoiding a doctor visit due to its cost. In addition, greater perceived household ability to meet economic needs lessened forgone doctor visits due to both cost and waiting time. These outcomes reinforce the proposition that wealthier individuals tend to be risk-averse and more willing to broaden the span of healthcare services that they access in order to optimise their health security. Moreover, the objective income variable (household income) had almost twice the effect on the likelihood of forgoing a physician visit than that attributed to the subjective income variable, that is, the perceived ability of the household ability to make ends meet. It seems, therefore, that forgone healthcare is indeed related to having limited financial means.

If the goal of public policy is to promote the social inclusion of all older adults within the fabric of society, efforts should be made to prevent their need to forgo healthcare, an act that essentially augments their exclusion from social life. This is because good physical and mental health facilitate active aging and social inclusion. In contrast, failure to maintain good physical and mental health in older age challenges the ability of older people to take part in the larger social sphere. A key means by which to prevent forgone care, as this chapter illustrates, is to promote better income security among the older population.

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Hendrik Jürges

27 Health insurance coverage and access to care among European elders: cross-national differences and social gradients

-
- ▶ Unmet health care needs and insufficient health insurance coverage still exist among European elders and vary widely across countries
 - ▶ Insufficient access and lack of insurance coverage are most prevalent in poorer countries with low health care expenditures and in countries with large income inequalities
 - ▶ Health insurance coverage and access to care are socially graded within almost all countries and may contribute to social inequalities in health status
-

27.1 Access to health: a key dimension of social inclusion

Pro-rich inequalities in health are a well-documented and ubiquitous phenomenon. They exist not only in poor countries but also in most (if not all) rich countries. Moreover, within countries, inequalities in health persist through the entire life-cycle, from the cradle to the grave.

Several explanations have been put forward to explain the persistent nature of the social gradient in health. For instance, better educated individuals have access to healthier jobs and greater autonomy in their jobs. Individuals with higher income can afford to buy healthier food, live in better housing and healthier environments. Last but not least, higher income can buy better access to health care or access to better health care. This mechanism is repeatedly stressed in the literature on social inequalities in health, which distinguishes between avoidable and unavoidable inequalities:

Disparities in health are avoidable to the extent that they stem from identifiable policy options exercised by governments, such as ... health care funding.

(Woodward & Kawachi 2000)

According to this common definition, social differences in health that are caused by differences in access to health care are avoidable and often considered unjust. In fact, differences in access to care exist to varying degrees in all countries, independent of the way health care is generally financed. Tackling avoidable health

inequalities has indeed long been high on the agenda in some countries (e.g. the UK), but less so in others (e.g. in Germany). Unfortunately, there has been little success so far – some policies even appear to widen the rich-poor gap in health due to differential uptake (for instance free access to preventative care).

Cross-national differences in health inequality have also been documented in the literature. Findings on differences in education- or income-related gradients such as those obtained from earlier SHARE waves (Jürges 2009, 2010) call for an explanation. In this chapter, I examine how access to health care – as a crucial dimension of social inclusion – varies across and within European countries. Specifically, I concentrate on income-related inequity in access to health care in SHARE Wave 5 among the elder population along three important dimensions: subjective unmet need as a measure of horizontal inequity, catastrophic out-of-pocket expenses for health care (relative to household income) as a measure of the financial burden, and satisfaction with basic health insurance coverage or the coverage in the national health system as an overall subjective measure of the health system performance in terms of access to care.

27.2 Data and measurements

The analyses presented in this study are based on data from SHARE Wave 5 (2012), covering some 64,000 respondents in 15 countries. Specifically, I rely on information collected in the health care module. This short but important module serves to facilitate international comparisons in two areas: (1) health care utilisation (in the last 12 months), including unmet need, and (2) health insurance coverage and out-of-pocket expenses. For cross-national comparisons we also add OECD data on income, income inequality and health expenditures (OECD 2014).

There are four items in SHARE Wave 5 to measure subjective unmet need. First, we asked respondents whether there “was a time in the past 12 months when” they “needed to see a doctor but could not because of cost”. Four per cent of the respondents answered yes. Second, we asked whether they did not see a doctor when they needed one because they “had to wait too long”. This applied to six per cent of the respondents overall. Then we also asked respondents whether they had “postponed visits to the dentist” in the last twelve months, to help keeping their living costs down (10 %) or whether they had “gone without or not replaced glasses” they needed because they could not afford new ones (8 %). The last two items are also part of the social deprivation index used throughout this volume. At least one unmet need was reported by 17 per cent of the respondents.

Out-of-pocket (OOP) expenses are costs of health care that are not paid for or reimbursed by “third party payers”, i.e. the national health system or a public

or private health insurer, and that are thus borne by the patient him- or herself. Patients typically pay out-of-pocket for treatments or drugs that are not covered (e.g. because they are too expensive, or because they are not effective) or only partially covered (i.e. patients make co-payments). Insurance contracts also often stipulate a certain deductible, that is, patients pay the full costs of their treatment up to some amount. Only if costs exceed this amount, the health insurance or national health systems pays for the treatment, fully or partially.

SHARE has measured respondents' annual out-of-pocket expenses for five types of medical care or care related to illness: doctor visits, dentist visits including prostheses, prescription and over-the-counter drugs, hospital and other inpatient stays (incl. temporary stays in nursing homes), and at-home care (personal care, wheels-on-meals, etc.). Additionally, we asked for the amount of the annual deductible (if there was any). Out-of-pocket expenses are computed as the sum of deductibles paid, direct payments to health care providers and co-payments. Descriptive summary statistics for the entire SHARE sample are shown in Table 27.1.

Table 27.1: Health care utilisation and out-of-pocket expenses

Type of care	Per cent who received type of care	Per cent who paid OOP conditional on use	Avg. OOP expenses conditional on payment	Avg. OOP expenses per sample member
Doctor visits	89 %	44 %	221 €	87€
Drugs ^{a)}	75 %	76 %	213 €	121€
Dentists	55 %	75 %	520 €	214€
Hospital/other inpatient	16 %	46 %	441 €	32€
At-home care	11 %	62 %	1,775 €	121€
Deductibles ^{b)}		21 %	329 €	69€
Sum				645€

Notes: a) Respondents who take drugs at least once a week, b) Per cent having a deductible and average annual deductible amounts, N = 63,966

Source: SHARE Wave 5 release 0, author's own computations

For example 89 per cent of the sample have visited a doctor at least once in the last twelve months. Of those, 44 per cent had paid an average amount of 221 € out-of-pocket. Overall, the average amount paid out of pocket was 645 € per person. To compare the financial burden of out-of-pocket expenses on households across countries, I have computed the percentage of annual household income spent out-of-pocket on health care. Across all countries, households in the SHARE samples spent on average 2.6 per cent of their net income on health care out-of-pocket. To obtain the full costs of health care one would also have to take insur-

ance premia or social security contributions into account. However, these are not available in the data.

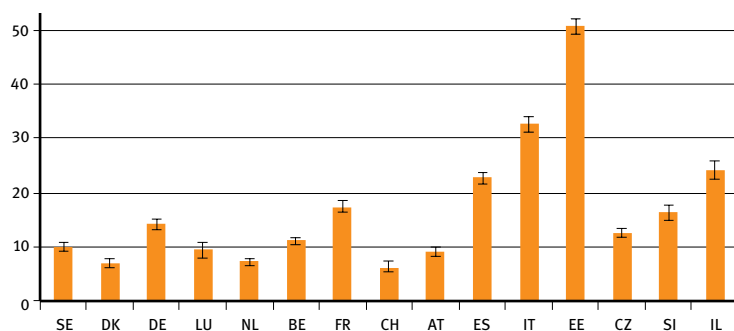
Although there is no generally accepted definition of catastrophic health care expenses, I use 15 per cent of net annual household income as threshold (see e.g. Wyszewianski 1986). According to this definition, three per cent of households with older adults aged 50 and over faced catastrophic out-of-pocket health care expenses in SHARE Wave 5.

One important innovation in SHARE Wave 5 was to ask respondents how satisfied they were with their own coverage in their basic (statutory) health insurance or national health system: very satisfied, satisfied, dissatisfied, or very dissatisfied. Overall, the level of satisfaction was quite high. 34 per cent of our respondents said they were very satisfied, and another 51 per cent said they were satisfied. Only 15 per cent of respondents were either dissatisfied (11 %) or very dissatisfied (4 %).

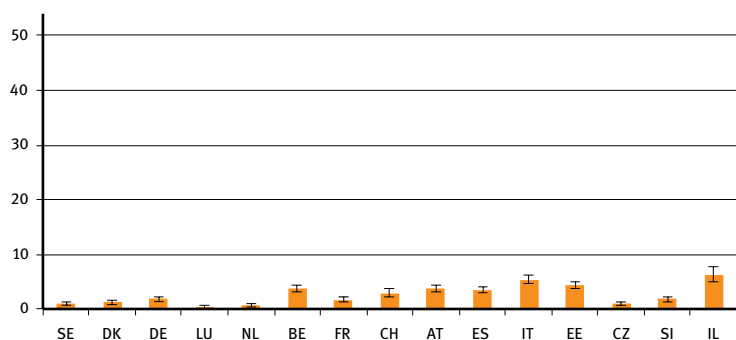
27.3 Cross-national differences in out-of-pocket expenses, unmet need, and satisfaction with health insurance coverage

In this section, I show a cross-national comparison of the level of health insurance coverage, or rather the lack of coverage, among European elders by describing differences in out-of-pocket expenses, unmet need, and dissatisfaction with health insurance coverage. Our data reveal substantial heterogeneity with respect to these three dimensions across SHARE countries. Figure 27.1 shows –by country – the percentage of respondents who mention at least one unmet need (Panel A), the percentage of households with catastrophic health care expenses (Panel B), and the percentage of respondents who say they are dissatisfied or even very dissatisfied with the coverage in their basic health insurance (Panel C).

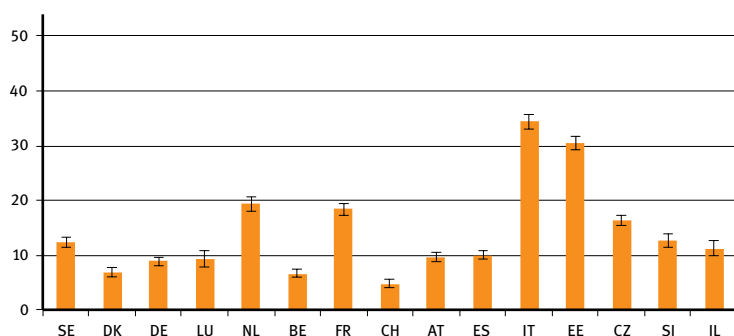
Figure 27.1 contains many notable results. First, there is an enormous cross-national variation in terms of the three indicators. For instance, more than 50 per cent of respondents in Estonia reported at least one unmet need, whereas in the countries with the lowest levels of unmet need, the proportion is less than ten per cent. Nearly five per cent of Israeli households faced catastrophic health care expenses, in contrast to less than one per cent in Luxembourg. Furthermore, Italian respondents are least satisfied with the coverage in their National Health Service. More than one third of the Italian respondents claimed they were dissatisfied or even very dissatisfied with their basic coverage. In contrast, less than



Panel A: Per cent with at least one unmet need



Panel B: Per cent with catastrophic OOP health expenses



Panel C: Per cent with dissatisfied with basic HI coverage

Figure 27.1: Cross-national differences in health insurance coverage indicators, vertical lines show 95 per cent confidence intervals

Notes: N = 63,966

Source: SHARE Wave 5 release 0, author's own computations

five per cent of Swiss respondents (who hold an obligatory private health insurance) claimed to be dissatisfied.

On the one hand, there is some stability in terms of the position of a country in the three rankings. For instance, Italy and Estonia are always among the three worst performing countries. Denmark and Luxembourg are among the five best performing countries, independent of the chosen indicator. On the other hand, we find that Dutch respondents, who have a very small proportion of respondents reporting unmet need and few households with catastrophic health care expenses, are fairly dissatisfied with the coverage in their basic health insurance. In contrast, Israeli respondents who have high levels of unmet need and who relatively often live in households facing catastrophic out-of-pocket expenses are moderately satisfied with the coverage in their basic health insurance.

Figure 27.2 shows how our measures of health insurance coverage are related to

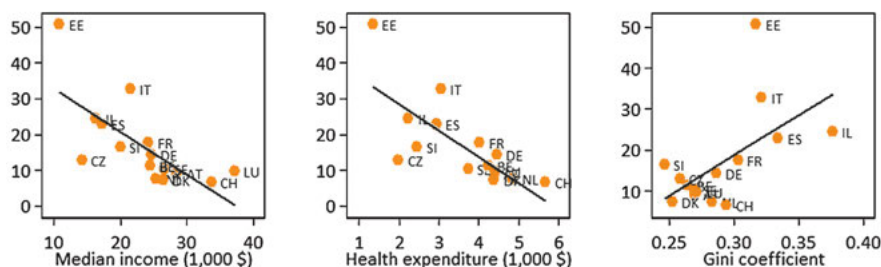
- (a) median per capita income (in PPP-adjusted US-Dollar) as a measure of general economic prosperity,
- (b) average health expenditure (in PPP-adjusted US-Dollar) as a measure of financial resources spent on health care and
- (c) the Gini-coefficient, as a measure of income inequality, a much cited possible source – on the societal level – of a wide array of health and social problems (Wilkinson & Pickett 2009).

I use the country-level data as published by the OECD. The results for median per capita income and average health expenditure per capita are actually very similar because both indicators are highly correlated ($r = 0.88$) and I will discuss results on health expenditure only.

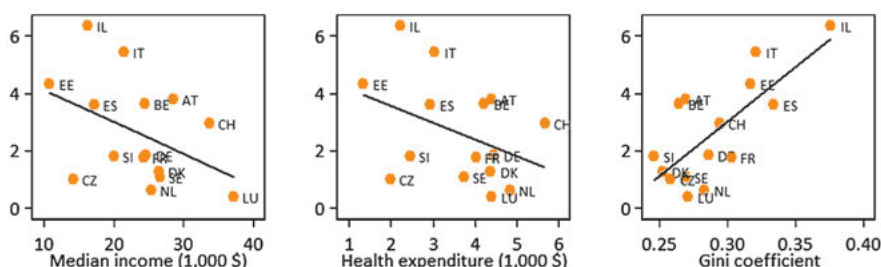
As the graphs in the middle column of Figure 27.2 show, health care expenditures are negatively linked with the percentage of respondents who report at least one unmet need, the percentage of households who faced catastrophic health care expenses, and the percentage of respondents who are dissatisfied with their health insurance coverage. In other words, I find a fairly strong link between the resources spent on health care and various indicators of health care coverage.

The graphs in the right column of Figure 27.2 show that our indicators measuring the lack of health insurance coverage are positively linked with income inequality. Thus countries with generally more equally distributed incomes (and lower Gini coefficients) also have fewer individual elders who report unmet health care needs, have fewer households facing catastrophic health care expenses and have a lower proportion of elders who report dissatisfaction with their basic health insurance or national health system.

Panel A: per cent with at least one unmet need



Panel B: per cent with catastrophic OOP expenses



Panel C: per cent dissatisfied with health insurance coverage

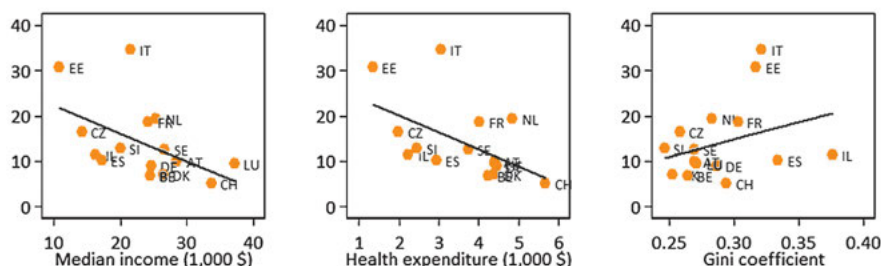


Figure 27.2: Cross-national correlation between macroeconomic indicators and health insurance coverage indicators

Notes: N = 63,966

Source: SHARE Wave 5 release 0, author's own computations

Seven of the nine bivariate relationships shown in Figure 27.2 are statistically significant (also in multivariate regressions with health expenditure and the Gini coefficient simultaneously included). Only two are not statistically significant at the ten per cent level: the relationship between health expenditure and the pro-

portion of households with catastrophic health care expenses and the relationship between income inequality and the percentage of dissatisfied respondents.

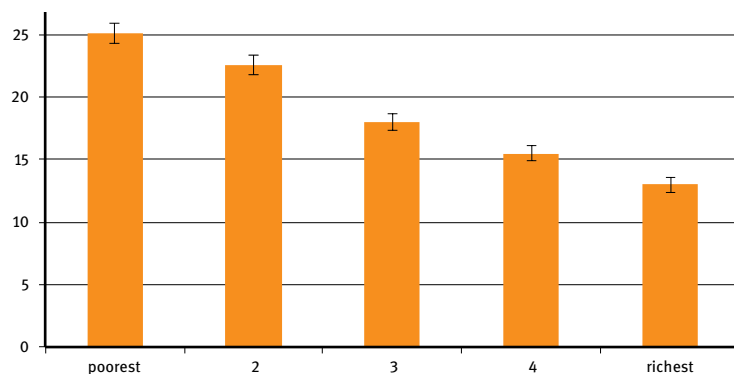
To summarise, the results shown in this section clearly demonstrate that access to care and health insurance coverage among the elders are linked with the economic prosperity of a country even within Europe. Richer countries that can afford to devote more resources in absolute terms to health care tend to provide better access to care and better health insurance coverage. Further, the data also clearly show that even given a country's income and health care expenditure level, less equal societies provide worse access to care and less health insurance coverage. This establishes another possible mechanism by which inequality per se may affect the health level of a society.

27.4 Income-related inequality in health insurance coverage and access to care

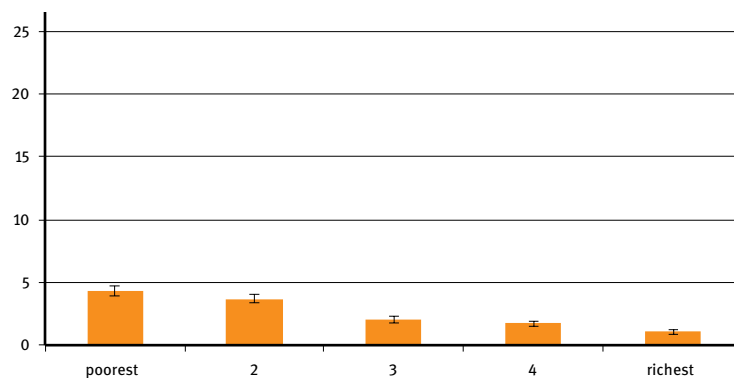
In this section, I show how – within the SHARE countries – unmet need, out-of-pocket expenses and satisfaction with health insurance coverage are linked with household income. To this end, I have classified each SHARE household according to their position in the within-country income distribution, i.e. to which income quintile they belong. For each of these quintiles, I have computed the proportion of respondents with at least one unmet need, the proportion facing catastrophic health care expenses and the proportion dissatisfied with their health insurance coverage.

Figure 27.3 shows income gradients for all countries combined. Notably, the relationship is in fact a gradient, because there are differences in access to care and health insurance coverage along the entire income distribution. We find significant pro-rich differences (with the exception of health insurance dissatisfaction) even between the richest and the second richest quintiles. Put differently, lack of access is not just a problem of poverty, i.e. a problem that can be simply explained by bad access among the poor.

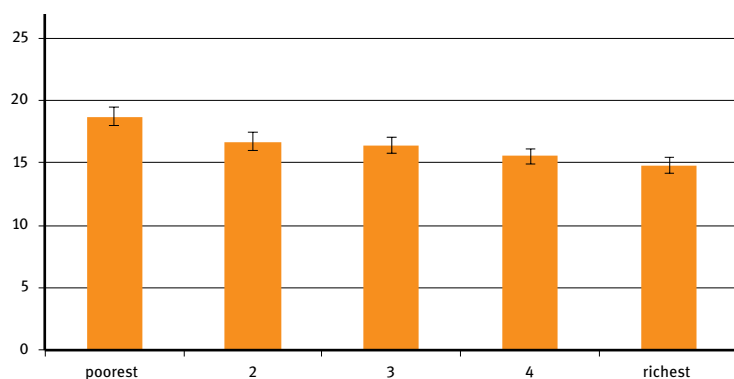
Below, I will discuss how gradients differ between countries. To understand differences in inequality, one has to make a distinction between relative and absolute measures of inequality. To illustrate, I first discuss differences in inequality between measurements. For instance, whereas in Figure 27.3, only 13 per cent of all respondents in the richest income quintile have at least one unmet need, this holds for 25 per cent of those in the poorest quintile. A relative measure of inequality would be the ratio between the two numbers, also known as the Q5/Q1-ratio, which is about one half. Thus the probability of unmet need is only half as large among the richest as among the poorest 20 per cent of the popula-



a) Proportion of respondents with at least one unmet need



b) Proportion of respondents with catastrophic OOP health expenses



c) Proportion of respondents dissatisfied with basic HI coverage

Figure 27.3: Average of health insurance coverage indicators by within-country income quintile; vertical lines show 95 per cent confidence intervals

Notes: N = 63,966

Source: SHARE Wave 5 release 0, author's own computations

tion. Since higher proportions of our indicator variables are worse, it is more convenient to consider the inverse, i.e. the Q1/Q5-ratio, which indicates how much more likely the poor are to suffer from lack of access or health insurance coverage. Ratios above 1 indicate pro-rich inequalities, and the larger the ratio, the larger the inequality. For catastrophic health expenses, this ratio is about four, and for health insurance satisfaction it is approximately 1.2. Thus relative inequality is smallest with respect to health insurance dissatisfaction and largest with respect to catastrophic health care expenses.

An absolute measure of inequality is the Q1/Q5-difference, which shows the percentage point difference in having at least one unmet need etc., between the poorest and the richest income quintile. Using the numbers shown in Figure 27.3, I find that absolute inequality is largest for unmet need and smallest for catastrophic health care expenses. Obviously, the relative and absolute measures can come to very different conclusions as to which is the domain with largest inequalities, and it is beyond the scope of this chapter to review the voluminous literature that has been written on these differences (see e.g. Asada 2010). In the following, I will report only the Q1/Q5 difference as an absolute measure of inequality because it is invariant to the definition of the outcome variable. That is, whereas one could change the Q1/Q5-ratio simply by arbitrarily studying differences in satisfaction rather than dissatisfaction with health insurance coverage, the Q1/Q5-difference does not change (except for the sign, which is trivial). Since there is no natural way to order the proportions reporting unmet need etc. I use the absolute measure here. A disadvantage is that this measure is heavily influenced by absolute levels of the outcome variable, that is, countries with large levels of unmet need also tend to show large absolute inequalities.

Table 27.2 shows, for each country in the SHARE Wave 5 data, the absolute inequality in our health care access and insurance indicators. Positive numbers reflect pro-rich inequalities and larger numbers mean larger inequalities. Countries are ranked by the first indicator (inequality in unmet need). Statistically significant pro-rich inequalities according to at least one of the three indicators can be found in all countries and almost all of the indicators are significantly different from zero. This confirms that social inequalities in access to care and health care coverage are a widespread phenomenon also in European countries.

Generally, the three measures of inequality are moderately correlated (correlation coefficients between 0.44 and 0.63). Consistently large inequalities can be found in Israel, Estonia, and Italy. This is not very surprising because of the absolute levels of unmet need etc. in those countries. For instance, respondents in the poorest Estonian quintile are 25.4 percentage points more likely to report at least one unmet need, 10.9 percentage points more likely to face catastrophic health care expenses, and 4.2 percentage points more likely to be dissatisfied

with their health insurance coverage than in the richest quintile. In contrast, in Slovenia and Switzerland, there are practically no poor-rich differences in unmet need and dissatisfaction with health insurance coverage. However, with respect to facing catastrophic health care expenses, Switzerland belongs to the most socially unequal societies.

Table 27.2: Absolute inequality in access to care and health insurance coverage (Q1/Q5-differences), by country

Country	Unmet need	Health care expenses	Dissatisfaction with HI coverage
Israel	40.0***	10.7***	13.1***
Estonia	25.4***	10.9***	4.2*
Spain	23.8***	-1.7	2.8**
Italy	14.8***	7.3***	3.9*
Sweden	11.8***	3.1***	0.0
Luxembourg	11.6***	0.9	-0.2
Germany	10.7***	3.4***	1.6
Austria	10.6***	6.8***	3.3**
Czech Republic	8.4***	3.8***	5.9***
France	5.7***	1.6***	4.7***
Netherlands	5.7***	1.2***	6.7***
Belgium	5.2***	6.7***	3.1***
Denmark	5.0***	2.8***	2.0
Slovenia	0.4	2.6***	0.6
Switzerland	0.3	6.4***	1.3

Significance: *** = 1 %; ** = 5 %; * = 10 %

Notes: Positive values indicate pro-rich inequalities, N = 23,392

Source: SHARE Wave 5 release 0, author's own computations

27.5 Unequal access to health care: directions for future research

Access to health care is a key dimension of social inclusion. In this chapter, I have studied subjective unmet need, catastrophic health care expenses and dissatisfaction with health insurance coverage as measures of access to health care among European elders. I have shown that unmet health care needs and insufficient health insurance coverage still exist among European elders and they vary widely across countries. Among the countries in our sample, the most serious deficiencies can be found in Eastern and Southern European countries, espe-

cially in Estonia and Italy, and in Israel. (As an aside: it is very unfortunate that we have no information on Greece, which was part of SHARE in earlier waves but could not continue data collection due to the financial crisis.) Generally, insufficient access and lack of insurance coverage are most prevalent in relatively poor countries, where health expenditures are low, and in countries with large income inequalities, i.e. where income redistribution tends to be weak. Thus general notions of social fairness and equity appear to be related to the access to health care that is given to the older population.

Finally, I found that health insurance coverage and access to care are socially graded in practically all countries. Specifically, I have concentrated on income-related inequity, and it is plausible to assume that such inequalities contribute to social inequalities in health status. Previous cross-national analyses of differences in health inequalities have concentrated on social gradients in individual determinants of health linked with social status, such as health behaviour (such as smoking) but often neglected access to care as an important pathway from low social status to poor health. Using the results shown in this chapter as starting point, future research based on the SHARE data can fill this important research gap.

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Enrica Croda

28 Pain and social exclusion among the European older people

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- ▶ Across Europe, significant fractions of the 50+ population are troubled by pain – women more than men, older individuals more than younger ones
 - ▶ There is a strong association between pain and social exclusion, measured either by material or social deprivation
 - ▶ These findings emphasise the need for public policy intervention promoting pain prevention and management strategies addressing the most vulnerable groups of the population
-

28.1 Pain is a public policy challenge

Chronic pain has an important impact on people's lives and is a fundamental dimension of well-being. Pain is one of the most common reasons people seek medical attention and take medications. It also complicates the treatment of other ailments and limits one's ability to work and function in society. At the individual level, it is associated with a series of negative outcomes including depression, job loss, reduced quality of life, impairment of function and limiting daily activities. At the societal level, it imposes considerable costs on the health care system and the economy.

Calculating the costs of pain to society is difficult because they include both the direct costs of the medical treatment of pain, and the indirect costs associated to the loss in productivity in any daily activity, most notably in the workplace. Recently, the Institute of Medicine estimated that chronic pain costs the US society at least \$560–635 billion every year, an amount corresponding to about \$2,000 for everyone living in the country (in 2010 USD). These figures are greater than the annual costs of heart disease, cancer, or diabetes (IOM 2011).

Our current understanding of people's pain experiences has been largely limited by data availability (Kahneman & Krueger 2006, Krueger & Stone 2008). In particular, little is known about the prevalence or severity of pain in the older population in Europe (Breivik et al. 2006, Kleijnen Systematic Reviews 2012).

In this paper, I exploit newly available information collected in SHARE Wave 5 to study the prevalence of chronic pain in the older population across the 14 European countries surveyed in Wave 5 (Austria, Belgium, Switzerland, Czech Republic, Germany, Denmark, Estonia, Spain, France, Italy, Luxembourg, Netherlands, Sweden and Slovenia) and investigate the extent to which chronic pain is associated with social exclusion.

28.2 What is the prevalence of pain in Europe?

In Wave 5, the SHARE project introduced some new questions about pain. First of all, respondents were asked whether they were troubled by pain (PH084). Across Europe, pain is part of life for one in two older (50+) adults (45 %). The prevalence of pain varies widely across countries. About one out of four over-50 individuals in Switzerland and in the Netherlands suffers from pain, compared to more than one out of two in France, Italy, Slovenia and Spain. While reporting styles may explain some of these differences, some patterns are consistent across countries.

For example, Figure 28.1 shows that in every country more women than men report being troubled by pain. Overall, 52 per cent of women and 38 per cent of men are bothered by pain. In some countries, the gender gap is quite wide. For instance, in Italy, 62 per cent of women, compared to 40 per cent of men, are in pain. The correspondent figures for Spain are 61 per cent for women and 38 per cent for men.

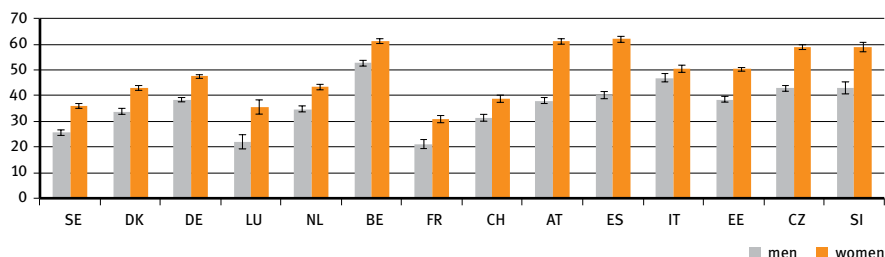


Figure 28.1: Prevalence of pain by gender and country

Notes: n = 61,557

Source: SHARE Wave 5 release 0; weighted

Also, prevalence of pain increases with age, but the gender gap persists as people age (Figure 28.2). For both men and women, there seems to be some kind of plateau once individuals reach their nineties. Classifying people in ten-year age groups, 43 per cent of women and 36 per cent of men aged 50 to 69 suffer from pain. By the time they reach their eighties, these percentages increase to 64 per cent and 49 per cent, respectively. This gender gap partly reflects differential mortality and seems to be consistent with the prevailing evidence indicating that women die at older ages than men, but experience higher rates of disability and poor health (e.g. Oksuzyan et al. 2008).

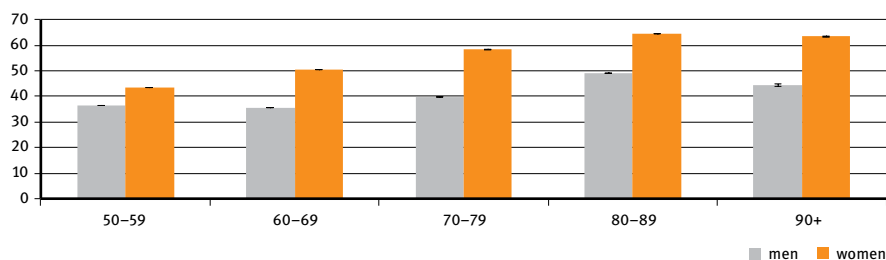


Figure 28.2: Prevalence of pain by age and gender

Notes: $n = 61,557$

Source: SHARE Wave 5 release 0; weighted

28.3 Pain and social exclusion

That markers of socioeconomic status, such as education and income, are associated to health outcomes is by now quite well established (e.g. Cutler & Lleras-Muney 2008). Croda (2015, in progress) shows that a similar association exists also between these measures of socioeconomic status and pain (see also Atlas & Skinner 2010). In the remainder of this chapter, I examine the extent to which there is an association between pain and social exclusion.

Social exclusion is itself a multidimensional concept, and there is little consensus on the number of these dimensions. However, the relevant aspects of exclusion can be captured by focusing on the material and social dimensions of deprivation (see chapter 6 in this volume). I rely on two indices of deprivation proposed in this book: the material deprivation index from chapter 5 and the social deprivation index from chapter 6. On the one hand, the material deprivation index focuses on material difficulties of households on two domains, the affordability of basic needs and the experience of financial difficulties, taking into account the affordability of various items, being behind with bills, etc. On the other hand, the social deprivation index addresses the extent of social isolation and lack of social support of households, taking into account the quality of the local area, number of rooms per person, lack of activities and so on.

For each index, I construct a binary indicator denoting whether individuals' deprivation index is above the median for their countries, putting them at higher risk of social exclusion than average (the median) within their country. Figure 28.3 compares the prevalence of pain for individuals at higher risk of social exclusion than average, to the prevalence of pain for individuals at lower risk of social exclusion, by country.

All across Europe, in every country, the prevalence of pain is much larger for those individuals who are more deprived, and therefore at higher risk of social exclusion, as operationalised by the material deprivation index (Panel A) or the social deprivation index (Panel B).

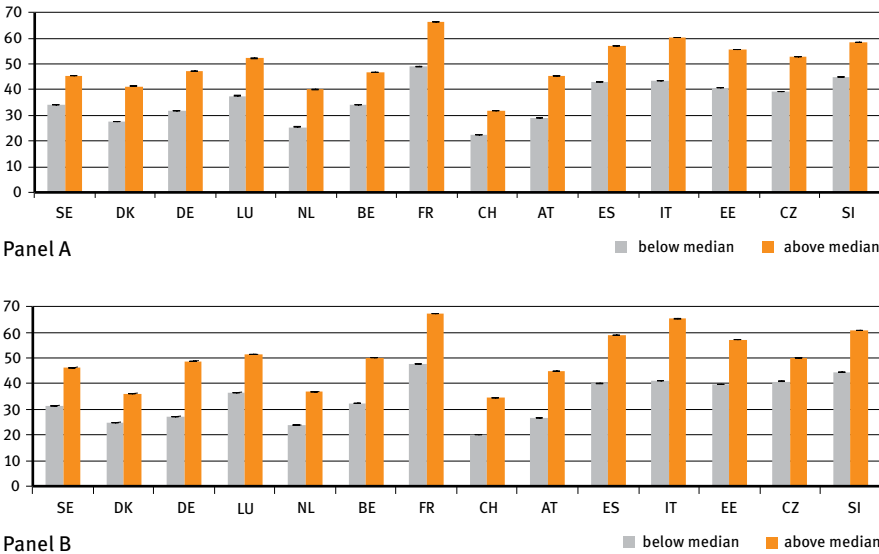


Figure 28.3: Prevalence of pain and social exclusion

Notes: Panel A is based on a sample of 55,396 50+ respondents for whom the material deprivation index is available. Panel B is based on a sample of 55,038 50+ respondents for whom the social deprivation index is available.

Source: SHARE Wave 5 release 0; weighted

The disparities are striking. For instance, in France, 66 per cent of those with material deprivation above the median are troubled by pain, compared to 49 per cent of the rest of the population, and 67 per cent of those with social deprivation above the median are troubled by pain, compared to 46 per cent of the rest of the population.

Not only the more deprived groups of the population are more likely to be in pain, no matter how deprivation is operationalised, they are also more likely to experience more severe pain levels than the rest of the population. Figure 28.4 shows that across Europe, 17 per cent of individuals more materially deprived than average are in severe pain, compared to eight per cent of the rest of the population, 28 per cent in moderate pain compared to 20 per cent and only 45 per cent of them do not report suffering by pain, compared to 62 per cent of the rest of the population (Panel A). Similarly, 18 per cent of those more socially deprived than average are in severe pain, compared to six per cent of the rest of the population,

29 per cent in moderate pain compared to 19 per cent, and only 44 per cent of them do not report suffering by pain, compared to 64 per cent of the rest of the population (Panel B).

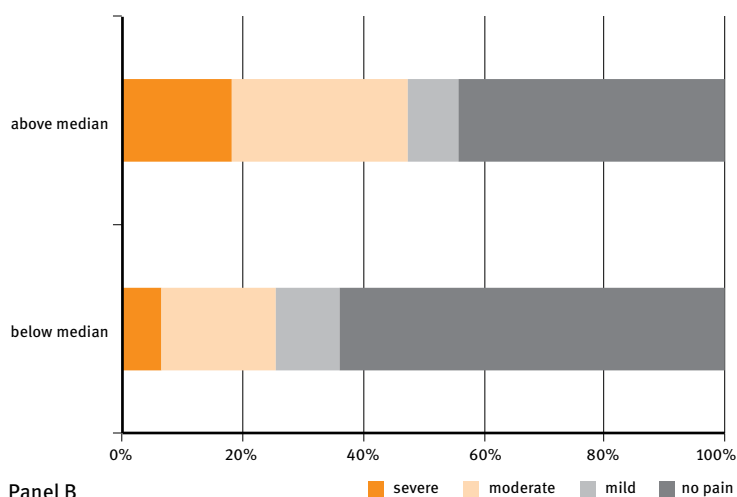
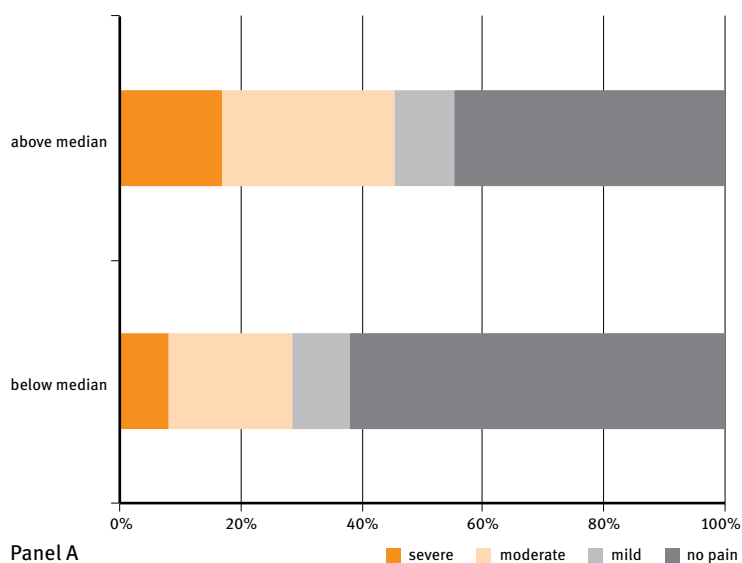


Figure 28.4: Intensity of pain and social exclusion

Notes: Panel A is based on a sample of 55,396 50+ respondents for whom the material deprivation index is available. Panel B is based on a sample of 55,038 50+ respondents for whom the social deprivation index is available.

Source: SHARE Wave 5 release 0; weighted

28.4 Does the observed association between pain and social exclusion hold also after controlling for health conditions?

The evidence presented so far suggests that women, older people, and the most materially and socially deprived are more likely to be in pain and to suffer from more severe pain. What can explain the observed strong association between pain and social exclusion? Are there variables that could partially or even fully explain the observed disparities? Alternatively, do the strong observed disparities hold even after taking into account alternative drivers?

A potentially important explanation for these strong disparities in the association between pain and social exclusion is that people in the most vulnerable groups are more likely to suffer from poor health.

In this section, I exploit the richness of the SHARE dataset to control for several dimensions of health status and study whether the association between pain and social exclusion holds also after controlling for health conditions.

Table 28.1 presents the results of regression analyses where I control for different dimensions of health status that may be associated with pain at older ages. In particular, I control for obesity, limitations with activities of daily living (based on a question asking about difficulties performing a list of everyday activities such as dressing, walking across a room, bathing or showering, eating, getting in or out of bed, using the toilet), and the number of diagnosed chronic diseases. The table shows estimates for the whole SHARE sample of over-50 individuals, disaggregated by age group (50–59, 60–69, 70+). In addition, all regressions include demographic characteristics, level of education and country indicators.

While these dimensions of health status do account for some of the correlation between pain and social exclusion, they remain a strong and persistent gradient.

In all the samples considered, even after controlling for health status and country dummies, the estimates show that women are more likely than men to experience pain, and the probability of being troubled by pain is higher for those individuals who are more materially and socially deprived than the median in their country.

Table 28.1: Probability of being troubled by pain

Variable	Age 50–59		Age 60–69		Age 70+		Whole SHARE sample	
Female	0.081 (0.009)	***	0.110 (0.008)	***	0.144 (0.010)	***	0.110 (0.005)	***
Social Exclusion								
Material deprivation above median	0.083 (0.009)	***	0.070 (0.008)	***	0.068 (0.010)	***	0.075 (0.005)	***
Social deprivation above median	0.074 (0.009)	***	0.079 (0.008)	***	0.060 (0.010)	***	0.072 (0.005)	***
Number of observations	14,065		18,523		13,133		51,741	

Statistical significance: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Notes: Probit estimates - marginal effects. Regressions control for age (5-year age groups), marital status, country dummies, health status indicators: underweight, overweight, obese, severe obesity, at least one ADL, at least 2 diagnosed chronic diseases (heart attack, including any other heart problem such as congestive heart failure, hypertension, high blood cholesterol, stroke or cerebral vascular disease, diabetes, chronic lung disease, arthritis, including osteoarthritis, or rheumatism, cancer or malignant tumour, including leukaemia or lymphoma, stomach or duodenal ulcer, peptic ulcer, Parkinson disease, cataracts, hip, femoral or other fractures, Alzheimer's disease, dementia, organic brain syndrome, senility or any other serious memory impairment); robust standard errors in parentheses

Source: SHARE Wave 5 release 0; weighted

28.5 The way forward: implications for public policy

This paper is a first step in trying to understand the economic and social implications of pain and in particular the association between pain and social exclusion.

I document the following:

- across Europe, significant fractions of the 50+ population are troubled by pain: women more than men, older adults more than younger ones
- there is considerable variation in reporting of pain across countries
- there is a strong association between pain and social exclusion, measured either by material or social deprivation.

These findings emphasise the need for public policy intervention promoting pain prevention and management strategies addressing the most vulnerable groups of the population.

Acknowledgments: I thank Liudmila Antonova and Danilo Cavapozzi for helpful discussions.

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Radim Bohacek, Laura Crespo, Pedro Mira and Josep Pijoan-Mas

29 The educational gradient in life expectancy in Europe: preliminary evidence from SHARE

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- ▶ Economic inequality manifests itself very prominently in inequality of health outcomes in general, and inequality of lifespans in particular
 - ▶ We explore the education gradient in life-expectancy in the SHARE data and we confirm that higher education carries an important longevity premium which is largest in Eastern countries
 - ▶ We find relatively small education-based life expectancy differentials in Northern Europe, that is, in countries with egalitarian and generous welfare policies, smaller income inequalities and lower poverty rates. However, the education gradients are also relatively small in Southern countries
 - ▶ SHARE provides a unique wealth of socio-economic and health variables that should allow researchers to broaden the analysis of the socio-economic gradient of survival and healthy survival in a harmonised dataset
-

29.1 The socio-economic gradient in survival

Economic inequality manifests itself very prominently in inequality of health outcomes in general, and inequality of lifespans in particular.¹ In this chapter we measure the mortality gradient of education in several SHARE countries. In particular, we compute survival functions from age 50 for men and women distinguishing between high and low educated individuals. We complement the study by computing the associated differences in life expectancies by education, and we compare the results to the ones obtained with ELSA for England.

We focus on education for several reasons. First, it is arguably the best approximation to lifetime income and the only measure of socio-economic status that does not change over the life cycle. Second, it has been shown (at least in the US) that it is the measure of socio-economic status that really matters for

¹ Kitagawa and Hauser (1973) were among the first to show that mortality rates in 1960 in the United States were inversely related to education and income.

mortality (Pijoan-Mas & Rios-Rull 2014) and other health outcomes (Cutler & Lleras-Muney 2006). Third, it is arguably the measure of socio-economic status with lowest measurement error and the most widely available one.

We have relatively good measures of the education gradient in the US thanks to the death certificates, but also because of good survey data. In particular, the National Longitudinal Mortality Study (NLMS) tracks mortality of individuals observed in the Current Population Survey or the Census in the late 70's and early 80's. For more recent measures, the long panel dimension of the Health and Retirement Study (HRS) has also proved useful. Overall, the results show large life expectancy gaps at different ages between college educated and non-college educated individuals.

There are however fewer studies for European countries because of data limitations. First, the death registers are less useful in Europe because they do not record data on education. A few studies have linked the death registers with census data to obtain education and sex-specific death rates in the 1980's and 1990's (Mackenbach et al. 2008, Avendano et al. 2011). This is possibly the best information we have today about the education gradient of mortality in Europe. However, samples are not always nationally representative and the resulting data are not homogenised across countries, which makes cross-country comparisons more problematic. Regarding survey data, only the European Community Household Panel (ECHP) – which covers the period between 1994 and 2000 – has been used (Majer et al. 2010).

SHARE is an interesting source of data for this topic. First, it explicitly attempts to obtain end-of-life interviews so it is arguably less likely to under-report deaths than other survey data. Second, it is based on nationally representative country samples of people aged 50 and older, which allows us to compare the gradient across countries using a harmonised dataset. Finally, SHARE provides a unique wealth of socio-economic and health variables that should allow researchers to broaden the analysis of the socio-economic gradient of survival and healthy survival. The possible problems with SHARE are the small sample sizes for every country, and the potential biases in sample design, sample collection, or sample retention inherent in survey data. This chapter is a first exploration of the potential of the SHARE data for this kind of analysis.

29.2 Building a sample for survival analysis with SHARE

We compute Kaplan and Meier (1958) estimates of survival functions for high and low educated individuals, separately for men and women in SHARE countries and ELSA. We separate men and women because there is ample evidence of large gender-specific gradients in the US and elsewhere.

Our sample period is 2004 to 2013, which covers up to five SHARE waves although not all countries provide data for all of them. The sampling universe is the civilian non-institutionalised population aged 50 or older, although individuals are kept in the survey if they move into a nursing home. The data structure that we use is as follows. We need to observe individuals for at least two waves even if they are not consecutive waves. Then, every observation is an individual with the date at which we observe the individual for the first time, the date at which we observe him or her for the last time, and the alive/dead status the last time we observe him or her. We drop individuals with missing data for education and with initial age below 50 or above 90. Of course we also need the gender, and the age of the individual at the first observation.

There are two concerns when choosing the countries to use for this note. The first concern is that country samples are relatively small, which makes estimates of survival functions by education type quite noisy. The second concern is the quality of the country samples for survival analysis. Specifically, some country samples produce life tables that are substantially different from the population life tables obtained from Eurostat. Therefore, we will focus on countries that produce aggregate life tables that are reasonably close to the population tables.² Table 29.1 reports the sample sizes for each country included in this note.

We group respondents into just two education categories, “high” and “low”, because our country-gender samples are too small for non-parametric estimation with more categories. We may consider different groupings depending on the ISCED-97 code that is used as threshold. Dummy variables edu_1 , edu_2 , and edu_3 are set to 1 if the respondent’s schooling corresponds to ISCED-97 codes 0-1, 0-2 or 0-3 respectively. The thresholds are primary (ISCED-97 = 1), lower-secondary

² The fit of SHARE-based life tables to Eurostat tables was good or very good for Spain, Poland, Italy (females), Estonia (males) and Denmark (females). At the other end, it was very poor for Germany, the Netherlands, Switzerland and Belgium. We exclude the latter countries from our analysis. At the margin we include France where the fit was quite poor for males but not so bad for females, so this caveat should be kept in mind. See Bohacek et al. (2015) for more details.

(ISCED-97 = 2) or upper-secondary (ISCED-97 = 3). In Table 29.1 we report the fraction of low educated individuals according to each definition. As it can be seen, there is a large heterogeneity in the distribution of education across country-gender cells. In Southern countries around 3/4 of the population over the age of 50 has education corresponding to lower-secondary or less. In Austria and Denmark it is less than 1/4.

Given the heterogeneity of the education distribution across countries, we choose the threshold to be country and gender specific. Our choice reflects the fact that the partition of a country population in two socio-economic groups of roughly the same size happens at different levels of education in different countries. In order to maximise sample size across the two education categories in the estimates of survival functions obtained in the next section, we select the dummy variable such that the threshold is closest to the median of the distribution within country-gender cell. For instance, in cell Estonia-males “low” education corresponds to edu_2 whereas for cell Estonia-females it corresponds to edu_3 .

Table 29.1: Sample sizes

Country	# Waves	Males				Females			
		# obs	edu ₁	edu ₂	edu ₃	# obs	edu ₁	edu ₂	edu ₃
South									
Italy	5	1,722	44.7	69.6	90.8	1,985	57.7	76.2	92.0
Spain	5	1,759	59.1	79.6	89.6	2,079	66.7	84.8	93.2
East									
Czechia	4	2,058	7.5	48.3	83.4	2,798	24.9	50.5	87.4
Estonia	2	2,278	6.2	34.3	67.4	3,394	6.0	29.6	61.7
Poland	3	851	38.8	39.2	84.0	1,039	51.2	51.5	90.7
North									
Denmark	5	1,343	9.6	13.6	62.0	1,496	18.3	27.9	60.9
Sweden	5	1,448	37.4	52.8	70.3	1,633	33.4	50.2	68.0
Centre									
Austria	5	1,998	9.0	14.4	66.6	2,645	17.5	33.8	76.1
France	5	2,431	34.8	41.1	78.4	2,991	43.2	53.1	81.9
England	7	6,380	33.5	57.6	65.55	6,736	46.1	68.9	76.16

Notes: Columns labeled $edux$ contain percentage of population with selected education category; edu_1 denotes ISCED-97 codes 0 and 1; edu_2 denotes ISCED-97 codes 0, 1, and 2; edu_3 denotes ISCED-97 codes 0, 1, 2, and 3

Source: SHARE Wave 1 release 2.6.0, Wave 2 release 2.6.0, Wave 3-SHARELIFE release 1.0.0, Wave 4 release 1.1.1, Wave 5 release 0

29.3 Education and survival

Life expectancy differences at age 50 computed for our samples from selected SHARE countries and England are presented in Table 29.2. The underlying KM survival functions with 95 per cent confidence bands are shown in Figure 29.1. Although the life-expectancy gradients that we report would not be statistically significant at the 95 per cent level for many country-gender cells, our results conform to the patterns found in the literature on education-related life expectancy differentials in general as well as with respect to gender and country areas.

Table 29.2: Life expectancy differences at age 50

Country	Males		Females	
	edu _i	L.E.D.	edu _i	L.E.D.
South				
Italy	1	2.1	1	3.1
Spain	1	1.5	1	-1.5
East				
Czechia	2	1.7	2	4.3
Estonia	2	8.4	3	2.7
Poland	2	5.7	2	2.4
North				
Denmark	3	1.4	3	1.8
Sweden	2	1.9	2	1.4
Centre				
Austria	3	5.3	2	-1.5
France	2	5.0	2	1.9
England	2	3.3	1	3.2

Notes: Column edu_i indicates the education definition used for the low education category, see foot note in Table 29.1

Source: SHARE Wave 1 release 2.6.0, Wave 2 release 2.6.0, Wave 3-SHARELIFE release 1.0.0, Wave 4 release 1.1.1, Wave 5 release 0

First, we find that lower education attainment is associated with higher mortality rates. With the exception of Austrian and Spanish women, higher education carries an important longevity premium.³ The education advantage in life expect-

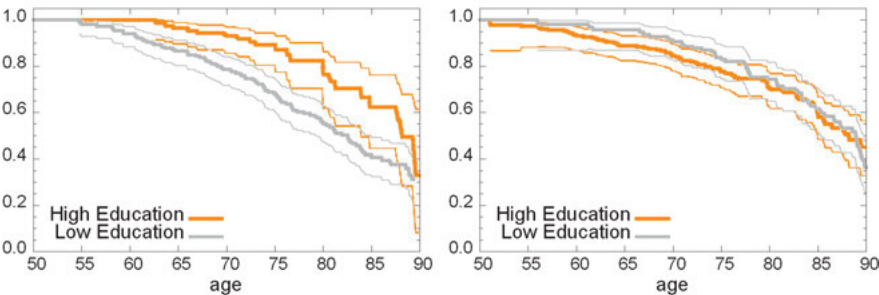
³ Looking at Figure 29.1c we see that the survival advantage for less educated women in Spain appears only after age 75, which may reflect some cohort effect.

tancy has been documented by Meara et al. (2008) and Pijoan-Mas and Rios-Rull (2014) for the United States as well as by Avendano et al. (2011) or Majer et al. (2010) for European countries.

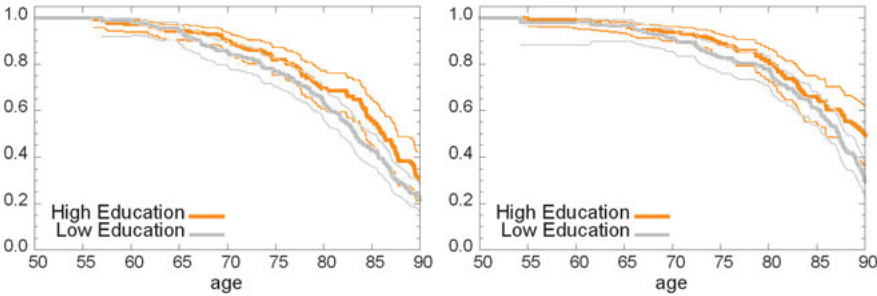
Second, there is substantial heterogeneity across Europe. We find the largest inequalities in mortality in Eastern countries, which is consistent with some findings in the literature (Avendano et al. 2011 and Marmot 2013). For instance, the education premium in Estonia is up to 8.4 years for males, but we also find large gradients for Poland and the Czech Republic. Then, we find relatively small education-based life expectancy differentials in Northern Europe, that is, in countries with egalitarian and generous welfare policies, smaller income inequalities and lower poverty rates. This is in contrast to the results in Mackenbach et al. (2008). However, the education gradients are also relatively small in Southern countries as noted in previous studies that used population data for selected sub-regions or cities.

Third, in general but not always, the educational differences in life expectancy are smaller for women than men. This matches the Marmot (2013) comparison of the educational gradient in life expectancies for a sample of 14 EU countries. Using Eurostat data, they report a larger education premium for men than for women, and larger in countries with shorter life expectancies. For Estonia and France, the large gender difference in the educational gradient is in line with Avendano et al. (2011). In contrast, we find a larger education premium in life expectancy for females than for males in the Czech Republic, Denmark, and Italy.

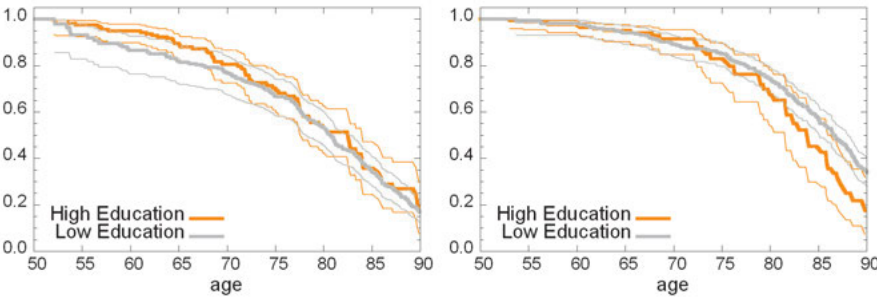
Figure 29.1: Survival functions by country



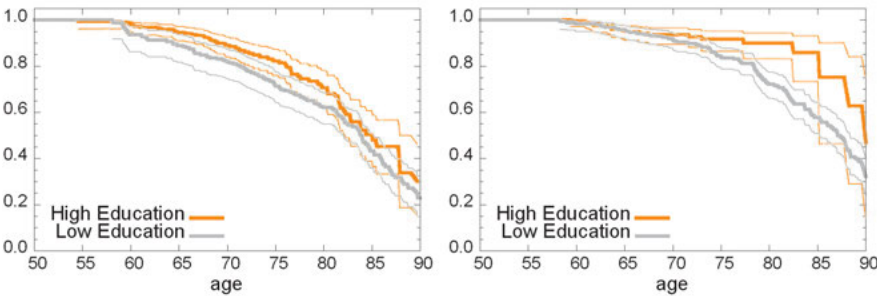
(a) Austria



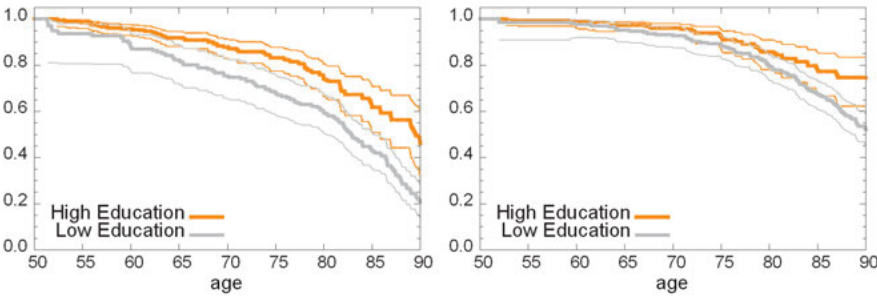
(b) Sweden



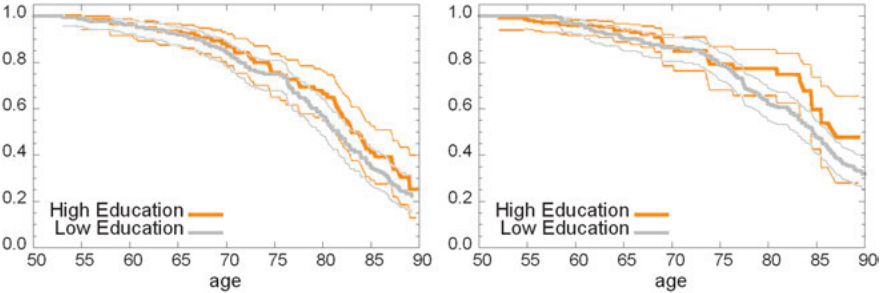
(c) Spain



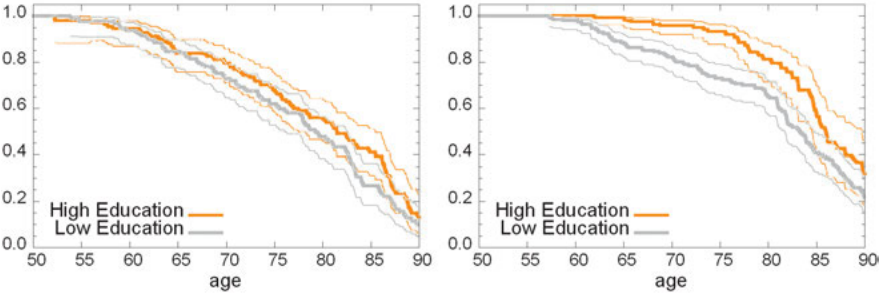
(d) Italy



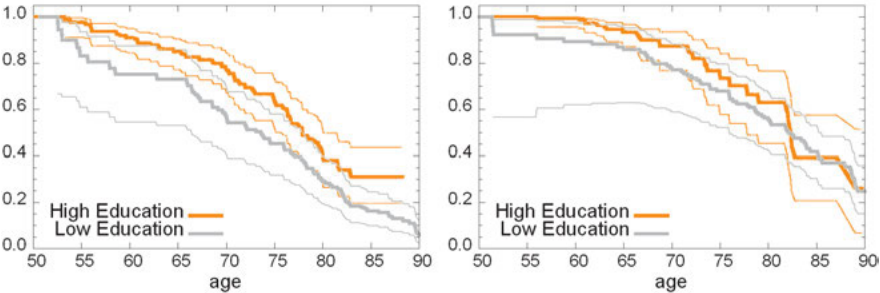
(e) France



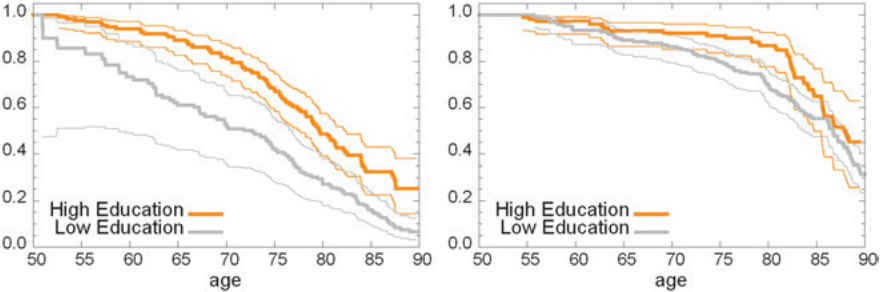
(f) Denmark



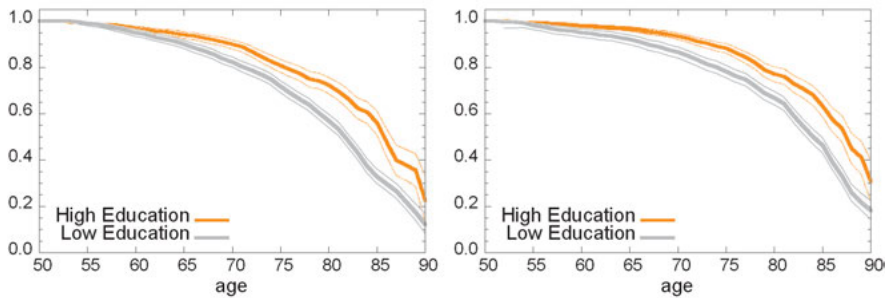
(g) Czech Republic



(h) Poland



(i) Estonia



(j) England

Notes: Left: males, right: females; grey: low education, orange: high education; dashed line: 95 % confidence intervals

Source: SHARE Wave 1 release 2.6.0, Wave 2 release 2.6.0, Wave 3-SHARELIFE release 1.0.0, Wave 4 release 1.1.1, Wave 5 release 0

29.4 Conclusion

We have used education as a social stratification variable in this chapter, because it is relatively easy to measure and it can be made comparable across countries. Education attainment has been identified as a major determinant of general living conditions and occupation and related to different patterns of smoking, obesity, excessive alcohol consumption, access and use of health care, and other important lifestyle choices which have an impact on life-expectancy. In spite of our small sample sizes we obtain non-parametric estimates of survival functions by education and of the education premia in life-expectancy which are in line with the findings from non-harmonised data in the existing literature.

On the other hand, it should be noted that internationally comparable education levels based on the ISCED classification do not take into account the quality of education in individual countries. Most importantly, education captures only one dimension of socio-economic characteristics while a more comprehensive set of measures would also include marital and labour market status, occupation, income, wealth or poverty index that might be more relevant for mortality at older ages and be more sensitive to health care policies across different countries. We plan to address these issues in our future work, together with the dynamic evolution of individual characteristics over time, in parametric hazard survival models with time varying stochastic endogenous covariates.

As the magnitudes of life expectancy differentials are very variable across countries and regions, we believe that SHARE data provides a unique opportunity for identifying their determinants. Policy interventions targeting these determinants might increase longevity and quality of lives of the European population.

Acknowledgements: ELSA data were made available through the UK Data Archive. ELSA was developed by a team of researchers based at the NatCen Social Research, University College London and the Institute for Fiscal Studies. The data were collected by NatCen Social Research. The funding is provided by the National Institute of Aging in the United States, and a consortium of UK government departments coordinated by the Office for National Statistics. The developers and funders of ELSA and the Archive do not bear any responsibility for the analyses or interpretations presented here.

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30 Unmet need for long-term care and social exclusion

-
- ▶ Older people needing long-term care are more likely to suffer from both social and material deprivation than those without such needs
 - ▶ Older people in countries where the responsibility for long-term care is mainly put upon families are more likely to have unmet needs for care than their counterparts where the government takes on a larger part of the responsibility
 - ▶ Unmet need is associated with material and social deprivation. At high levels of need, the association is only with social deprivation
 - ▶ Policy recommendations:
 - expanding systems of formal care may reduce the number of older people with unmet needs for long-term care
 - improving neighbourhood relationships may have the indirect effect of encouraging carers to help with LTC in the community
-

30.1 Why look at unmet need for long-term care in relation to social exclusion?

While the need for long-term care (LTC) is a significant risk for all ageing populations, LTC provision systems vary across countries within the EU. Where little social protection against long-term care needs is provided, the living conditions of the dependent person and his or her family may be affected (Council of the European Union 2014). Also, older persons may not receive appropriate care.

Earlier studies differ in their estimates of the percentage of people with unmet needs, depending on the type of population analysed and the concept of unmet need used (see García-Gómez et al. 2015 for a review). García-Gómez et al. (2015) found high levels of pro-rich inequity in the use of community care services and in extended home care services in Spain in 2008, while intensive use of informal care services appeared to be disproportionately concentrated on the worse-off. However, apart from a study by Shea et al. (2003) on the USA and Sweden, there appears to be no international comparative research on this issue. Also, to our knowledge there are no previous studies of the relation between deprivation or social exclusion and unmet needs for LTC.

Deprivation and social exclusion can be both a cause and a consequence of unmet needs for long-term care. Persons with few financial and human resources

may find it more difficult to obtain (paid or unpaid) formal care. Small social networks may limit opportunities to receive informal care. Conversely, limitations in daily living activities, especially when no help is provided, may make it difficult to access various services and to take part in social activities. Moreover, bad health and economic conditions in the past could be underlying causes of exclusion and of both need and unmet needs for care in the present. We do not try to unravel those causal paths, but provide an empirical overview of the correlation between exclusion and unmet needs for care. We also look at differences between countries, taking account of differences in LTC systems.

After explaining (section 30.2) how we measure unmet need for care and social exclusion, we first look at the relation between being in need of care and measures of social exclusion (section 30.3). Given that older persons are dependent, we investigate what kind of help they receive in each system of LTC (section 30.4). In section 30.5 we analyse whether unmet need is connected to exclusion, and which particular forms of social exclusion are most important for older persons with unmet needs. Section 30.6 concludes.

30.2 Concepts, data and methods

We consider only those aged 65 and over, who do not live in nursing homes. Limitations requiring care are relatively rare among people aged below 65. Information on care received in nursing homes is insufficient, and the indices of material and social deprivation are less meaningful for people living there. The Czech Republic and Israel are left aside because of a high proportion of missing values on deprivation indices and Luxembourg because of its very small sample size.

30.2.1 Defining needs and unmet needs for long-term care

We define four hierarchical levels of need for long-term care based on the number of lasting limitations in activities of daily living (ADL's), namely dressing, walking across a room, bathing or showering, eating, and getting in or out of bed, and on the number of limitations in instrumental activities (IADL's): preparing a hot meal, shopping for groceries, making telephone calls, taking medications and managing money. Combining the indices for ADL and IADL (from 0 to 3 or more limitations), we get 16 combinations of limitations, from 00 (no limitations), 01 (no ADL, one IADL limitation)... to 32 (3 or more ADL, 2 IADL limitations) and 33 (3 or more ADL and 3 or more IADL limitations).

We define level 1 as having only one IADL limitation (01), level 2 as having one ADL or 2-3 IADL limitations (10, 02 or 03), and level 3 either one ADL and one IADL limitations, or two ADL but no IADL limitations (11 or 20). Finally, level 4 includes all who have more limitations than the previous levels (12, 13, 21, 22, 30, 31, 23, 32, 33).

Overall in our 65+ sample, about one in six (17 %) had a level of need greater than zero, that is needed some form of LTC. Among them, 13 per cent were at the lowest level 1, 39 per cent had moderate needs (level 2), 20 per cent suffered from fairly severe limitations (level 3), while 28 per cent had the highest level of need (level 4).

Facing such needs for care, one can benefit from various types of help. SHARE distinguishes three types: informal help, formal (i.e. professional or paid) personal care and formal domestic help. We assume that ADL limitations require personal care, while for IADL limitations domestic help will be mostly sufficient. We further assume that informal carers provide personal care as well as domestic help, and are able to meet all needs for care, even when no formal care is present. We define a situation of unmet need if either people have one or more IADL limitations and neither formal domestic help nor informal help, or one or more ADL limitations and neither formal personal care nor informal help. This implies that when people have an ADL limitation and only domestic help – but neither formal personal care nor informal care – this counts as unmet need.

This measure of unmet need is an objective one, as limitations and the care received are assessed independently. Objective may be preferable to subjective, self-reported measures of unmet need, which may suffer from self-reporting bias (García-Gómez et al. 2014). However, unlike other objective measures, e.g. those used by Tennstedt et al. (1994), we assess need and care received only in a general sense and not with respect to every type of ADL or IADL limitation separately. Moreover we do not know the number of hours of care or help received. This, together with our assumption that informal care can meet all needs, even in the absence of any formal care, implies that our measure of unmet need should be regarded as indicative only and probably a lower bound on the extent of unmet needs. We use it to discover patterns of unmet need and their correlation with social exclusion.

30.2.2 Measuring social exclusion

Following the definitions from chapter 5 and 6 in this volume, economic or material deprivation is distinguished from social deprivation or exclusion. Material deprivation has to do with the affordability of ordinary consumption goods (gro-

ceries, meat, fruit, clothes, shoes, heating, unpaid rent, mortgage or bills), of health related expenditures (dentist, glasses, doctors) and the inability to cope with extraordinary expenses. Social deprivation or exclusion means being isolated (getting to the nearest bank, doctors or pharmacy is difficult) and living in an unclean, dangerous, non-congenial neighbourhood, where people are unhelpful. We follow the definition of Myck et al. in adding an overcrowded home, low writing or reading skills, low computer skills, and having no local social activity (not attending courses, not taking part in any religious or community organisation). Both indices range from zero to one. Most of those aged 65 and over have some form of social deprivation, while only 49 per cent have a positive value on the economic deprivation index. We also use a binary variable defined as being among the 25 per cent most deprived according to each of the two types of deprivation. According to this criterion, 11.4 per cent of those aged 65 and over are severely deprived.

30.2.3 A LTC welfare state typology

In a recent study, Verbeek-Oudijk et al. (2014) grouped SHARE countries according to their LTC systems. Concentrating on spending on non-residential care, they make a broad division between Northern Europe (Denmark, the Netherlands and Sweden), where the government is mainly responsible for LTC, Central Europe (Austria, Belgium, France and Germany), where responsibility is shared, and countries in Southern and Eastern Europe (Spain, Estonia, Italy, Slovenia and Switzerland), where the family carries the main responsibility for LTC. Interestingly, there is no clear correlation between expenditure on non-residential LTC as a percentage of GDP, and this grouping.

There is no compelling reason to expect that any of these types of LTC system will be associated with more or less unmet need, or with a larger or smaller association of unmet need with social exclusion. Both families and the government can perform their responsibility adequately or can leave gaps.

30.3 Need for care is linked to material and social exclusion

Taking all levels of need together, some 17 per cent of all older persons are in need. The proportion varies from less than ten per cent in Switzerland or the Netherlands to about a one in five in Belgium, Spain, Italy or France and a quarter

Estonia (Figure 30.1). In general, needs are higher in the Southern and Eastern countries than in Scandinavia and Western and Central Europe, even when taking into account that in Sweden, Denmark and The Netherlands, a larger percentage of all 65+ live in nursing homes than in the other countries. Countries also vary in the distribution of levels of need. The severest level of need appears to be relatively common in Italy and Spain.

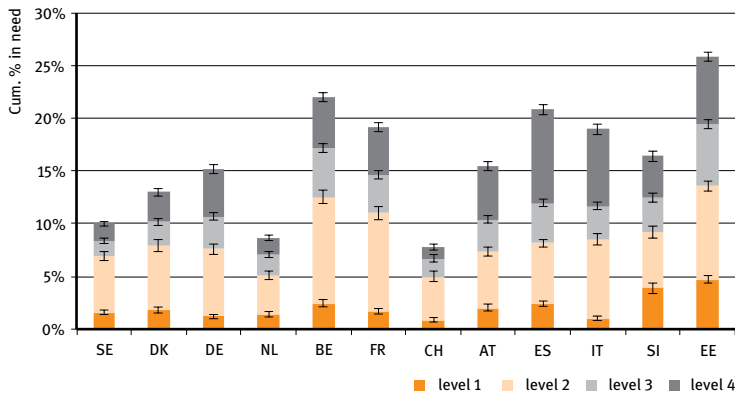


Figure 30.1: Proportion of older persons (65+) in need of care, by country and level of need

Notes: $n = 27,799$

Source: SHARE Wave 5 release 0

Since LTC needs increase very strongly with age, differences between countries might be affected by the age distributions. However, the same patterns obtain when controlling for the age and gender distribution.

We investigate the association between need for LTC and deprivation by running a number of probit regressions for LTC need, using the levels of need discussed above in a cumulative way. That is, we start with a broad definition of need encompassing all levels, which we subsequently narrow down to the most severe level of need 4. We successively add control variables, starting with demographic variables (age, gender, marital status), continuing with socio-economic variables (education, home ownership, possession of financial assets and/or debts) and finally a range of chronic conditions. We could not use household income because of the large number of missing values; including it for those cases where it was available hardly affected the associations between unmet need and the deprivation variables. Advanced age, renting your home, being less educated, having no financial assets, and suffering from chronic conditions all are associated with LTC need. None of the controls has a substantial effect on the strong association between need for care and social and material deprivation, except for

chronic conditions (results available on request). Inclusion of the latter reduces the association by about 20-25 per cent for material deprivation, and about 16 per cent for social deprivation. A possible interpretation is that bad living conditions in the past are correlated both with the risk of suffering from chronic conditions, and material and social deprivation. Another interpretation is that bad health itself has an impact on social exclusion.

Figure 30.2 shows that need for care and material and social deprivation are strongly associated, even when controlling for a large number of demographic, socio-economic and health characteristics. Being in severe deprivation increases the probability to have any LTC need by about nine percentage points (doubling the probability), and the probability to have needs at the severe level of four by about three percentage points (tripling it). The association is much stronger for social deprivation than for material deprivation, and social deprivation seems to become relatively more important than material deprivation at higher levels of need. One interpretation is that social deprivation, more than material deprivation, is a consequence of the need for care (shops, banks, doctors and the pharmacy became inaccessible when the respondent acquired limitations), in addition to being a cause of need.

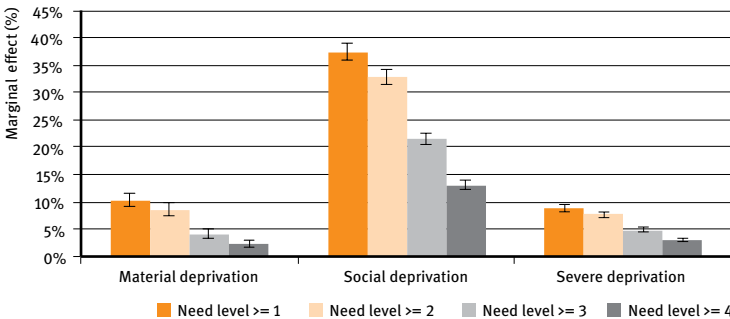


Figure 30.2: Association between deprivation and need for care, controlling for demographic, socio-economic and health characteristics: marginal effects from probit estimates (+ confidence intervals)

Notes: $n = 24,683$; material and social deprivation were entered in the same model; severe deprivation was entered in a separate model (to avoid artificial collinearity, as the latter is based on the former)

Source: SHARE Wave 5 release 0

30.4 A third of older persons in need did not receive adequate care

What kind of care do older people with limitations receive? We distinguish between informal care, formal personal care and formal domestic help and we use the definitions of unmet need (i.e. no appropriate care) discussed in section 30.2.

Figure 30.3 shows, unsurprisingly, that people are more likely to receive care the higher their needs. The biggest divide lies between need level 2 (only one ADL limitation and no IADL limitation, or no ADL limitation and one or several IADL limitations) and need level 3 (two ADL limitations, or one ADL and one IADL limitation). Also interesting are the differences between LTC systems. At all levels of need, persons in countries where the government takes the main responsibility for long-term care ('Type 1 state-LTC') are more likely to receive formal care than in countries where responsibility is shared between government and families ('Type 2 shared-LTC'), and even more than in countries where responsibility is mainly put upon families ('Type 3 family-LTC'). In the latter countries, families generally do not shirk this responsibility, as shown by the much larger proportions of older persons getting (only) informal care. Nevertheless, ultimately the proportion of older persons left with unmet needs is also higher in the family-LTC countries,

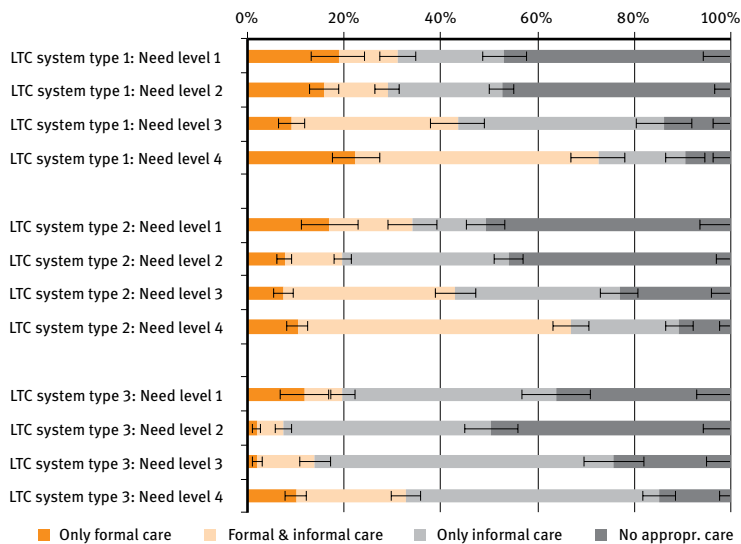


Figure 30.3: Kind of care received by older people in need of care, by level of need and LTC system type

Notes: n = 4,714

Source: SHARE Wave 5 release 0

compared to the shared-LTC and state-LTC countries, especially at more severe levels of need (these differences between LTC-types are statistically significant). Overall among the 65+ a third did not receive adequate care or help. While the prevalence of unmet need falls with the level of need, it was still around 15 per cent at severe need levels.

30.5 Unmet need for care, exclusion and the welfare state

Obviously one can only have unmet need if one is in need of long-term care. For the analysis of the association between unmet need and social and material deprivation this creates what is called in econometric terms a possible “selection bias”. For this reason we used Heckman probit regressions to analyse this association. As shown in section 30.3, the “selection” into LTC need is mainly a function of age, gender, country, deprivation and health conditions. Given that a person is in need of care, we assume in a second step that experiencing unmet need depends on the number of ADL and IADL limitations, education, home ownership, possession of financial assets and debt, country, living in a couple and gender, as well as of course social and material deprivation.

Such models, while still descriptive, partly control for contemporaneous factors affecting both needs and the way they are met. The results, shown in Figure 30.4, show that material and social deprivation levels are related to a higher probability of having unmet needs at the lowest levels of needs. At levels of need above 3, only social deprivation matters. As for the severe deprivation index, it is correlated to unmet needs at all levels, except for people with the highest level 4.

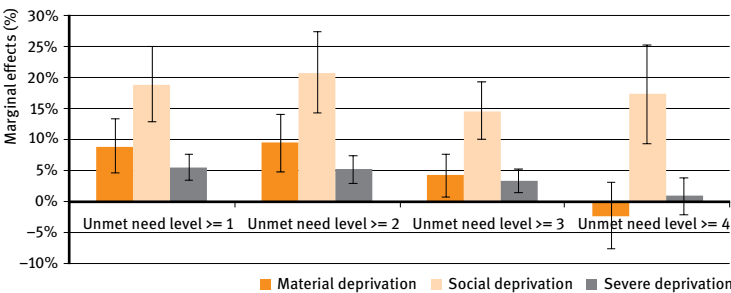


Figure 30.4: Association of social, material and severe deprivation with unmet need for care at four progressively higher levels of need, marginal effects from probit estimates

Notes: n = 24,683

Source: SHARE Wave 5 release 0

Looking at the association of unmet need and severe deprivation separately for the three groups of welfare state regimes (Table 30.1), we find that the probability to have *unmet* needs is somewhat higher under the Central system than the Nordic system, and higher under the South-East system than under the Central system. The association with severe deprivation, everywhere positive, does not

Table 30.1: Association of severe deprivation and unmet need for LTC, at four progressive need levels and within three LTC systems, probit coefficients

VARIABLES	Unmet need level ≥ 1		Unmet need level ≥ 2		Unmet need level ≥ 3		Unmet need level ≥ 4	
	Coeff.	St. error	Coeff.	St. error	Coeff.	St. error	Coeff.	St. error
Severe deprivation	0.118*	0.067	0.082	.073	0.110	0.101	0.020	0.140
Northern (state LTC)	ref	ref	ref		–		–	
Central (shared LTC)	0.078	0.067	0.117§§	0.074	0.121	0.101	0.022	0.146
South-East (family LTC)	0.197***	0.075	0.212***	0.082	ref		ref	
Severe deprivation # South-East (family LTC)	ref	ref	ref	ref		ref	ref	ref
Severe deprivation # Northern (state LTC)	–0.150	0.246	0.119	0.251	–		–	
Severe deprivation # Central (shared LTC)	0.178§§	0.113	0.232*	0.121	0.252§§	0.162	0.176	0.233
Observations	24,683		24,683		19,105		19,105	

Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, §§ $p < 0.15$

Note: Estimated coefficients from 4 Heckman selection probit models: 4 progressive levels of need with interaction terms of severe deprivation with welfare regimes. The Nordic countries are excluded from the level 3 and 4 models with interactions. All models include ADL and IADL levels, demographic and socio economic variables. See text of section 30.3 for the selection models (probability to have LTC need).

Source: SHARE Wave 5 release 0

differ much across welfare regimes. At fairly low level and intermediate levels of disability, it seems more positive in the Central countries. Severe deprivation is more strongly associated with unmet needs in Central Europe than in the Southern and Eastern countries (the effect is not significant for the highest levels of need; the Nordic countries are excluded for unmet need at level 3 or more because unmet need at those levels of need is very rare there). A tentative interpretation could be that for those severely deprived the family is essential in complementing the welfare state, and family is more efficient and present in Southern and Eastern countries than in Central Europe.

What type of social deprivation is related to unmet needs for care? In a final analysis seven of the more relevant elements of the index of the social deprivation are introduced separately (difficulties in getting to the nearest bank, doctors, pharmacy, living in unclean, dangerous, uncongenial neighbourhood, where people are unhelpful). We also add variables indicating the degree of urbanisation of the place of residence, from big city to rural areas, with the idea that some people might have more unmet needs because they live far away from care providers. Living in an area where people are perceived to be unhelpful is found to be the only element linked to unmet need for care. Perhaps surprisingly, living in a big city is also detrimental, though only at low needs for care. A possible policy implication is that improving neighbourhood relationships may have the indirect effect of encouraging carers to help with LTC in the community.

30.6 The more deprived, the more need for long-term care, and the more often these needs remain unmet

We distinguish four levels of LTC need, based on the combination of ADL and IADL limitations. Needs for LTC were higher in the Southern and Eastern countries than in Scandinavia and Western and Central Europe. Deprivation was clearly linked to LTC needs, even when controlling for demographic variables, socio-economic position and chronic conditions. There seems to be a direct link, although we cannot unravel its causal direction.

Relying on data on care and help received we estimated that among those needing LTC, a third did not receive adequate care or help. While the prevalence of unmet need falls with the level of need, it was still around 15 per cent at severe need levels. Unmet needs were found in all countries, though in the majority of cases at lesser levels of need. In the South and East of Europe, where the respon-

sibility for long-term care is mainly borne by families, a substantial proportion of older persons had to cope with fairly severe needs which are unmet neither by formal nor by informal care or help. The proportion was smaller in countries where the state takes on most of this responsibility (Sweden, Denmark, the Netherlands). Countries where the responsibility is shared between the state and families were intermediate.

Not receiving appropriate care was linked to deprivation. It is as if those in deprivation faced a double penalty: more likely to have limitations, and at the same time less likely to receive help. But we found some sign that severe deprivation is less problematic in the South and East than in Central Europe, probably because of the strong role of the family.

We also found, surprisingly, that older people living in big cities more often have to cope with unmet LTC needs. Among other reasons, it is probably the quality of the neighbourhood that is a problem. More work is clearly needed to untangle the various effects.

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Ludovico Carrino and Cristina Elisa Orso

31 Eligibility regulations and formal home-care utilisation among the vulnerable older people in SHARE Wave 5

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- ▶ Eligibility matters and differs across countries
 - ▶ Potential failures of Long-term Care (LTC) systems arise when objective vulnerable elders are left out of home-care programmes, or when formal care is provided to healthy individuals
 - ▶ Education plays a crucial role in determining the access to formal home-care for eligible individuals
 - ▶ Diabetes, cancer, Parkinson, fractures partially explain why non-vulnerable individuals receive home-care
-

31.1 Eligibility regulations and access to formal home-care

Availability, accessibility and acceptability of public home-based programmes of long-term care for older people in Europe is under intense analysis. Tightening government budget constraints, together with the ongoing ageing process, call for efficient and effective home-care provision that could promote the practice of healthy (and active) ageing among older adults (European Commission 2014). Gaining insights on availability, accessibility, acceptability and utilisation of formal home-care is therefore particularly useful to improve both its efficiency and effectiveness.

In this chapter we explore the determinants of access to formal home-care for the older population in Europe. We contribute to the existing literature in that we take into account the institutional regulations for public LTC programmes, which label individuals as “eligible” or “non-eligible” to in-kind/in-cash benefits, according to their medical-status. In particular, we investigate potential “failures” of LTC programmes, which arise when vulnerable individuals who are legally entitled to receive formal-service, do not receive any (the so-called “no-care zone” (Wallace 1990)) or when, conversely, individuals make use of home-care although not being eligible for it.

Utilisation of public home-based assistance requires some degree of interaction between the applicant and the institution providing the benefit. Access

to main care programmes in Europe is vastly determined in two sequential and regulated steps. First, an assessment-of-need is performed by medical teams in order to build a “vulnerability profile” of the elder applicant; second, a decision on their eligibility status is taken by comparing the vulnerability profile with a set of eligibility rules defined by the legislation. The eligibility status conveys two sorts of information: at the extensive margin it discriminates between eligible and non-eligible individuals (i.e. having *access* to the programme or not) while at the intensive margin it characterises the individual degree of eligibility and, therefore, the extent to which a recipient can benefit from the programme (i.e. the *utilisation* of the service). What needs to be stressed is that assessment and eligibility processes act as a compulsory gateway to public domiciliary support in all countries and, in some cases, as pathways to reablement or to care planning (Eleftheriades & Wittenberg 2013). Although such regulative aspects are likely to be crucial factors in determining access to and utilisation of home-based care in Europe, they have not been comprehensively reviewed and included so far in applied analyses.

In a recent paper (Carrino & Orso 2014) we provide a review of main public LTC programmes of domiciliary-care in several European countries. We find that regulations are highly heterogeneous, both within and between countries, with respect to the actual definition of the population in “need-of-care”. Due to the high level of heterogeneity in defining eligibility criteria, we focus our attention on a subset of European countries (Austria, Belgium, Czech Republic, Germany, Spain and France), whose public LTC regulations clearly identify a minimum level of need corresponding to a condition of “objective dependency” that entitles individuals to receive a public home-care service.

Table 31.1 summarises the assessment and eligibility rules for main LTC programmes in these countries. Even though all regulations attach a vulnerability-index to each medical profile, substantial variations arise in how such indices are built. Even if most programmes evaluate “objective vulnerability” on a set of functional (mostly ADL and iADL tasks) and cognitive limitations, almost no regulation includes them altogether in the assessment process. Moreover, the health outcomes are often unequally weighted within an assessment scale: some limitations are given more importance than others, and there are legislations that define some deficit as necessary and/or sufficient for eligibility. As a consequence, individuals with equal medical-profiles may well result to be eligible for LTC services under one legislation while being ineligible under others.

Table 31.1: Summary of LTC Eligibility Regulations

Country	Programme (scale)	# items	ADL	iADL	Others	Eligibility threshold	Equal weighing
AT	<i>Pflegegeld</i>	21	✓	✓	M, C	60h/month+	No
BE	<i>APA</i>	7	p	p	C	7 points	Yes
	<i>INAMI/RIZIV (BESADL)</i>	6	✓		C	Washing and dressing / cognition	No
	<i>Vlaamse zorgverzekering</i>	25	✓	✓	C	35 points	No
CZ	<i>Příspěvek na péči</i>	10	✓	✓	C	3 deficits	yes
DE	<i>Pflegeversicherung</i>	15	✓	✓	M, C	90m/day+/ Cognition	No
ES	<i>Promoción de la Autonomía Personal</i>	9	✓	✓	C	25 points	No
FR	<i>APA (AGGIR)</i>	8	✓*	**	C	2 ADL / cognition	no
	<i>Action Sociale (AGGIR)</i>	8	✓*	**	C	washing / cooking / housework	no

Notes: C = cognitive limitations; M = advanced medication procedures; p = partial coverage;

* Incontinence not included; ** iADL do not enter the algorithm for GIR classification; + Austria: at least one ADL and one iADL limitations must occur. Germany: out of the 90m of need, at least 45m must come from ADL limitations.

Source: Carrino & Orso (2014)

31.2 Potential failures of long-term care

Basing on our review, we implement countries' LTC eligibility rules on the individual observations included in the 5th wave of SHARE, for Austria, Belgium, Czech Republic, France, Germany and Spain. Our sample selection includes all individuals aged 65+ (15,481 observations). SHARE data are particularly useful for this sort of analysis, since they contain a set of questions that allows us to build, for each individual, a simplified medical profile comparable with the LTC regulations of the countries in our sample. As a result, we are able to generate a dichotomous individual variable, named *eligibility*, which takes value 1 if the

individual fulfils the minimum requirements of at least one LTC programme implemented in her area of residency (i.e. he/she is *eligible* to LTC home-care services) and 0 otherwise. The eligibility status is therefore exogenously assigned at the individual level on the basis of the LTC regulations implemented in each respondent's country. Furthermore, eligibility in these countries is determined solely on a patient's functional and cognitive status, as well as on age (the latter is not always included as a condition). Our eligibility variable can be interpreted as a necessary requirement to obtain publicly funded long-term care, and as a proxy for the country-specific perspectives on the concept of vulnerability, therefore allowing us to account for the heterogeneity in both the assessment-of-need procedures and the eligibility rules among the selected countries.

We consider an individual as *formal care receiver* if he/she reports to have received professional or paid personal-care/nursing-care in their own home, in order to perform activities that he/she could not have performed otherwise, or to have received meals-on-wheels. We construct a dichotomous variable for formal home-care utilisation that assumes value 1 if respondents receive such forms of assistance during the twelve months preceding the interview, and 0 otherwise.

Table 31.2 shows that, on average, ten per cent of the population is eligible to home-based LTC. The country-specific eligibility rates go from 11.7 per cent in France to 7.3 per cent in Belgium. These rates should not be interpreted as comparable inclusiveness rates, since their heterogeneity derives from both differences in regulations and differences in the country-specific population and these effects cannot be disentangled at this level of analysis (Carrino & Orso 2014).

Table 31.2: Eligible and non-eligible individuals across countries

	Austria	Germany	Spain	France	Belgium	Czechia	Total
Non-eligible	1,970	2,256	2,796	1,978	2,354	2,572	13,926
Eligible	250	203	347	262	185	308	1,555
(in %)	11.3 %	8.3 %	11.0 %	11.7 %	7.3 %	10.7 %	10.0 %
Total	2,220	2,459	3,143	2,240	2,539	2,880	15,481

Source: Authors' elaboration from SHARE data

Furthermore, we can exploit the exogenous and regulative nature of the eligibility variable to gain some further insight on formal care utilisation in our sample. Table 31.3 reports the share of total population who gets formal home-care and/or is eligible for it.

Table 31.3: Eligibility and receiving home-care

(% of total population)		Receiving formal home-care	
		No	Yes
Eligible	No	86.7 %	3.2 % (ii)
	Yes	5.5 % (i)	4.6 %

Source: Authors' elaboration from SHARE data

As it is visible from Table 31.3 the “eligibility” status does not necessarily identify those individuals who are actually “treated” by public programmes, for a number of reasons. First, SHARE does not include information on whether an individual did apply for LTC benefits. Our eligibility variable is built independently of individuals’ actual utilisation of formal care, and does not represent a treatment effect but, rather, an intention to treat. That is, eligible individuals are those whose medical-profile is regarded by local regulations as being “vulnerable enough” to receive public care. Second, an individual can choose to buy formal care on the private market, because of a lack of public care supply or because he/she needs a kind of assistance which is not covered by the public programmes.

Nevertheless, Table 31.3 allows us to distinguish between two well-known potential “failures” of the care-programmes, which arise when:

- i. individuals who would be, in principle, considered as eligible, do not actually receive any formal care
- ii. individuals who are not eligible still make use of formal care

Point (i) should be carefully examined, since it highlights “no-care zones” where the LTC programmes are not effective, thus hinting at existing issues in the interaction between applicants and institutions. Investigating the determinants of these conditions is a task of major economic and policy relevance. The existing literature provides evidence for an important role played by education (health and bureaucracy literacy) on the lack of access among those who need it, but does not consider the role of eligibility regulations (Parker et al. 2003, Peerson & Saunders 2009).

Point (ii) potentially encompasses actual “system failures”, e.g. when someone receives a service (formal home-care) he/she is not entitled to receive, since he/she is not eligible for it. As already mentioned, caution should be exercised in interpreting these figures, since they could be partly generated by the presence of non-LTC services which are usually assimilated to LTC (e.g. some disease-specific home-assistance, like insulin injections for diabetic patients), by the presence of smaller community-level LTC programmes (whose eligibility rules are not included in the “eligibility” variable), and the presence of private providers from which non-eligible individuals can receive paid assistance.

31.3 The main determinants of access to formal care and the role of education

Our aim is to shed light on the determinants of formal care utilisation between two different subpopulations: eligible and non-eligible individuals. In order to do that, we estimate two probit models conditioning on the eligibility status of the respondents. In line with the prevailing literature, the demand for formal care is assumed to rely on various socio-demographic, health-related and economic factors (see for instance Bonsang 2009, Balia & Brau 2013). Specifically, we consider a set of socio-demographic variables and several measures of respondents' health status. Moreover, we introduce information on the elder adults' degree of involvement in the public sphere: an indicator for "sociability", which includes the number of social activities in which he/she has been involved during the month preceding the interview, and a variable counting the number of contacts with the dentist during the twelve months prior to the interview.

In both subgroups, we find the following results:

- a positive effect of age is found on the probability of receiving home-care. The dummy for being retired is not significant, mainly due to the sample selection (we include only respondents aged 65+ who are mostly retired)
- the spousal support has a significant and positive effect on the formal home-care use
- having children significantly reduces the likelihood of formal care utilisation with respect to not having any. The latter effect follows economic intuition, since it highlights the offspring's role in providing help to their parents
- As for the dummy for the household's ability to make ends meet, its coefficient is not significant in both models
- Objective and generic vulnerability outcomes like ADL and IADL are significant (with a positive sign) for both samples. This shows that discretionality of care-access due to functional limitations exists regardless of whether individuals are "officially" labelled as vulnerable or not

Among eligible individuals, an important result concerns education. Having lower education significantly decreases the probability to receive home-care. These findings provide evidence for an accessibility issue that would be hard to identify without information on eligibility status. Higher levels of education significantly matter in navigating the intricate LTC settings, understanding the complicated bureaucracy and the associated technical jargon in order to access to formal home-care services. This effect can be related to the health literacy concept, which refers to the degree of familiarity with health-related terminol-

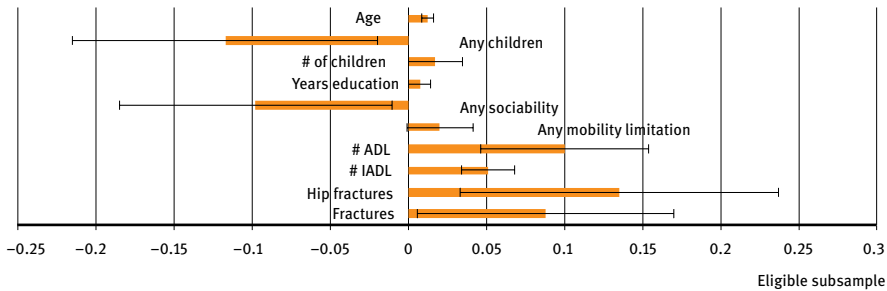


Figure 31.1: Probability of receiving home-care, eligible population

Notes: Probit model, marginal effects at the mean of the variables (we reported only significant marginal effects); 65+ individuals (N=1,538).

Source: SHARE Wave 5 release 0

ogy and notions (Nutbeam 2008). According to the WHO definition “health literacy represents the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health”. Education is one of the crucial determinants of health literacy (see e.g. Sun et al. 2013). Highly educated individuals are more likely to apply literacy skills to health tasks, improving decision-making related to health issues in a highly bureaucratic and complicated health-care maze. In an ideal situation, being in a condition of objective dependency would be sufficient to receive assistance, regardless of individuals’ literacy levels. However, the unavoidable (so far) hurdle of interacting with regulations and formal institutions appears to increase the difficulty of access for the lower educated subgroups.

Further results, specific to the eligible population, can be summarised as follows:

- among eligible individuals, the number of children has a negative effect on formal care utilisation, but this effect decreases with their number
- the “sociability” variable highlights that individuals who take part in activities (external to the family) have a lower probability of receiving care, probably because they are more able to exploit informal support from friends (or neighbours) compared to those who do not participate in any (Kalwij et al. 2014)

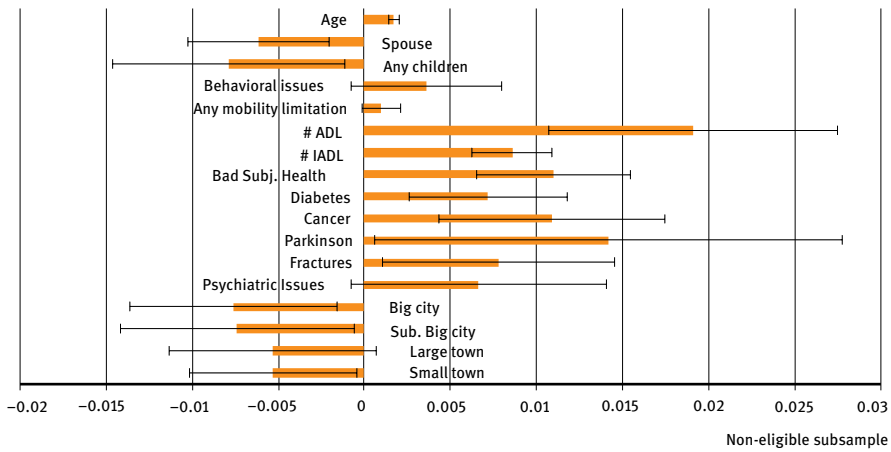


Figure 31.2: Probability of receiving home-care, non-eligible population
Notes: Probit model, marginal effects at the mean of the variables (we reported only significant marginal effects); 65+ individuals (N=13,874)
Source: SHARE Wave 5 release 0

If we look at the non-eligible population, health-status characteristics contribute to explain why we observe that individuals who are not in an “objectively” vulnerable condition (and maybe do not report any functional limitation) still receive some formal care, i.e. the (ii) case discussed above.

- First, when objective functional limitations are present, the individual can look for minor community-level programmes (whose regulations are not included in our eligibility variable) that can provide them with some LTC benefit
- Second, when specific pathologies are detected, some specific public health/ social programmes, which do not necessarily fall within the category of LTC services, could provide domiciliary assistance. In our results, such effects are found for depressive symptoms, as well as for conditions like diabetes, cancer, Parkinson, and fractures
- Third, respondents may decide to buy formal care on the private market when the public provision is unavailable or does not cover the specific need

Finally, those individuals who report to live in rural areas (with respect to big cities, large towns, city suburbs and small towns) are more likely to receive formal home-care when their medical status is considered as “non-vulnerable” by LTC regulations. This might capture the higher confusion and difficulty of access that can characterise big city health services and medical bureaucracy. Moreover, rural areas are likely to exhibit a different organisation of social-assistance offices and health-care, which could result in a different care-supply and eligibility rules

with respect to those captured by our review (which concentrates at main nation- or region-wide programmes).

Overall, our analysis points to the key role of education as a vehicle for enhancing social inclusion in terms of accessibility to home-care programmes. Highly educated individuals labelled as “eligible” by the national or regional assessment schemes have more chances to receive home-care compared to those less educated, due to their capability to apply literacy skills to health related issues. In terms of policy implications, this conveys the importance of taking into consideration older individuals’ health, and bureaucratic literacy levels, in order to improve access to formal home-care programmes. Otherwise, the risk would be to incorrectly label low-educated eligible individuals, who do not get care, as “non-compliant” – simply when they just do not have enough skills to comply with the regulations implemented in their own nation or region. A second key point of our analysis concerns the non-eligible population. Suffering from severe diseases such as diabetes, cancer, Parkinson and fractures increases the probability of receiving home-care services among non-eligible individuals. As previously mentioned, it may be due to the presence of community-based care-programmes which do not fall within the range of long-term care programmes (and, consequently, are not “captured” by our eligibility measure), but which cover specific domiciliary services to those seniors most in need of care.

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32 Long-term care insurance across Europe

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- ▶ Overall, relatively few 50+ Europeans hold private long-term care insurance (LTCI) policies
 - ▶ There are large country-specific variations in LTCI coverage rates that are mainly related to differences in the institutional design of long-term care provision
 - ▶ Education, income, widowhood, good subjective health status, and chronic conditions are positively related with the demand for LTCI policies
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32.1 Demand and supply for long-term care insurance in Europe

Population aging is one of the main challenges for most Western countries. The number of older individuals will increase substantially and some of the extra years of life might be spent with some level of dependency requiring care. However, it is unclear if the need for long-term care will necessarily increase to the same extent as the number of older citizens, because compression of morbidity (if any) may play a mitigating role. At the same time, changes in the family structures – with more childless households or more mobile children – will require the enhanced provision of formalised care arrangements. An important question in many countries is how to adapt the provision of long-term care (LTC) to the changing needs of their aging populations. In this context, long-term care insurance (LTCI) plays a fundamental role. In contrast to acute care needs, LTC needs can require years of medical, social and financial requirements. Despite this looming financial risk in old-age, it is known that purchase rates of private LTCI policies are low (Brown & Finkelstein 2009). This could be due to a lack of demand (e.g. because of a preference for informal care by daughters, as stressed in chapter 33 in this volume) or due to a lack of supply (e.g. because insurance companies are concerned about adverse selection or even aggregate longevity risks).

In order to derive strategies for mitigating financial problems in the provision of LTC, a comprehensive study of the dispersion and utilisation of LTCI is a necessary first step. The goal of this chapter is to give empirical insights into the structure of long-term care insurance coverage across Europe using SHARE. In particular, we examine the cross-country variation in LTCI coverage using the newly introduced question HC 116 (*Do you have any of the following private or public long-term care insurances?*). Our main focus lies on the demand for private

supplementary LTCI, particularly in those countries where non-negligible fractions of households hold such policies.

We find large country-specific variations in LTCI coverage rates. This is in accordance with the differing institutional LTC arrangements in Europe which create different incentive structures for the demand for private insurance. In France and Israel, there exist quite developed markets for such insurance policies, whereas in the other European countries under scrutiny, only a small share of people are privately insured against the risks of needing long-term care. We find that income and education are important determinants of the probability of holding a private LTCI policy. Moreover, being widowed is positively related to having an insurance policy. The effect of health is ambivalent: while reporting excellent or very good subjective health is positively correlated to being insured, suffering from a chronic condition is also positively associated with LTCI ownership. We also analyse whether the low holding of LTCI policies in some countries is due to supply-side constraints or to differences in socio-demographics. We conduct a policy thought experiment and decompose differences in market shares between countries into supply side factors, i.e. institutional constraints, and different socio-demographic characteristics which are related to demand. The main result of this exercise is that most of the differences in observed market shares would vanish if the supply structure was similar.

32.2 Long-term care insurance: theoretical and empirical economic research

LTC may be defined as care for people who need support in activities of daily living over a longer time span. Persons receiving LTC have lost their autonomy in conducting activities like moving around the house, personal hygiene or dressing. Help is then provided by family members, friends or (semi-)skilled caregivers and nurses (Colombo et al. 2011). The demand for and provision of LTC as well as its financing systems show great diversity across Europe. For example, according to recent OECD data the share of LTC recipients (defined as individuals receiving LTC by paid providers, including non-professionals receiving cash payments under a social programme) varies notably across the countries surveyed in SHARE. In the Netherlands, Israel and Switzerland around 20 per cent of the population aged 65 and older receive LTC according to this definition in 2011. The shares for the Czech Republic, Denmark, France, Germany, Luxembourg and Sweden lie between twelve per cent and 17 per cent. In Spain, Slovenia, Estonia and Italy less than ten per cent of the older population receive this kind of care. With the exception of Slo-

venia, where institutionalised care outnumbers home care, in all other countries more than half of the care recipients are cared for at home in 2011 (OECD 2013). Further country-specific arrangements of LTC systems may relate to the source of funding (by taxes or insurance contributions), entitlement to LTC benefits (universal or means-tested) or level of public LTC coverage (single systems or multiple benefits/services/programmes) (Kraus et al. 2010, Colombo et al. 2011).

Figure 32.1 shows public LTC expenditures as a share of GDP for the countries which are analysed in this article. Care-related public spending varies to a great extent between countries. While in Sweden and the Netherlands between 3.5 and four per cent of GDP is spent on public LTC provision, expenditure in the Czech Republic and Israel is less than 0.5 per cent. Hence incentive structures to buy additional private long-term care insurance may vary as well.

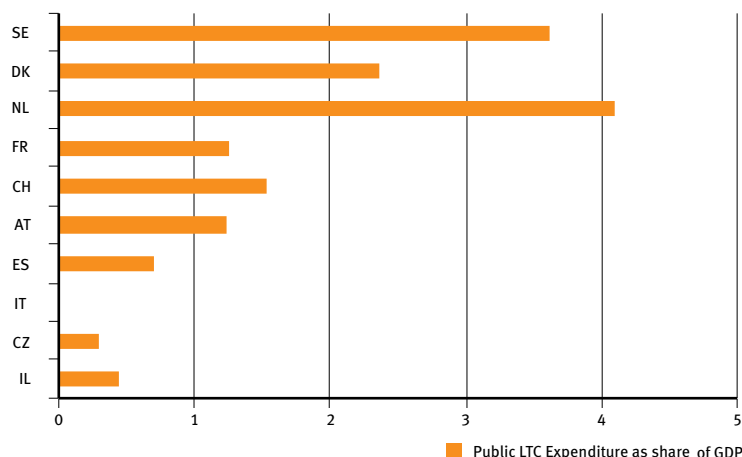


Figure 32.1: Share of public expenditure on LTC as a percentage of GDP, 2012 (2010 for Israel)

Notes: No data available for Italy

Source: OECD Health Data, data extracted on 11 Nov 2014 13:08 UTC (GMT) from OECD.Stat

The role of private LTCI is especially interesting in the context of potential future financing challenges of LTC. The merit of private care insurance is ambivalent – on the one hand it will provide an important supplement to public expenditure and ease the potential pressure on government budgets, on the other hand, private financing of care might be difficult and thus, a less efficient way to ensure universal and sufficient coverage in the population, for example due to selection problems (Colombo et al. 2011).

Alternative explanations for the low demand for additional LTCI purchase in countries where a market for such policies exists are discussed in the litera-

ture. Frequently listed explanations are asymmetric information in the insurance market (like adverse selection and moral hazard), the complexity of insurance contracts, uncertainty about the future costs of LTC and reforms of LTC institutions, individuals' myopia in assessing the financial risk for LTC, competing financial priorities, as well as the availability of potential substitutes for care provision (like public coverage, family or friends) (Pestieau & Ponthière 2010, Colombo et al. 2011). Not many empirical studies that examine the determinants of buying LTCI policies exist for European countries.

32.3 Data and descriptive results

The 5th wave of SHARE introduced a new question on long-term care insurance as part of the Health Care Module. The question was not asked in Germany and in some other countries where no market for private long-term care insurance exists (i.e. Belgium, Estonia and Slovenia). We exclude data from Luxembourg – even though the question was asked, because post-validation revealed that no private LTCI products are available. Thus we are able to discuss and compare data for the following ten countries: Austria, the Czech Republic, Denmark, France, Israel, Italy, the Netherlands, Spain, Sweden and Switzerland. The generic question on long-term care insurance in SHARE Wave 5 is *“Do you have any of the following public or private long-term care insurances?”* In case the question is unclear, the interviewer is instructed to add the following text: *“Long-term care insurance helps covering the cost of long-term care. It generally covers home care, assisted living, adult day-care, respite care, hospice care, and stays in nursing homes or residential care facilities. Some of the long-term care services might be covered by your health insurance”*. Respondents then can report one or more of the following answer categories: *‘Public’*, *‘Private mandatory’*, *‘Private voluntary/supplementary’*, *‘None’*. Due to the country-specific care arrangements and their different levels of public and private coverage, the given categories slightly vary between country questionnaires. In Austria, France, Israel and Switzerland there is no option to report being covered by public LTCI. The Danish and Swedish surveys do not distinguish between private mandatory and private voluntary LTCI but only offer the category *‘private’* insurance. In Austria and Switzerland the question concentrates solely on holding a private LTCI policy. Respondents were asked if they own any private care insurance and could opt *‘yes’* or *‘no’*. Moreover, in the Swedish version of the questionnaire the translation of the question does not perfectly cover the subject-matter of interest. Swedish respondents were asked if they have a public or a private *‘hälsovårdsförsäkring’* – which is mostly equivalent to *‘health care insurance’*. The option to choose having no LTCI was not available in Sweden.

Before we report the respondents' coverage with private voluntary LTCI policies we would like to take a quick look at the fraction of missing answers. The share of persons refusing to give an answer or answering 'I do not know' varies across countries. We find low rates of these missing values in Austria, Denmark, France, Italy and Spain (less than 1%). Refusals and 'Don't know' answers are slightly more common in the Czech Republic and Sweden (1.13% and 2.27%). The share of missing values is highest in Israel, the Netherlands and Switzerland (between 5.98% and 6.73%). We treat few ($N=15$) implausible cases where respondents stated simultaneously to have and not to have LTC insurance also as missing.

With the exceptions of Austria, Sweden and Switzerland, where respondents cannot choose to answer having no LTCI coverage at all (i.e. neither public nor private), in the remaining countries respondents mostly report to hold no such insurance. In France and Italy more than 80 per cent state that they do not have any insurance, in Denmark and Spain we find shares exceeding 70 per cent. More than half of the respondents in the Czech Republic claim to have no LTCI policy. Shares are lower in Israel and the Netherlands, with approximately 25 per cent.

In the following we take a closer look at the cross-country variation of the coverage with private supplementary LTCI policies. To give a descriptive overview regarding our main focus, Figure 32.2 shows the weighted percentage share of respondents who state holding a private voluntary LTCI policy. As hypothesised, we observe a very diverse distribution across countries depending on the institutional context. In Israel we find the highest coverage rate with over 32 per cent of the surveyed persons stating to own a private supplementary LTCI policy. The second greatest share is found in Switzerland with 19.37 per cent of the respondents owning such insurance policies. France, the Netherlands and Sweden yield results of 14.67 per cent (NL), 13.95 per cent (SE) and 13.41 per cent (F), respectively. The remaining countries show population shares of well below ten per cent claiming to have signed a LTCI contract. In the Southern European countries the shares are 4.94 per cent for Spain and 2.63 per cent for Italy. The lowest coverage rates are found in the Czech Republic (2.28%), Denmark (1.83%) and Austria (1.45%).

Before analysing potential determinants for holding a private care insurance policy, a major concern of our article is to compare the self-reported coverage shares we find in SHARE data with the most recent information on the development of the long-term care insurance markets in the respective countries. Bearing in mind the country-specific European institutional care arrangements with highly different financing sources, organisational depths, eligibility criteria and levels of development, some of the descriptive statistics we stated above might demand more detailed exploration. Due to a relatively small market penetration

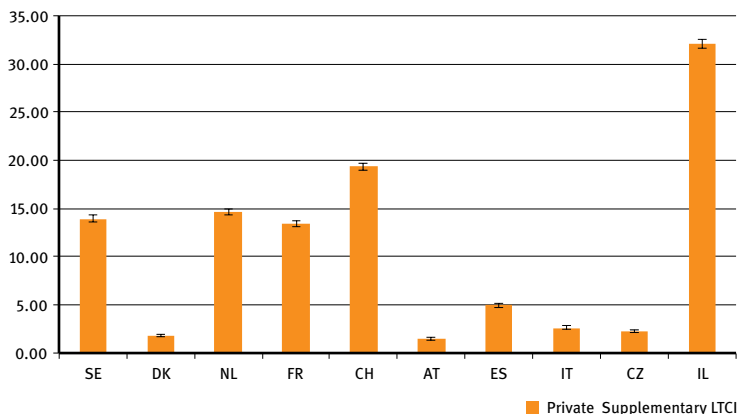


Figure 32.2: Private supplementary LTCI, share of valid answers in per cent with standard deviations

Notes: Overall N=41,899. Observations in the individual countries: SE – 4,358; DK – 4,029;

NL – 3,813; FR – 4,282; CH – 2,745; AT – 4,153; ES – 6,264; IT – 4,588; CZ – 5,427; IL – 2,240

Source: SHARE Wave 5 release 0 using calibrated individual weights, authors' own calculations

in most European countries, aggregate information on the number of private LTCI holders is still scarce. Nevertheless, it is possible to make some comparisons between the reported shares of LTCI in SHARE and existing figures or general statements on the development of those markets. We are providing an overview of this exercise in Table 32.1. In this table, we report the available information on the depth of private LTCI markets from official reports and the corresponding sources and year of the report. We identify six countries in which the most recent market information available seems to correspond to the LTCI coverage reported in SHARE: Austria, Denmark, the Czech Republic, Italy, France and Israel. Official figures on LTCI holders are documented best for countries with developed markets for this kind of insurance (i.e. Israel and France). In those countries we also find relatively high shares of private insurance holders among the SHARE respondents. On the other hand, the low fraction of LTCI holders reported in SHARE for Austria, Denmark, the Czech Republic, and Italy coincides with the information that in those countries markets are still very thin. In the remaining countries, private LTCI coverage seems to be reported too frequently by SHARE respondents compared to the available information on the development of the respective insurance markets. These countries are Spain, the Netherlands and Switzerland.

Finally, we consider the survey results for Sweden as an 'intermediate' case in the scope of our validation process. 13.95 per cent of SHARE respondents report private LTCI ownership, which seems fairly high in a country where the

state provides a comprehensive public solution for care needs (Fukushima et al. 2010, Karlsson et al. 2010). However, as mentioned earlier, in the Swedish version of the questionnaire, the translation of the relevant question does not perfectly match the subject-matter of interest. Swedish respondents were asked if they have a private ‘hälsovårdsförsäkring’ – which is mostly equivalent to ‘health care insurance’. Compared to recent official figures of private health care insurance coverage, answering behaviour in SHARE seems to be reliable (Svensk Försäkring 2014) but does not exactly correspond to our research question.

Table 32.1: Compilation of market statistics on LTCI

Country	Information on LTCI markets	Year	Source
AT	LTCI: 60,000 insured persons	2010	Kern & Lammer (2011)
	Market for private LTCI has expanded recently - with eleven insurance companies offering a stand-alone LTC policy in 2012 compared to six providers in 2007	2012	Liepold & Hager (2012)
DK	Private Health Insurance: 1.094277 insured persons of which are 10.6 % personally signed schemes and of those are 80.1 % care insurances	2010	Danish Insurance Association (n.d.)
FR	LTCI: 5.5 million insured persons	2012	AXA (2012)
ES	LTCI: 17,500 insured persons	2010	SCOR Global Life (2012)
IL	“A high market penetration with over 4 million insured” (appr. 54 %)	2012	SCOR Global Life (2012: 39)
IT	No official data on private expenditure, including out-of-pocket expenditure for LTC or insurance are available	2010	Tediosi & Gabriele (2010)
NL	“No substantial demand for private LTC insurance”	2013/ 2014	Van den Berg (2013/2014: slide no. 9)
SE	Private health care insurance: ~ 573,000 insured persons	2013	Svensk Försäkring (2014)
CH	“Private LTC insurance is not a success in Switzerland”	2012	SCOR Global Life (2012: 31)
CZ	No information on LTCI, and only very limited role of private health insurance in general (0.1 % of the population covered by private insurance)	2011	Roubal & Šídlo (2014)

32.4 The demand for private long-term care insurance

32.4.1 Empirical strategy and measures

In the following section we aim to identify socio-economic and health characteristics which are related to the possession of a private supplementary long-term care insurance policy. The main sample of analysis is based on data from Austria, the Czech Republic, Denmark, France, Israel and Italy. Additionally, we supplement SHARE Wave 5 data with variables from previous waves which did not change between survey years (e.g. gender, education). We estimate a probit regression model for which we define the following variables.

Dependent Variable: A dummy variable indicates if a respondent owns a private supplementary/voluntary LTCI policy.

Independent Variables: We include information on socio-economic characteristics such as age (divided into four age groups: “*under 55*”, “*55 to 64*”, “*65 to 74*” and “*75 or older*”), gender, current employment status (“*retired*”, “*working*”, “*not working*” – where “*working*” contains employed or self-employed persons and “*not working*” covers unemployed, permanently sick or disabled people, homemakers or others), education (based on the ISCED-1997 scale with categories “*no/primary education*”, “*secondary education*” and “*tertiary education*”) and weighted household income, which is defined as the combined monthly net income of all household members of the year before (i.e. 2012). We adjust the local currencies by applying purchasing power adjusted price indices provided by Eurostat and in a second step we construct the equivalence scale income by dividing the overall household income by the square root of the number of household members. In addition, our model contains variables reflecting the family background which might influence a person’s decision to purchase an insurance policy. These include current marital status (“*married*”, “*single*”, “*divorced*”, “*widowed*”), the number of household members as well as the information whether the respondent has children (as dummy variable “*yes/no*”). Moreover, we analyse the influence of a person’s health situation on the decision to hold a LTCI policy. We use the self-rated health status (“*excellent/very good*”, “*good*”, “*fair*”, “*poor*”) and – as a more objective health measure – an indicator if the respondent is suffering from any chronic conditions (dummy variable if the respondent reports any chronic or long-term health problem, illness or disability including mental health problems). Additionally, we use a binary variable indicating if the respondent received home care (e.g. any professional or paid services due to a physical, mental, emotional or memory problem in their own home) or nursing

home care (been temporary or permanently in a nursing home/residential care facility overnight) within the last twelve months. Finally, we include a dummy variable for each country to control for unobserved heterogeneity caused by potential country-specific effects. In Table 32.2, we report summary statistics for the explanatory variables of the regression model.

Table 32.2: Summary statistics for the estimation sample

Variable	Mean in % (SD)	N
Male (Ref.=female)	43.29	25,574
Age group		25,484
<55	12.50	
55–64	34.23	
65–74	31.37	
75+	21.90	
Education ISCED-1997		25,040
No/primary education	22.72	
Secondary education	54.83	
Tertiary education	22.44	
Health self-rated		25,488
Excellent/very good	28.61	
Good	34.76	
Fair	25.54	
Poor	11.10	
Health chronic illness (=yes)	48.04	25,487
Care received last year (=yes)	10.24	25,377
No. of household members	2.15 (0.99)	25,561
Marital status		25,187
Married	69.77	
Single	5.50	
Divorced	9.46	
Widowed	15.27	
Employment status		25,204
Retired	60.09	
Working	26.53	
Not working	13.38	
Household income (log)	7.28 (1.21)	20,824
Child (=yes)	91.62	25,466

Notes: Sample: DK, FR, AT, IT, CZ, IL

Source: SHARE Wave 1 release 2.6.0, Wave 2 release 2.6.0, Wave 4 release 1.1.1, Wave 5 release 0

32.4.2 Results

Results from the probit regression are shown in Table 32.3. We report the average marginal effects of the dependent variables on the probability to possess a private LTCI policy in Austria, the Czech Republic, Denmark, France, Israel and Italy. Overall, we do not find significant differences in the probability to own a private LTCI policy between men and women. However, we estimate a slightly higher probability of LTCI ownership among the 55 to 64-year old compared to respondents aged 55 and younger. There is no significant effect for those older than 65. Education has a positive effect on the likelihood to have a supplementary insurance. This could be due to an increased awareness of the need to insure the additional risks privately. We do not find significant differences in the likelihood to own private LTCI policies between married, single and divorced respondents. However, widowed individuals are substantially more likely to be privately insured. This could be related to the fact that widows and widowers do not have a partner anymore that could provide informal care. Thus, there is an increased need for formal care that can be (partially) financed by a private insurance. At the same time, widowed respondents might have cared for the deceased partner and thus have an increased awareness that care might be needed at some point in their life. We do not find an effect of whether the respondent has any children on the purchase of private LTCI. Moreover, compared to retired individuals, those in the category ‘not employed’ have a lower likelihood to own a private insurance. Since this category is comprised of so many different subgroups, the effect is hard to interpret. Self-rated health shows an interesting and at first glance counterintuitive effect: those rating their health as ‘excellent’ or ‘very good’ are much more likely to buy private insurance compared to those in worse health conditions. Several mechanisms are possible to explain this relation: on one side, unhealthy individuals might abstain from demanding LTCI policies because they might assume that their premiums will be very high due to their bad health condition. On the other side, the effect could be related to risk preferences which on the one hand determine health status and on the other hand might drive the purchasing of private insurance (“advantageous selection”). Interestingly, for chronic conditions we find the reverse effect: conditional on subjective health those suffering from chronic health problems are slightly more likely to be privately insured which could be an indication for adverse selection based on health. The fact if someone received care in the past twelve months seems to be unrelated to coverage with a private LTCI policy. Income has a significantly positive effect on buying an insurance contract. The number of household members is negatively related to holding a private LTCI policy which could be an indication of a substitution effect: if more household members are present who could potentially provide informal care the need for private insurance is lower.

Table 32.3: Probit regression on owning a private LTCI policy

Variables	Marginal effects	Standard error
Male (Ref.=female)	-0.0017	(0.0033)
Age group (Ref.= <55)		
55-64	0.0107**	(0.0054)
65-74	0.0090	(0.0067)
75+	-0.0072	(0.0070)
Education ISCED-1997 (Ref.=no/primary education)		
Secondary Education	0.0056	(0.0040)
Tertiary Education	0.0101**	(0.0049)
Marital status (Ref.=married)		
Single	-0.0034	(0.0073)
Divorced	-0.0031	(0.0054)
Widowed	0.0185***	(0.0058)
Children (Ref.=no child)	-0.0091	(0.0069)
Employment status (Ref.=retired)		
Working	0.0055	(0.0052)
Not working	-0.0238***	(0.0045)
Health self-rated (Ref.= excellent/very good)		
Good	-0.0133***	(0.0045)
Fair	-0.0197***	(0.0052)
Poor	-0.0295***	(0.0063)
Health: chronic illness (Ref.= no illness)	0.0063*	(0.0037)
Care received (Ref.=not received)	0.0031	(0.0059)
Household income (log)	0.0046***	(0.0011)
No. of household members	-0.0036*	(0.0020)
N	20,130	
Pseudo-R2	0.22	

Significance: *** = 1%; ** = 5%; * = 10%

Notes: Controlled for country fixed-effects

Source: SHARE Wave 1 release 2.6.0, Wave 2 release 2.6.0, Wave 4 release 1.1.1, Wave 5 release 0

32.5 A policy (thought) experiment

In this section we investigate whether the low holding of LTCI policies in some countries is driven by institutional supply-side constraints or by different demand structures based on observable characteristics. As already indicated in the data section above, the LTCI institutions differ substantially between countries. While quite well developed markets exist in France and Israel, market development is rather limited in Austria, Denmark, the Czech Republic and Italy. More specifically, in Israel three types of private LTCI are offered: 1) Commercial individual LTCI, 2) Commercial collective LTCI, 3) Collective LTCI through health plans. 60 per cent of the population (including children) have a private LTCI policy either indirectly through their health plan or directly from a commercial insurance company. Most insurance holders (88 %) have collective insurance (provided by their health plan). In France, private LTCI fills a gap in care provision as the public system covers only parts of the costs incurred by the receiver. More than 20 insurance companies offer around 40 different policies. Around 5.5 million individuals are covered by a policy (approximately 10 % market penetration). Compared to Israel and France the supply of LTCI policies is not well developed in Austria, Denmark, Italy and the Czech Republic and few insurance policies are offered (references are given in Table 32.1).

The question we would like to answer in this section is the following: what would the LTCI coverage be if households in Austria (or Denmark, Italy and the Czech Republic) faced the same market conditions as households in France or Israel? For this purpose we estimate the demand equation as in the previous section only for Israel and France and use those parameter estimates to predict demand in Austria, Denmark, the Czech Republic and Italy. We then take France (resp. Israel) as the reference country and predict the probability of holding a LTCI policy for Austria (and Denmark, Italy and the Czech Republic) with the parameter estimates of France (resp. Israel). We can decompose the difference of the market shares, for example, between France and Austria into two parts: the first component is the difference between the market share in France and the predicted market share in Austria (using the parameter estimates of France). The second component is the predicted market penetration of Austria minus the observed market share in Austria. If s_i denotes the market penetration in country i the decomposition can be stated as:

$$S_{France} - S_{Austria} = (S_{France} - S_{Austria}^{predicted}) + (S_{Austria}^{predicted} - S_{Austria})$$

The first term can be interpreted as the difference in market penetration due to a different composition of the population (based on observable characteristics), the second term is the difference in market shares due to differences in market conditions (i.e. supply side and institutional factors). In order for this decomposition to be valid, we have to assume that individuals from different countries but with identical characteristics have the same demand (preferences) for LTCI policies. Therefore difference in demand between identical individuals in different countries can be – in our interpretation – solely attributed to differences in supply conditions. This assumption usually underlies such kind of policy experiments.

In Table 32.4, the results of the decomposition are displayed. The second column contains the difference between the reference country and the country of interest. Column three and four show the result of the decomposition. The results indicate that the differences due to different distributions of socio-economic variables are negligible, i.e. most of the effects in column two are quite small (exceptions are the differences between Israel and Austria and Israel and Denmark). This means that differences in the observable characteristics do not explain the differences in market shares between these country pairs. Interestingly, the difference in the market shares can largely be explained by “structural” differences between the countries. Comparing the results from column two and four shows that the difference in market shares observed between France and Israel on the one hand and the four other countries on the other hand would almost completely disappear if the institutional contexts converged. In other words: Denmark, Italy, the Czech Republic and Austria might have much higher utilisation of private LTCI if the supply conditions as in France or Israel existed there.

Table 32.4: Results of the policy experiment

Ref - i	$S_{\text{Ref}} - S_i$	$S_{\text{Ref}} - S_i^{\text{predicted}}$	$S_i^{\text{predicted}} - S_i$
F - DK	0.1118	-0.0174	0.1292
F - AT	0.1146	-0.0272	0.1418
F - IT	0.1023	-0.0185	0.1208
F - CZ	0.1141	-0.0174	0.1438
IL - AT	0.2875	-0.0789	0.3664
IL - IT	0.2752	0.0448	0.2304
IL - DK	0.2847	-0.1043	0.389
IL - CZ	0.287	0.0156	0.2714

Notes: Decomposition of the differences in market shares; Reference countries: France and Israel

Source: SHARE Wave 1 release 2.6.0, Wave 2 release 2.6.0, Wave 4 release 1.1.1, Wave 5 release 0

32.6 The importance of market conditions

In this paper, we analysed the coverage with private supplementary long-term care insurance among the older population in ten European countries. We find a large dispersion of coverage rates among those countries. While purchasing rates of private LTCI policies are high in France and Israel, where markets for those types of insurances are well developed, coverage rates are much lower among other countries. This is mostly due to the fact that the institutional frameworks for the provision of long-term care are diverse. Some states provide extensive public coverage, like, e.g. Sweden and Denmark, which makes the purchase of private insurance less necessary. On the other hand, Southern and Eastern European countries also show low shares of LTCI holders among the older population even though less formal care is provided by the state there. Here formal care is very often substituted by informal family care.

Looking into the determinants of LTCI purchase, we find that coverage increases with education and income. Widowed individuals are more likely to own LTCI and the number of household members decreases LTCI purchase. With respect to subjective and objective health we find contrasting results. While individuals in excellent and very good subjective health are more likely to own LTCI, those with a chronic condition are likewise more likely to own an insurance policy. Overall, the patterns of LTCI holdings seem plausible and reveal a diverse but consistent pattern. In a small policy experiment we decompose the differences in market shares between relatively well developed markets (France and Israel) and less developed markets (Austria, Denmark, the Czech Republic and Italy) into two components: one explained by differences in observable characteristics and the other related to differences in market conditions. Interestingly, this exercise reveals that differences in observables are not the answer to explain the differences in LTCI coverage rates. The market shares in Austria, Denmark, the Czech Republic and Italy would almost completely converge to coverage rates in France and Israel if the same market conditions prevailed.

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33 Long-term care insurance and the family: does the availability of potential caregivers substitute for long-term care insurance?

-
- ▶ Children and especially daughters play an important role in the supply of informal care
 - ▶ The availability of potential informal caregivers, i.e. the children, decreases the probability of purchasing private voluntary long-term care insurance
 - ▶ Future research on long-term care should focus on characteristics of potential substitutes for insurance policies (children and partner)
-

33.1 Why long-term care is an issue in Europe

The needs for long-term care (LTC) are expected to increase gradually due to population ageing in Europe. The population aged 65 or older, which is more at risk of dependency, will more than double by 2050 according to the forecasts of the European Union (Pestieau & Ponthière 2010). It is however unclear if the population in need for care will increase in the same proportion due to compression of morbidity (potential increase of life expectancy in good health). In assessing the adequacy of the financing and provision of long-term care, it is important to take into account the abilities of the countries to rely on the informal provision of care to older individuals in the future. Recent studies, using inter alia SHARE data (e.g. Bolin et al. 2008), showed that long-term care is mainly provided by informal caregivers. This type of care has no direct impact on public finances but it is not clear if such a situation is desirable. Several studies have highlighted that caregivers bear large opportunity costs because of care responsibilities (e.g. Van Houtven et al. 2013). Furthermore, informal care may have adverse effects on multiple dimensions of health of the caregivers (Pinquart & Sörensen 2003). The propensity to provide care could decrease due to changes in family structure and the growing participation of women in the labour market, which may constrain the future supply of informal care provision within the family (Pestieau & Ponthière 2010). Moreover, the low rates of public long-term care insurance (LTCI) coverage could lead to adverse financial consequences for older individuals and their families. Estimates suggest that the cost of a one-year stay in a nursing

home averages between \$40,000 and \$50,000 a year in the United States while a 65-year-old has 39 per cent chance of entering a nursing home (Mellor 2001). A potential solution to this lack of public coverage could be the development of private insurance market for long-term care. This alternative depends on the suitability of a market solution for this type of insurance. United States, France, Japan, Germany and Israel are the countries where this market insurance is the most present (Colombo et al. 2011; see also chapter 32 in this volume). Recent market developments in some OECD countries suggest that insurance providers are moving more and more towards private LTC indemnity policies (Colombo et al. 2011). However, this sector is likely to remain small compared to public insurance. Brown and Finkelstein (2007) provided evidence of supply side market failures (premiums marked up substantially above expected benefits and coverage limit relative to the total expenditure risk). Pestieau and Ponthière (2010) focused also on the causes of the “long-term care insurance puzzle”. They identified six potential explanations for the underdevelopment of the private LTCI market: excessive costs – loading factors and adverse selection –, social assistance acting as a Good Samaritan, trust into family solidarity, unattractive rule of reimbursement – lump sum –, myopia or ignorance, and denial of heavy dependence.

Regarding the trust in family solidarity, Pauly (1990) developed a theoretical framework highlighting the importance of children in the rationale for the non-purchase of LTCI due to intra-family moral hazard. If parents prefer receiving care from children, they are less likely to opt for LTCI. Mellor (2001) tested this hypothesis of parents relying on child-provided care in old-age in United States: while education, income and wealth impact positively on LTCI ownership (consistent with Brown & Finkelstein 2007), she found no evidence of a significant link between the availability of informal caregivers and insurance ownership. Thanks to the 1st wave of SHARE in France, Courbage and Roudaut (2011) showed that LTCI is purchased to protect families, in order to prevent children from heavy tasks given the evidence about potential negative effects associated with the care-giving burden.

The 5th wave of SHARE introduced questions about the ownership of voluntary/supplementary LTCI. The potential substitutability between informal care providers (children and partner) and private LTCI can be tested empirically for several SHARE countries. Section 33.2 presents the analytical sample, taking into account the countries where private voluntary/supplementary LTCI is in place. Section 33.3 confirms that LTC is largely provided informally and more specifically by daughters. Section 33.4 suggests a significant relationship between the availability of informal caregivers and LTCI ownership. Section 33.5 concludes.

33.2 Long-term care insurance in SHARE Wave 5

In Wave 5, a new question appeared in the SHARE questionnaire: “Do you have any of the following public or private long-term care insurances?”. The choices were: “1. Public; 2. Private mandatory; 3. Private voluntary/supplementary; 96. None”. Respondents could select as many answers as they want. The summary of the respondent’s answers is in Table 33.1. It is important to note the absence of Germany, Sweden, Belgium and Slovenia due to data collection problems and the large proportion of “None” and “Do not know” answers¹ while in all SHARE countries, basic coverage of LTC exists, sometimes implicitly in national basic health insurance. Indeed, LTC are partially covered by the national health systems. In Luxembourg support for the provision of LTC, either at home or in an institution, is mainly provided through the universal long-term care insurance (“assurance dépendance”) as part of the social security scheme. The public health insurance system of Belgium (INAMI/RIZIV) provides a comprehensive universal coverage for all costs associated with acquiring assistance for activities of daily living (dressing, eating, washing, etc.). This benefit applies to assistance provided both at home and in institutions, subject to personal contributions (i.e. “ticket modérateur”). Different measures exist to minimise out-of-pocket payments. The federal allowances for the older individuals and targeted social welfare benefits are financed through direct general taxation. Finally, according to the Swiss health accounts, long-term care is financed for about 40 per cent through a complex system of public support and social insurance and about 60 per cent by household. Public LTC expenditure varies from 0.5 per cent of GDP in Estonia to 3.8 per cent of GDP in the Netherlands and even 4.5 per cent in Denmark (European Union 2012).

The sum of the percentages of the Table 33.1 can be larger than one hundred since the respondents can benefit from public insurance and take a supplementary one to be better covered.

However, the interest of this chapter is on the voluntary LTCI ownership. Colombo et al. (2011) explain that “*typically, private LTC insurance arrangements develop around a country’s public LTC system, either to complement available public coverage, or provide benefits where there is no public LTC coverage.*” There are two types of private LTC products: the model of reimbursement (US/Germany) and the indemnity model (France/Germany). Germany has therefore the two types of private LTCI. A compulsory one for individuals who have opted out of social health insurance (9 % of population, reimbursement) and a voluntary one which insures eligible expenses not covered by the LTCI programme (3.5 % of population, indemnity policies) (Colombo et al. 2011).

¹ Only 0.19 per cent of respondents refuse to answer the question

Table 33.1: Long-term care insurance in SHARE Wave 5 countries

Country	Observations (#)	Public (%)	Private mandatory (%)	Private voluntary/ supplementary (%)	None (%)	Do not know (%)
DK	4,127	25.2	0.0	1.9	72.6	0.3
LU	1,610	88.7	4.9	11.2	7.8	0.4
NL	4,094	27.6	32.4	14.0	26.2	5.2
FR	4,412	0.0	2.7	15.5	81.2	0.8
CH	3,005	0.0	0.0	18.6	74.9	6.6
AT	4,251	0.0	0.0	1.4	98.2	0.5
ES	6,451	26.0	0.6	5.1	70.2	0.6
IT	4,702	10.2	0.7	2.2	86.8	0.5
EE	5,721	6.8	0.1	0.1	92.5	0.5
CZ	5,655	39.7	1.2	1.8	56.0	1.5
IL	2,433	0.0	61.4	29.6	26.9	5.6
Total	46,471	18.44	9.08	8.87	64.5	1.3

Notes: Excluding Germany, Sweden, Belgium and Slovenia for spurious or missing data

Source: SHARE Wave 5 release 0

The countries included in the analysis are the ones for which there is a private market for LTCI. According to Colombo et al. (2011) and the results from Table 33.1, nine countries have been selected. All citizens from Denmark, Luxemburg, the Netherlands, France, Switzerland, Austria, Spain, Italy, the Czech Republic and Israel have the possibility to purchase voluntary LTCI. However, Spain is not included in the sample because private LTCI seems to be reported too frequently. Sweden is also excluded from the sample since the question was not correctly phrased (it refers to “private health care policy” rather than “private LTC policy”, see chapter 32 in this volume for the reliability of answers to LTCI question). Citizens from Luxemburg, Switzerland and the Netherlands seem also to overestimate their private intake of LTCI. However, they remain in the sample since the well-established presence of this market and a rate of private insurance ownership higher than ten per cent. Estonia is removed from the sample given the extremely low percentage of respondents (0.1 %) reporting owning a voluntary insurance.

Table 33.2: Summary statistics

Country	Obs (#)	Informal care (%)	Private LTCI (%)	Woman (%)	Single (%)	1 child (%)	# Sons	# Daughters
DK	4,045	27.2	1.9	53.5	29.2	92.0	1.16	1.14
LU	1,592	15.0	11.2	52.8	25.2	87.2	1.03	0.94
NL	4,054	15.0	14.0	55.0	22.6	89.3	1.17	1.14
FR	4,339	13.1	15.5	56.9	35.2	89.7	1.17	1.11
CH	2,956	13.1	18.6	54.4	29.5	83.5	1.05	1.03
AT	4,177	19.0	1.4	57.4	37.5	88.0	1.08	1.05
IT	4,622	13.6	2.2	54.4	22.3	87.6	1.03	0.93
CZ	5,570	34.7	1.8	58.5	36.0	95.4	1.1	1.08
IL	2,401	16.2	29.6	56.0	22.5	92.8	1.52	1.47
Total	33,756	19.7	8.9	55.8	29.7	89.9	1.13	1.09

Notes: Excluding individuals being less than 50 years old

Source: SHARE Wave 5 release 0

For the other countries, the market for LTCI is still in its infancy.² Table 33.2 presents the summary statistics for the main variables from the fifth wave of SHARE used in the models. The sample includes respondents aged 50 or older since the intake of insurance should be before the moment where dependency occurs (no age restriction).

33.3 The importance of children in informal care supply

Before looking at the availability of informal caregivers and LTCI ownership, we provide evidence that children play a significant role in providing informal care, particularly daughters. Table 33.3 presents the results from three models estimating the determinants of the probability to receive informal care from anyone outside the household, i.e. children (in-law), friends, neighbour, other relative, etc. The sample sizes for the analysis vary as compared to that of summary statistics due to missing information on educational level of respondents and/or distance from the nearest child. The measure of informal care is based on the fol-

² For Belgium and Slovenia, problems in the collection of data occurred. Germany is also not in the sample because of non-response, although the possibility of purchasing LTCI exists.

lowing question: “Thinking about the last twelve months has any family member from outside the household, has any friend or neighbour given you or your partner personal care or practical household help?”. The models include the following explanatory variables: the number of sons and the number of daughters, gender, age, a dummy variable that is equal to one if the respondent has a partner (married or not), a dummy variable that is equal to one if the respondent has still a child in the household. In order to measure the disability of the respondents, we built a disability index based on the first principal component identified from a principal component analysis (PCA) depending on the five following measures: having more than one chronic disease, have more than three mobility problems, having more than one (instrumental) daily activity limitation and being considered as depressed according to the EURO-D scale. This depression scale has been created by a collaboration of eleven European countries to allow comparison of risk factor profiles. The PCA is done for each country separately. We also add the distance from the nearest child in the models as some studies have shown that it is related to the probability to receive informal care (e.g. Bonsang 2009)³. Finally, we include education level of the respondent: low education corresponds to ISCED 0 to ISCED 2 (lower secondary school), medium education corresponds to ISCED 3 (upper secondary school), and high education corresponds to ISCED 4 (post-secondary non tertiary school) to ISCED 6.

The estimates of the marginal effect (at the sample mean) reported in the first column (1) are based on a sample including all respondents without taking into account the geographical distance from the nearest child, and irrespective of whether they have children. In SHARE, this child location variable is allowed to take the following categories: the children can live either in the same building (but not the same household), less than one km away, between one and five km away, between five and 25 km away, between 25 and 100 km away, between 100 and 500 km away or more than 500 km away. From this variable, we compute a new variable, the distance from the nearest child, by assigning the number of kilometres corresponding to the middle of the bandwidth of each possible categorical answer. The second (2) and the third (3) columns are different from the first one because the sample includes now respondents with at least one child living outside of the household. The distance from the nearest child is added as an additional explanatory variable. While the second model includes all respondents, the third specification focuses on individuals aged 65 years or more.

3 1,405 respondents are dropped from the sample due to missing information about the distance from the nearest child

In all models, the number of children is a significant factor predicting the probability to receive informal care. Having daughters seems more helpful for receiving care than having sons. Having a partner highly decreases the probability to receive informal care by people living outside of the household. Moreover, we observe that women have a higher probability of receiving care from outside the household. Disability, as a proxy for the need for care, is also a significant predictor for receiving informal care. Having a co-resident child is also associated with a lower probability to receive informal care from outside the household, suggesting the importance of intra-household care provision as substitute for care received from outside the household. Finally, geographical distance from the children is negatively associated with the probability to receive informal care.

Table 33.3: Probability of receiving informal care from outside the household

Variables	(1) Probit		(2) Probit		(3) Probit	
	Marginal effects	Standard error	Marginal effects	Standard error	Marginal effects	Standard error
Number of sons	0.005**	(0.002)	0.006***	(0.002)	0.008**	(0.003)
Number of daughters	0.010***	(0.002)	0.011***	(0.002)	0.013***	(0.003)
Having a partner	-0.082***	(0.005)	-0.084***	(0.006)	-0.093***	(0.008)
One child in HH	—	—	-0.027***	(0.007)	-0.049***	(0.010)
Distance from the nearest child (km/100)	—	—	-0.006***	(0.002)	-0.009***	(0.003)
Disability	0.054***	(0.001)	0.056***	(0.002)	0.064***	(0.002)
Female	0.011**	(0.004)	0.012**	(0.005)	0.020***	(0.007)
Low education	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Medium Education	0.008	(0.005)	0.008	(0.006)	0.001	(0.008)
High Education	0.021***	(0.006)	0.027***	(0.007)	0.011	(0.010)
Aged 50–64	-0.001	(0.005)	0.004	(0.006)	—	—
Aged 65–74	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Aged 75–84	0.058***	(0.007)	0.058***	(0.008)	0.056***	(0.008)
Aged 85+	0.125***	(0.012)	0.140***	(0.014)	0.135***	(0.015)
Observations	33,600		26,802		15,899	
Log likelihood	-14,646		-11,932		-7,495	

Significance: *** = 1%; ** = 5%; * = 10 %

Notes: Country dummies are also included in the model; The first column presents the results of the model using the full sample, the second column only includes individuals with at least one child living out of the household, and the third column is restricted to individuals with at least one child living out of the household and being less than 65 year-old

Source: SHARE Wave 5 release 0

We assessed the robustness of our results by estimating the model using different specifications and analytical samples. The two analysis presented in columns 2 and 3 were performed on singles only. The number of children was limited to four. Wealth and income obtained from the previous wave of SHARE were included in the analysis (Luxemburg and Israel were dropped from the sample in these models because they were not part of W4). In all cases, children (and especially daughters) play a significant role in the provision of informal care to older parents.

33.4 The availability of informal caregivers and long-term care insurance ownership

In the previous section, we provide evidence about the importance of children in informal care provision from outside the household. If having a child is negatively linked to the probability to own a LTCI that could be consistent with the concept of substitutability of children to LTCI purchase.

Table 33.4 shows the estimates of the marginal effects (at the sample mean) of the probability of “owning voluntary private long-term care insurance”. For the first model, the analysis is based on a sample including all respondents without taking into account the geographical distance from the nearest child, and irrespective of whether they have children. The number of sons and daughters has a negative impact on the probability of owning a private voluntary LTCI. We add the restriction of having at least one child living outside of the household in the second probit model (2). The role of children is still significant (the daughters are slightly better substitutes than sons), and the same applies if a child lives in the household. Having a partner now decreases the probability of owning LTCI. Note also that higher educated individuals are more likely to have a LTCI (potentially the wealth effect mentioned by Mellor (2001)). Distance from the nearest child is negatively related to LTCI ownership, which contradicts the hypothesis that the lower availability of informal care should lead to an increase in the probability to own a LTCI, although the magnitude of the effect is very small. Note that distance from the children may be endogenous and we cannot discard the possibility that the model may suffer from an omitted variable bias. Further analysis will be necessary in order to shed light on this result.

Table 33.4: Probability of owning private voluntary long-term care insurance

Variables	(1) Probit		(2) Probit		(3) Probit	
	Marginal effects	Standard error	Marginal effects	Standard error	Marginal effects	Standard error
Number of sons	-0.002**	(0.001)	-0.003**	(0.001)	-0.005**	(0.002)
Number of daughters	-0.003**	(0.001)	-0.004***	(0.001)	-0.007***	(0.002)
Having a partner	-0.004	(0.003)	-0.008**	(0.003)	0.001	(0.005)
One child in HH	—	—	-0.006*	(0.003)	-0.009*	(0.005)
Distance from the nearest child (km/100)	—	—	-0.002**	(0.001)	-0.004*	(0.002)
Disability	-0.004***	(0.001)	-0.005***	(0.001)	-0.002	(0.002)
Female	-0.001	(0.002)	-0.001	(0.003)	-0.002	(0.005)
Low education	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Medium Education	0.002	(0.003)	0.002	(0.003)	0.002	(0.006)
High Education	0.016***	(0.004)	0.017***	(0.004)	0.024***	(0.007)
Aged 50–64	-0.007**	(0.003)	-0.005*	(0.003)	—	—
Aged 65–74	Ref.	Ref.	Ref.	Ref.	—	—
Aged 75–84	-0.008**	(0.003)	-0.008**	(0.004)	—	—
Aged 85+	-0.014***	(0.005)	-0.013**	(0.005)	—	—
Observations	33,756		26,911		10,931	
Log likelihood	-8,565		-6,794		-2,794	

Significance: *** = 1%; ** = 5%; * = 10 %

Notes: Country dummies are also included in the model; The first column presents the results of the model using the full sample, the second column only includes individuals with at least one child living out of the household, and the third column is restricted to individuals with at least one child living out of the household and being less than 65 year-old

Source: SHARE Wave 5 release 0

The results also show that disability (and so being a potentially dependent person according to the created index by PCA) is associated with a lower probability to have a private voluntary LTCI. Furthermore, age is negatively associated with LTCI ownership, possibly due to cohort effect (the market for LTCI is still new, older cohorts are thus less likely to have one). Finally, gender does not seem to have an impact on LTCI ownership. In order to deal with the question of age, the third model (3) only includes people less than 65 years old with at least one child living outside of the household. The role of the number of children remains determinant (daughters are slightly better substitutes than sons and their coefficients are both higher than in the second model). By contrast, having a partner does not seem to influence insurance ownership and the estimate of the impact of disability decreases and is no longer significant.

We have also tested the sensitivity of our results to different sample selections and specifications. The sample was, *inter alia*, restricted to the five countries with a declared rate of private voluntary LTCI higher than ten per cent. Indeed, the markets in Italy, Czech Republic, Denmark and Austria are really small (less than 2.5 %) because new. In this case, the results are even significantly stronger. Wealth and income were included in the analysis based on W4 values. While higher income tends to increase probability of insurance ownership, wealth does not seem to have an influence (maybe due to the fact that we are using data from W4 on a sub-sample of people who have participated to the fourth wave) and in all cases, the same negative impact of the number of children and presence of a child in the household on owning LTCI is significant, suggesting that family acts as a substitute for LTCI ownership. “*Trust into family solidarity*” (Pestieau & Ponthière 2010) definitely plays a role.

33.5 Trust in family solidarity plays a role

In this chapter, we shed light on the relationship between the LTCI ownership and the availability of potential informal caregivers in European countries, focusing on the role of children. We find that having children, and especially a daughter, is associated with a higher probability of receiving informal care and with a lower probability to own a LTCI. Having a co-resident child is also negatively related to LTCI ownership. Given the decrease in fertility and the increasing labour force participation of women, we may expect that it will reduce the availability of potential informal caregivers that may lead to an increase in the demand for LTCI in the future.

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