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Intergenerational transfers and productive ageing in a cross-national comparative perspective

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Declaration

I certify that the thesis I have presented for examination for the MPhil/PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it). The copyright of this thesis rests with the author. Quotation from it is permitted, provided that full acknowledgement is made. This thesis may not be reproduced without my prior written consent. I warrant that this authorisation does not, to the best of my belief, infringe the rights of any third party.

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Statement of conjoint work

I confirm that Chapter 3 was jointly co-authored with Professor Benjamin Lauderdale and I contributed the majority of this work. Specifically, I am responsible for 50% of the conception of the idea, research design and analysis, and for 100% of the data collection, data management, interpretation of the results and writing of the manuscript (on which I received advice and feedback from both of my supervisors).

Abstract

Internationally, concerns with the implications of population ageing have led to growing attention being paid to the economic contributions and dependency of older adults. Research on intergenerational support investigates older adults' exchanges of money and time with their family members, while productive ageing refers to their economic contributions to the broader society. So far, research on these topics at the aggregate level has mainly focussed on Europe and the United States (US). Comparisons of intergenerational transfer regimes are usually made between welfare states in Europe, while productive ageing is a US-centred concept that is not necessarily translatable to societies with different socio-cultural characteristics. In addition, only a few studies of individual-level relationships link intergenerational family transfers with older adults' participation in economically productive roles.

This thesis addresses the gaps in the literature cited above with four empirical papers on intergenerational support, productive ageing and the interrelations between them in a cross-national comparative perspective. I use data from the Survey of Health, Ageing and Retirement in Europe, the Korean Longitudinal Study of Ageing, and a conjoint survey experiment. In the first paper, I compare transfers of financial, practical and coresidential support between parents aged 50 and above and their children in Italy and South Korea, two countries with similarly familistic approaches to welfare but different levels of social protection towards older adults. The second empirical paper develops a method for weighting and aggregating indicators into a composite scale based on a conjoint experiment on experts, which I use to compare operationalisations of productive ageing between a group of Italian and a group of South Korean academics. In the third paper, I compare the factors associated with participation in paid work and informal caregiving among middle-aged and older Italian and South Korean parents, focussing on the role of socioeconomic status and transfers of support with adult children. In the fourth paper, I study the association between daily grandchild care and grandparents' labour supply in Europe with a focus on gender and socioeconomic differences. Overall, the findings highlight the role of country-level policy and culture as well as gender, socioeconomic resources and family transfers in influencing older adults' contributions to welfare and the economy.

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For my grandmother

Contents

List of tables

List of figures

1. Introduction

1.1. Ageing, intergenerational support and activity participation

In this thesis I investigate middle-aged and older adults' contributions to their families and to the broader society through intergenerational support transfers and participation in productive roles. Specifically, I analyse transfers of financial and practical assistance between parents aged 50 and above and their adult children, and older parents' and grandparents' engagement in productive activities such as employment and informal caregiving. I consider intergenerational support and productive participation in later life as part of the same framework, and investigate how these behaviours interact with each other and with the characteristics of middle-aged and older individuals across different countries.

1.1.1. Concepts and definitions

Throughout the thesis, I refer to individuals aged 50 and above as "middle-aged and older" or simply "older", and to ages from 50 onwards as "mid- to later life" or simply "later life". This is a rather broad definition, and many individuals in their 50s and 60s would not consider themselves "older" (or even "middle-aged"). However, I take 50 as the lower age boundary for several reasons. First, participation in the labour market is an important theme of the thesis, and considering ages 50 and above allows me to examine and compare groups of individuals who are before, around and past the normal retirement age. Second, I am interested in transfers of resources with adult children, including grandchild care. Given previous demographic trends in the countries I study, individuals aged 50 or older are likely to have young-adult children (i.e. aged 20–34), who may need financial and practical assistance as they set up their own independent livelihoods, and often have young children of their own. Third, given that the term "old" does not refer to any specific chronological age (Balard, 2015), a low cut-off allows me to capture a wide variety of experiences and transitions. Fourth, the surveys that I use for the empirical analyses collect data on individuals aged 50 (or 45) and older, so by adopting this threshold I make the most of the information available. Thus, rather than advancing the theoretical argument that 50 is when "old age" begins, my choice is pragmatic, and made

in the understanding that no defined cut-off age adequately captures the variety of individual experiences of ageing.

In social gerontology, the study of older adults' contributions to their families and societies has developed around the themes of intergenerational support and activity participation. Intergenerational support refers to transfers of resources between family members of different generations, predominantly older adults, their children and their grandchildren (Albertini, 2016; Szydlik, 2008). The study of intergenerational transfers highlights how older adults contribute to the welfare of their family members by giving and receiving money, time and other resources. Gerontological research on activity participation relates instead to older adults' engagement with the broader society through activities that have a social or economic dimension (Bass & Caro, 2001) or that contribute to their health and wellbeing (WHO, 2002).

As Arber and Attias-Donfut (1999) note, the term "generation" can assume different meanings, including those of birth cohort, family generation or, from a sociological perspective, historical or social generation. In this thesis, the term generation is used in two overlapping ways. The first is to identify groups of people who were born around the same time and, in the countries under study, have common ways of engaging with public welfare by receiving social benefits, making contributions, and participating in the labour market. This definition comes closest to Kohli's (1996) concept of "welfare generations". The second way in which the term is used refers to generations as "family generations", to indicate the lineage between older parents and adult children, or among grandparents, parents and children. The two definitions clearly overlap, as older adults in this thesis represent both the generation of parents/grandparents, and the generation of those with specific labour market participation patterns, societal contributions and benefits.

In this thesis I focus on the economically quantifiable contributions older people make to their families and societies. With regard to intergenerational support, I restrict my attention to exchanges of financial and practical assistance, including direct money transfers, coresidence and the provision of informal care. Accordingly, I do not study emotional support in the form of closeness, frequency of contact and relationship quality (Szydlik, 2008). Moreover, I focus on exchanges of support between parents aged 50 and above and their adult children. Transfers with children are by far the most common form

of intergenerational family support in later life, and also the most relevant for estimating older adults' contributions to (and dependency on) younger generations (Albertini, Kohli, & Vogel, 2007). I thus exclude childless individuals, who deserve separate accounts since they tend to differ substantially from parents in their support networks and behaviours (Albertini & Kohli, 2009; Pesando, 2018).

With regard to activity engagement, I adopt the concept of "productive ageing", defined as older people's participation in activities that produce services or goods that have value for others (Bass, Caro, & Chen, 1993). In line with this definition, I examine participation in employment, volunteer work and informal caregiving (including care for grandchildren and adults) as productive activities. Given my focus on contributions that have an economic value, I do not consider older people's engagement in predominantly consumption-related activities such as education, sport or hobbies, which are commonly studied in relation to their effect on health and wellbeing (Adams, Leibbrandt, & Moon, 2011).

1.1.2. Why study older adults' contributions to society in a comparative perspective?

Population ageing affects nearly all countries in the world, albeit with different timing and speed (UN, 2017; WHO, 2015). In the West, the forerunners in the process are Mediterranean countries such as Italy, where 43% of the population is currently aged 50 or above, a proportion that is projected to rise to more than half (52%) by 2035 (UN, 2017). In Asian countries, ageing is taking place at a higher speed. In South Korea (from now on simply referred to as "Korea"), the proportion of over-50s is currently around 34%, but it will reach half of the population in less than two decades, by 2035 (UN, 2017).

Ageing implies that societies need to adapt to the shift from a primarily young to a primarily middle-aged and older population. In recent decades, this has prompted concerns among policymakers in high-income countries about the sustainability of pensions and healthcare systems (OECD, 1988), and about imbalances in the so-called "generational contract" (Walker, 1996), with higher proportions of older people putting increasing pressure on younger generations in both the private and the public domains. The bodies of research on intergenerational support and productive ageing address

precisely these concerns. On the one hand, both entail a recognition of older people's contributions to the social groups in which they live and operate, and dismiss conceptions of later life as an exclusively dependent state (Gonzales, Matz-Costa, & Morrow-Howell, 2015). On the other hand, both discourses also engage with the concept of dependency. The study of intergenerational support deals with dependency explicitly, by quantifying the assistance that older adults receive from their family members. Research on productive ageing frames dependency implicitly, by characterising it as lack of participation in socially valued roles (Moulaert & Biggs, 2013).

In addition to their separate relevance, intergenerational support and productive ageing can be usefully studied as part of the same framework. Middle-aged and older adults contribute to society as members of their families. Forms of intergenerational support such as informal care for sick or disabled parents and grandchild care are socially productive activities that contribute to the long-term care and childcare systems, respectively. Moreover, family transfers and productive roles performed outside the family are heavily interconnected and strongly linked with the resources available to older individuals. Family transfers can facilitate or hinder participation in paid and unpaid work and care, and productive participation can shape the time and money that older adults have available to transfer to others, as well as their own support needs. Investigating these interactions will lead to a better understanding of the determinants and consequences of older people's contributions to their families and societies.

I adopt a cross-national comparative perspective to study intergenerational support and productive ageing. By definition, comparisons encompass more than one case. Ageing is currently taking place across a variety of different political, economic and cultural contexts, and analysing more than one country highlights the diversity in the extent and types of older adults' participation and contributions to society. By explicitly accounting for such diversity, comparisons can inform policy developments for similar contexts, as well as differentiations in what works best (Morrow-Howell & Wang, 2013). Importantly, comparative research is necessary to identify how policy, structural and cultural factors interact with older adults' engagement in socially productive roles, with its predictors and its consequences (Chen et al., 2016). A cross-national comparison enables to contextualise individual outcomes in a way that is often not possible in single-country analyses (Gerring, 2004). As such, the comparison can generate new hypotheses

on the relationship between contextual characteristics and individual behaviours (Hancké, 2009).

I adopt two cross-national comparative approaches. The first three empirical chapters of this thesis consist in a two-country case study of Italy and Korea. As I explain in Chapters 2 and 4, these two countries are interesting to compare with respect to intergenerational transfers and activity participation, because similarities in their welfare models and labour markets coexist with striking differences in the degree of social protection guaranteed to middle-aged and older individuals relative to younger generations. Moreover, as I argue in Chapter 3, differences in socio-cultural norms around older adults and the family make Italy and Korea interesting cases to test whether the definition and measurement of concepts such as "productive ageing" is comparable across contexts. In the last empirical chapter (Chapter 5) I use data from 20 European countries to study the relationship between grandchild care and grandparents' labour supply across different childcare policy regimes.

Both approaches to cross-national comparative research have advantages and drawbacks, which I discuss in section 1.4 of this introduction. In the following two sections, I review the literatures on intergenerational support (1.2) and productive ageing (1.3) and highlight the gaps in each of them, thus beginning to motivate the four empirical chapters of the thesis.

1.2. Intergenerational transfers of support: review of the literature

In this section I review the literature on transfers of money and time between middle-aged and older parents and their adult children, including intergenerational coresidence and grandchild care provision.

Exchanges of assistance between parents and their children are an essential aspect of human socialisation and development, and do not represent a particular feature of certain societies or time periods. As Ron Lee (2013) argues, intergenerational transfers evolved in pre-historical times in the setting of small groups of hunter-gatherers, and operate like a credit market, whereby young offspring borrow resources from their parents while

growing up, and later repay this debt through transfers to their ageing parents and to their own children.

In a prominent account of family ties and values across Western Europe, Reher (1998) argues that, as far back as the Middle Ages, family members of different generations were strongly dependent upon one another in Mediterranean countries. He shows that, in these settings, it was customary for adult children to live with or in close proximity to their parents even after marriage, and this facilitated the exchange of money and time resources between generations. Reher also argues that, in Central and Northern Europe, ties between family members have historically been weaker than in the South, as shown by the fact that in the Middle Ages it was customary for young-adult children in England to be sent to work in a different household away from the parental home. However, Anderson (1971) provides a historical account of families in nineteenth-century Lancashire and shows that, in urban industrial settings in England, intergenerational family exchanges were the predominant source of assistance for those in dependent or critical stages of life. Among working-class families, children were regularly looked after by grandparents and extended kin, and intergenerational coresidence was normative during the first years of married life and subsequent to widowhood.

Fertility decline and increased longevity have generally contributed to a strengthening of parental support to children over time, as individuals have a lower number of offspring in whom they invest more heavily (R. Lee, 2013) and spend increasing proportions of their lifetimes alive at the same time as their descendants (Bengtson, 2001). In the 1980s and ‘90s, sociological and demographic research on family relations mainly investigated the causes of fertility decline, relating it to the decreasing importance of family institutions like marriage and childbearing and to shifting gender roles, in what Van de Kaa (1987) and Lesthaeghe (1995) termed a “second demographic transition”. Since the turn of the twenty-first century, with population ageing becoming a more prominent issue, demographers and sociologists have paid increasing attention to the rising importance of multigenerational family relations (Bengtson, 2001). In particular, the last two decades have witnessed a rapid expansion in the literature on intergenerational support that is in line with the increasing policy relevance of notions of intergenerational redistribution and fairness (Albertini et al., 2007).

In a traditional life course perspective, the overall volume of intergenerational support from parents to children is greater when children are young than after they have become adults (R. Lee, 2013). Financial assistance intensifies during the transition to adulthood, as children attempt to set up their independence and parental investments act as "scaffolds" and "safety nets" (Swartz, Kim, Uno, Mortimer, & Bengtson O'Brien, 2011). Practical and financial support from parents may also increase when children have offspring of their own (Bucx, Van Wel, & Knijn, 2012), after which children are largely independent, until the parents age and may become dependent upon filial support due to poor health, widowhood or the inability to work (Haberkern & Szydlik, 2010; Isherwood, Luszcz, & King, 2016). The timing of these transitions and the amount of support given and received by each generation at each point in their life are inherently linked to demographic trends and socio-political structures, and thus vary across space and time.

An important feature of the research on intergenerational support has been the challenging of traditional notions of old-age dependency on adult children, and the recognition of the rising importance of older parents as providers of support. This is linked to the fact that, since the 1970s, young people in high-income countries have experienced progressively delayed and extended transitions to adulthood, characterised by prolonged education (Furstenberg, 2008), delayed union formation (Billari & Liefbroer, 2010), and greater difficulties in achieving economic and housing independence (Sironi & Furstenberg, 2012). In line with these changes, parental support has become extended until children are well into their reproductive years (Swartz et al., 2011). Increased divorce rates have also contributed to prolong parental support, as children tend to receive more financial assistance from their older parents after marital breakdown (Leopold & Schneider, 2011). Moreover, the increase in female employment has led to a rise in young parents' childcare support needs, and to a greater involvement of grandparents in the rearing of grandchildren (Glaser & Hank, 2018).

Socio-demographic trends in the lives of children alone do not explain the expansion in the duration of parental support. The most influential component of this shift in Western welfare states has been the development of pensions and old-age benefits, which has enabled parents to provide assistance to their children until later in life (Kohli & Kunemund, 2003). In East Asia, where similar socio-demographic trends delaying the transition to adulthood have been under way, the balance of family transfers at later

stages of the parental life course remains upward, from children to parents, partly due to the late development of old-age protection (C. S. Kim, 2008; Lin & Yi, 2011).

1.2.1. Welfare states, familism and intergenerational transfer regimes

A large body of literature compares intergenerational support transfers across countries with the aim of investigating the link between the private and the public dimensions of the generational contract (Albertini et al., 2007). This literature is based on the premise that, by providing financial security and care services to individuals, the state performs functions that were originally assigned to families, thus altering their internal allocation of resources (Kohli, 1999). This implies that the cross-national comparative literature on intergenerational support cannot be understood without reference to the comparative literature on welfare states. Welfare regimes are broadly intended here as the ensemble of social policies, legislation, structural and cultural factors that may shape the incentives and obligations for family members to provide financial and care support to one another.

In his influential work, Esping-Andersen (1990) classified welfare regimes into three model typologies, according to the degree of "de-commodification", which he defined as the extent to which individuals can make a livelihood without relying on the market. In the liberal welfare regime model, represented by the United Kingdom (UK), the state encourages market solutions to social problems and needs, and state support is limited to those unable to make a living for themselves. In conservative or corporatist welfare regimes such as Germany and Italy, the state consolidates existing divisions across social groups and encourages de-commodification through the family, typically by tying benefits to formal employment and by keeping family services underdeveloped. The social-democratic model, represented by countries such as Sweden and Norway, is characterised instead by a universalistic approach to welfare provision by the state. This model is the most egalitarian and de-commodifying, because it socialises the cost of providing financial and care support for dependent individuals.

While important as a systematic method for classifying welfare regimes, the Esping-Andersen (1990) model proved overly simplistic. Because it was predominantly focussed on Western Europe, the classification was hard to generalise to different geographical contexts. Ferrera (1996) argued that Southern European countries – Italy, Spain, Portugal and Greece – did not fit well within the conservative-corporatist group. These countries

lacked the universalism in employment protection typical of continental European welfare. They were instead characterised by highly fragmented income maintenance systems, combining generous pensions with large gaps in coverage for unemployment. They also presented some distinctive characteristics such as strong clientelism and selective distribution of subsidies and cash transfers; low involvement of the state in welfare provision, with the exception of the healthcare system; and, as Flaquer (2000) later pointed out, labour markets characterised by widespread informality, tax evasion and low female participation.

A second group that did not fit within the Esping-Andersen welfare classification is represented by East Asian countries. Kwon (1997, 1999) analysed the welfare systems of Korea, Japan and Taiwan. He argued that, despite being most closely comparable to the conservative-corporatist type, East Asian welfare states presented some distinctive features. These included the role of the state as regulator, rather than provider of welfare; the fragmented provision of income security, which was mainly guaranteed to selected groups strategic for the survival of the authoritarian government; and, most importantly, the subordination of welfare developments to the imperative of economic growth and modernisation, which led Holliday (2000) to classify East Asian countries into a separate, "productivist" model of welfare capitalism.

In addition to its limited generalisability to non-Western European contexts, the Esping-Andersen model was also criticised for its lack of attention to gender and family issues. In particular, the original classification did not consider the degree to which welfare institutions favoured and reinforced a male-breadwinner family model, characterised by the distinction between unpaid care work, carried out by women, and paid employment, carried out by men (Lewis, 1992). Lister (1994) argued that, given that family care is predominantly women's work, the classification of welfare regimes based on de-commodification should be complemented by one based on "de-familialisation". Specifically, she proposed that welfare regimes may be characterised according to "the degree to which individual adults can uphold a socially acceptable standard of living, independently of family relationships, either through paid work or through the social security system" (p.37). Esping-Andersen (1999) addressed this criticism by incorporating "familialism" in a revised version of the welfare regime classification.

While in its generic meaning familism, or familialism, is defined as a social pattern in which the family assumes a position of ascendance over individual interests, in the comparative literature on welfare regimes and intergenerational transfers it is intended as the extent to which families, rather than the state or the market, are assumed to be predominantly responsible for financial and practical assistance to dependent individuals (Leitner, 2003).

In her study of family policies in Europe, Leitner (2003) defines "familialistic" policies as those actively aimed at strengthening the family caring function towards children, older adults and disabled individuals. These include policies concerning time rights, such as parental leave and care leave; direct and indirect transfers to caregivers, such as cash benefits and tax deductions; and social rights attached to caregiving, such as derived income security for non-employed spouses. By contrast, she identifies "de-familialising" policies as those aimed at unburdening families from support functions, such as publicly provided childcare and long-term care, or state subsidies for service provision through the market.

Countries may be classified as more or less familistic according to their policy mix, as well as their existing legal obligations and cultural norms around the family and gender roles. Among high-income countries, familism is strongest in Mediterranean settings such as Italy, due to the presence of "familialising" policies such as cash-for-care transfers, legal responsibilities to financially provide for family members in need, and strong cultural norms concerning the reciprocal obligations between family members (Da Roit, Gonzalez Ferrer, & Moreno Fuentes, 2013; Da Roit & Naldini, 2010; Saraceno, 2016). Some East Asian countries, including Korea, can instead be considered familistic welfare regimes in transition. Since the early 2000s, they have witnessed a rapid expansion of "de-familialising" policies concerning childcare and long-term care, mostly subsidised through the market (D. Lee, 2018; Saraceno, 2016). At the same time, legal obligations and cultural norms around the family continue to mandate its support responsibilities (H. J. Park, 2015), income support measures such as pensions and unemployment benefits are far from achieving universal coverage (Hwang & Lee, 2012), and the division of gender roles remains strong (León, Choi, & Ahn, 2016).

Because familism directly relates to the extent to which family members are reliant upon one another for financial support and care, the classification of countries based on the degree of familism in welfare institutions is extremely relevant for the comparative literature on intergenerational support regimes (Dykstra, 2018). Numerous studies, which I review below, compare parent-child transfers of financial and care support between groups of countries classified as "familistic" or "de-familised". However, as I argue in Chapter 2, there is also value in comparing intergenerational transfers across countries *within* the familistic group. This allows to go beyond binary distinctions between familism and de-familisation, and to make hypotheses about which specific aspects of welfare may interact with the exchange of resources between family members.

1.2.2. Cross-national comparative research on intergenerational transfer regimes

The main aim of the literature on the country-level determinants of intergenerational support is to unveil the relationship between public (state) and private (family) transfers. As argued by Martin Kohli (1999) in his seminal discussion on the topic, the traditional view of modernisation posits that the development of the welfare state has made family support unnecessary. The implication is that more de-commodifying – or de-familising – welfare states should display lower levels of intergenerational family exchanges, in what is referred to as the "crowding-out" effect. However, since the late 1990s, empirical evidence has been reaching different conclusions. In an influential study Kunemund and Rein (1999), analysing parent-child transfers in five high-income countries, suggest that the more resources older people receive from the welfare state, the more scope they have to engage in reciprocal support exchanges with their children. This mechanism is referred to as "crowding-in".

These early papers have paved the way for a rapid growth in the literature on welfare regimes and intergenerational transfers, boosted in the mid-2000s by the release of the Survey of Health, Ageing and Retirement in Europe (SHARE) (Borsch-Supan & Jurges, 2005). Based on the pre-existing Health and Retirement Study (HRS) from the United States (US) and on the English Longitudinal Study of Ageing (ELSA), SHARE is the first comprehensive cross-national survey that allows researchers to analyse support transfers between older parents and their children in a number of European countries using the same set of indicators.

SHARE-based studies of intergenerational support from adult children to their ageing parents find some evidence of crowding-out, as levels of financial and practical assistance from children appear to be higher in countries with less generous pension systems (Attias-Donfut, Ogg, & Wolff, 2005) and characterised by familistic welfare policies and cultural norms (Kalmijn & Saraceno, 2008; Schmid, Brandt, & Haberkern, 2011). However, the literature suggests that crowding-out is not the only mechanism in act. Daatland and Lowenstein (2005) use an alternative dataset on Norway, England, Spain, Germany and Israel and show that, while the absolute level of filial support to parents over 75 is similar across these countries, support mainly comes in the form of intensive personal care in Spain (a familistic setting) and of non-essential tasks such as regular contact and company in Norway (a non-familistic one). Findings by Haberkern & Szydlik (2010) using SHARE also back the claim that, although intensive care support from children is more prevalent in Southern than in Northern Europe, the wider availability of formal care services in the North enables adult children to focus on complementary support functions such as organisational tasks and housekeeping.

SHARE-based studies have also revealed that, across Europe, intergenerational support flows mainly from parents to children (Albertini et al., 2007; Attias-Donfut et al., 2005). As in the case of filial support, the evidence on the crowding-out hypothesis is mixed. Albertini et al. (2007) find that financial and time transfers from parents to children are more frequent in the de-familising Northern European welfare states than in the familistic South, but also corresponding to lower amounts of money and time provided. Isengard and Szydlik (2012) and Albertini and Kohli (2013) also reveal a European North-South divide in the predominant type of parental assistance to adult children, with coresidence more common in the South, direct monetary transfers in the North, and Central European countries such as Belgium, Germany and France performing somewhere in the middle.

European studies on grandparental childcare also find mixed evidence for the crowding-out and crowding-in hypotheses. Among the studies using SHARE, Hank and Buber (2009) and Igel and Szydlik (2011) find grandparental involvement to be more frequent but less intensive in terms of time commitments in Northern and Central European countries, where formal childcare provision is more widespread than in the South. More recent studies by Di Gessa and colleagues (2016) and Bordone et al. (2017) show that, across Europe, low childcare service provision, restricted parental leave and little

opportunities for part-time work correspond to higher rates of intensive childcare provision by grandmothers. Analysing data from the European Social Survey (ESS), Jappens and Van Bavel (2012) find that mothers are more likely to utilise grandparental care as a substitute for formal childcare in regions where traditional familistic values are more prevalent.

A consistent message from the empirical literature is that crowding-out and crowding-in are not mutually exclusive, and the differentiation in family transfer regimes across European welfare states is in the type and amount (in terms of money and time transferred) as opposed to the absolute level of intergenerational support. Taking from Litwak's (1985) task-specificity model, the emerging theory on the relationship between public and family transfers is the so-called "specialisation hypothesis". This posits that the welfare state and the family specialise in different functions, so that policies relieving families from financial and care responsibilities will crowd out intensive forms of support such as large money transfers and personal care, but encourage more complementary forms of help such as frequent exchanges of small sums of money and help with household chores. A series of empirical papers by Martina Brandt and colleagues use multilevel models of European SHARE countries to test these mechanisms in relation to care, help and financial support in both directions along the generational line, and find evidence in favour of the specialisation hypothesis (Brandt & Deindl, 2013; Brandt, Haberkern, & Szydlik, 2009; Deindl & Brandt, 2011; Igel, Brandt, Heberkern, & Szydlik, 2009).

The large body of evidence discussed here attributes differences in intergenerational transfer regimes across Europe to a combination of family policies, legal obligations, pension systems and cultural attitudes about family responsibilities. Comparative analyses of intergenerational support regimes in other regions are relatively rare.

Research on East Asian countries tends to emphasise the role of cultural norms rather than welfare policies. Lin and Yi's (2011, 2013) comparative analyses of China, Taiwan, Japan and Korea find similarities in intergenerational support transfer regimes across these countries, and emphasise the main differences with respect to the West. In particular they show that, contrary to European findings, financial and practical support

in East Asia flows mainly from children to older parents, arguing that this reflects stronger cultural norms of filial responsibility.

Regarding grandparental care, Maehara and Takemura (2007) argue that the greater persistence of traditional filial norms in Korea compared to Japan is related to stronger intergenerational solidarity between grandparents and grandchildren. Ko and Hank (2014) compare China and Korea and suggest that the much higher proportions of grandparents involved in childcare in China (around 58%) compared to Korea (around 6%) reflect differences in the relative importance of patrilineal norms and working mothers' needs as determinants of grandparental care.

Cross-national comparative studies on grandparental care and intergenerational coresidence in South-East Asia (Knodel & Nguyen, 2015; Knodel & Pothisiri, 2015) emphasise instead the role of macroeconomic factors. The authors argue that, because countries such as Thailand, Myanmar and Vietnam are relatively culturally homogenous, the higher rates of custodial grandchild care and lower coresidence between older parents and adult children in Thailand relative to Myanmar reflect the fact that young Thai adults have fewer children and are more likely to migrate, in line with the country's higher level of economic development.

US research on intergenerational support is notably US-centred, and mainly focussed on individual-level relationships (Silverstein, Gans, & Yang, 2006). Comparative studies of the US and the UK (Grundy & Henretta, 2006; Henretta, Grundy, & Harris, 2002) have also aimed to compare individual-level outcomes rather than highlight how differences in welfare characteristics may interact with transfer regimes. The availability of a large number of waves from the HRS has recently enabled researchers to look at differences in intergenerational support over time and across cohorts of older adults (Henretta, Van Voorhis, & Soldo, 2018).

Several shortcomings arise from this review of the cross-national comparative literature on intergenerational support regimes. First, the empirical work on the connection between contextual structures and intergenerational transfers is strongly Euro-centred, with most studies analysing SHARE data to compare parent-child transfers across European welfare regimes. Comparative research on other contexts is scarce. As discussed with regard to the comparative literature on welfare states (Esping-Andersen,

1990), Western European models can be hard to generalise to contexts with different historical and cultural backgrounds (Szoltysek, 2012). Thus, context-specific knowledge is necessary to assess whether similar relationships between public and private transfers hold outside European countries.

There is also a lack of studies comparing intergenerational support regimes across countries belonging to different geographical regions. This reflects an implicit assumption that welfare systems are more "comparable" within than across regions. However, it has been shown that, especially with regard to familism in welfare institutions, East Asian and Southern European countries share similarities that matter (Ferrera, 2016). In 2016, a special issue of the Journal of European Social Policy was dedicated to comparing the welfare states of Italy, Japan, Korea and Spain (Estevez-Abe, Yang, & Choi, 2016 and other articles in that issue). The authors highlight that all four countries have familistic welfare policies, strong cultural norms about the reciprocal obligations among family members, and labour markets characterised by a division between the formal and informal sectors, with little social protection to those working in informal jobs (Estevez-Abe et al., 2016; Ferrera, 2016; Saraceno, 2016).

These characteristics predict strong interdependence between older parents and their adult children for financial and practical support, which implies that a comparison across these countries may highlight other contextual factors that influence the net direction and amount of intergenerational transfers. And while it is arguable that cultural differences between East Asia and Southern Europe are important, so they are between the North and South of Europe, especially with regard to family values (Reher, 1998). More generally, cross-regional comparisons are valuable for generating hypotheses about the country-level influences on intergenerational support that go beyond the European North-South divide.

In terms of methodology, the European literature on the specialisation hypothesis (e.g. Brandt & Deindl, 2013) often relies on multilevel models to infer the effect of country-level characteristics on parent-child transfers. It has been shown by Bryan and Jenkins (2016) that the coefficients for country-level characteristics in multilevel random-effects models with few (e.g. less than 25 or 30) countries may not provide reliable estimates of the true associations of interest. Given that SHARE includes data on 11 countries at

baseline and 28 at the most recent wave (released in 2019), it may be more profitable for research to rely on in-depth comparisons of fewer case studies rather than on multilevel analyses.

Chapter 2 of this thesis consists in a two-country comparison of intergenerational support transfers between Italy and Korea. The comparison allows me to study intergenerational transfer regimes beyond the traditional distinction into familistic and non-familistic welfare in Europe. This comparison is particularly useful in suggesting whether the Western European model of intergenerational support can be applied to contexts where the degree of social protection guaranteed to older adults through pensions, benefits and public services is much lower, such as Korea. As an empirical approach, the two-country case study approach allows me to better contextualise the differences between these countries in terms of specific socio-political and structural factors.

1.2.3. Individual motives and consequences of intergenerational support

Research on intergenerational support at the individual level has aimed to explain the motives for transferring resources, the personal and family characteristics that predict support exchanges, and the consequences of such support for its givers and recipients.

The literature on the individual motives for giving financial and practical support is framed around the concepts of altruism and reciprocity. While altruism assumes the benefit of the recipient to be the main motivation for giving support, reciprocity or exchange theory posits that individuals transfer resources in the expectation of receiving something in return (Kohli & Kunemund, 2003). Altruism and reciprocity are related to crowding-out and crowding-in at the country level (Reil-Held, 2006). By assuming the main reason behind a transfer to be the need of the recipient, altruism predicts the crowding out of family support by public transfers that address that need. By contrast, reciprocity fits better within the crowding-in framework as it allows for the existence of further motives behind intergenerational exchange. As it is the case for the relationship between public and family transfers in cross-national comparative studies, these two types of motivations are not mutually exclusive, and assumptions that individuals have a single and well-defined reason for giving support to their kin are unrealistic (Grundy, 2005; Kohli & Kunemund, 2003; Silverstein, Conroy, Wang, Giarrusso, & Bengtson, 2002).

Going beyond individual motivations, at the family level intergenerational exchanges are explained by need and opportunity structures (Szydlik, 2008), so that the likelihood of a transfer increases when a family member needs practical or financial help, and another member possesses the necessary resources (Brandt & Deindl, 2013).

In Europe and the US, parents of higher socioeconomic status as expressed by occupational class, education and wealth are more likely to transfer money to their young-adult children, and less likely to live with them (Albertini & Radl, 2012; Fingerman et al., 2015; Isengard, Konig, & Szydlik, 2018). Household and family structure also influence the likelihood of time and money transfers: in Europe, only children receive on average more money from their parents than individuals with siblings (Emery, 2013); in the UK and the US, mid-life women providing care for their older parents or parents-in-law are also more likely to help their adult children through time transfers (Grundy & Henretta, 2006). Across different contexts, caregiving is predominantly performed by women (Albertini, 2016; Do, Norton, Stearns, & Van Houtven, 2015) and mothers tend to receive more support from their adult children than fathers (Silverstein et al., 2006).

Among the indicators of recipients' needs that predict support transfers, children's marital breakdown, job loss and the birth of a child have been found to increase the likelihood of parental support (Leopold & Schneider, 2011). Filial support to ageing parents is connected instead to poor parental health, and its likelihood increases with parents' age (Haberkern & Szydlik, 2010; Igel et al., 2009).

Among studies of the effects of intergenerational support on its recipients, transfers of money from older parents to their young-adult children are usually examined with respect to their consequences for children's outcomes. In the US, parental financial support is positively linked with children's subsequent occupational attainment (Manzoni, 2018) and health (Ong, Nguyen, & Kendall, 2018). Grandparental childcare has also been found to have a positive effect on young parents' participation in the labour market (Arpino, Pronzato, & Tavares, 2014) and on young adults' fertility intentions (Aassve, Meroni, & Pronzato, 2012), especially in countries such as Italy, where public childcare service provision is low. Support transfers in the opposite direction, from

children to parents, have been mainly been studied in relation to their effect on parental health and wellbeing (Silverstein & Bengtson, 1994; Silverstein, Chen, & Heller, 1996).

Another body of literature examines the consequences of intergenerational support for the givers, focusing predominantly on their wellbeing (Albertini, 2016). From the point of view of older adults, some theoretical discussions (Bengtson, Giarrusso, Mabry, & Silverstein, 2002) and empirical evidence from Europe (Tosi & Grundy, 2018) suggest that giving support to adult children as a consequence of children's divorce or economic difficulties may result in lower psychological wellbeing and quality of life among parents. However, authors analysing SHARE data have found coresidence with adult children to have positive or no effects on parents' mental health in later life (Aranda, 2015; Courtin & Avendano, 2016). Results about the effect of grandparental care on grandparents' health are ambiguous, with some European studies reporting positive (Di Gessa, Glaser, & Tinker, 2016) and others detecting no effect (Ates, 2017).

From the point of view of the adult children, the consequences of giving support have been examined in relation to caregiving burden, with intensive care for an ageing parent or parent-in-law linked to poor mental and physical health outcomes for women across Europe (Brenna & Di Novi, 2016; Hiel et al., 2015) as well as in Korea (Do et al., 2015). Research on the effects of providing care to ageing parents on paid work participation also suggests that women in Europe and the US reduce their labour supply when faced with care responsibilities (Bauer & Sousa-Poza, 2015; Crespo & Mira, 2014), while for men either modest declines (Van Houtven, Coe, & Skira, 2013) or increases in participation (Dentinger & Clarkberg, 2002) have been detected.

While the literature on the consequences of intergenerational support for its givers and recipients is extensive, some gaps emerge from this summary. First, relatively little research has looked at how giving money or practical assistance to adult children may affect the labour supply of middle-aged and older parents. Intergenerational transfers can affect the money and time resources available to older adults, and thus shape their financial necessity or ability to work for pay. Some studies of productive ageing in East and South-East Asia that I review below (section 1.3.2) have highlighted the relevance of intergenerational support transfers for older parents' participation in economic activity given the importance of family ties in these settings (Giang, Pham, & Phi, 2018; J. H.

Kim, 2013, 2018). In the US, Miller, Tamborini and Reznik (2018) study the effect of giving financial assistance to young-adult children on fathers' retirement expectations and realisations. They find that a child's move out of the parental home substantially reduces financial support to children, and leads to a decrease in fathers' age of expected and realised retirement. This suggests that supporting a child affects parents' labour supply by reducing their retirement savings and thus altering their planning horizon. However, more research is necessary to assess whether this relationship holds and is generalizable to different contexts.

In Chapter 4 of this thesis, I analyse participation in employment and informal caregiving after age 50 among Italian and Korean parents. I include transfers of money to and from children, intergenerational coresidence and grandchild care among the predictors of employment and informal care and help to adults, with the aim of understanding the potential interrelations between intergenerational transfers and middle-aged and older parents' participation in these productive roles. While the empirical strategy does not allow to make inference about the direction of causality, the results suggest that helping children financially is significantly associated with parents' participation in paid work in both countries, which is in line with the results from Miller et al. (2018).

Second, a small but growing number of studies has looked at how grandparental childcare may affect grandparents' labour supply (Zanella, 2017). Some studies on the US and various European countries find that the presence or birth of a grandchild is linked with a decrease in labour supply, especially among grandmothers (Backhaus & Barslund, 2019; Frimmel, Halla, Schmidpeter, & Winter-Ebmer, 2017; Rupert & Zanella, 2018). However, some questions remain unanswered. In particular, it is unclear whether intensive grandchild care reduces paid work participation by representing a competing time commitment, or whether grandparents are less likely to work than non-grandparents because of changes in their circumstances upon grandparenthood, such as the acquisition of a new social role. Moreover, differences in the relationship across countries characterised by different childcare policies are under-investigated, but they may be relevant given that rates of intensive grandchild care provision as well as individuals' ability to reconcile or combine work and childcare varies across childcare policy regimes (Igel & Szydlik, 2011; Lewis, 2006).

In Chapter 5, I examine the association between daily grandchild care provision and grandparents' labour supply across European countries using SHARE data. Unlike previous studies, I take daily grandchild care rather than grandparent status as the main explanatory variable, and use a bivariate modelling approach to account for the selection of grandparents with different unobserved traits into work and grandchild care. I test for heterogeneity in the association across groups of countries characterised by different childcare policy regimes. My findings suggest that the conflict between work and grandchild care is strongest for grandparents living in countries with familistic approaches to childcare policy.

1.3. Productive ageing: review of the literature

In recent decades, a debate has developed around the potential decline in economic growth and productivity associated with population ageing (Bloom, Canning, & Sevilla, 2003). Reports such as the Organisation for Economic Cooperation and development (OECD)'s (1988) "Ageing populations: The social policy implications" and the World Bank's (1994) "Averting the old age crisis" are emblematic of policymakers' concerns with the rising economic costs linked to the increase in the proportion of older individuals covered by defined-benefit pension systems. The dominant policy response to population ageing since the 1980s can be summarised by the "live longer, work longer" (OECD, 2006) approach, which has prompted reforms aimed at extending working lives and shifting from defined-benefit to defined-contribution pension systems in most high-income countries over the past decade (OECD, 2017e).

By emphasising the economic risk associated with a growing number of "inactive" older adults in receipt of pensions and other welfare benefits, this policy framework equates productivity with labour market activity, and it assumes that older adults who are retired, unemployed or homemakers do not produce economic output. However, this does not provide an accurate description of older adults' contributions to society, as it ignores participation in activities such as volunteering and family care, which take place outside the formal labour market but produce valued services and goods (Bass & Caro, 2001). Moreover, a framework equating productivity with formal paid work carries implicit age and gender biases, as in most contexts those at advanced ages and women are less likely

to be employed relative to younger men (Herzog, Kahn, Morgan, Jackson, & Antonucci, 1989).

Around the late 1980s in the US, the productive ageing framework began to emerge as a reaction to the dominant paradigm depicting formal employment as the only form of productive contribution to society, and older adults as inherently unproductive (Butler, 1989; Butler & Gleason, 1985). According to Bass, Caro and Chen's (1993) widely used definition, productive ageing consists in older people's participation in activities that produce goods or services, or that develop others' capacity to do so, whether for pay or not. Examples of productive activities include paid work, but also unpaid volunteering and informal care.

1.3.1 Theoretical perspectives and issues of definition and measurement

From a theoretical perspective, productive ageing has its origins in the early research in social gerontology on what constitutes a successful model of ageing, i.e. one that maximises both the wellbeing of older individuals and the benefits to society as a whole (Havighurst, 1961). By the early 1960s two contrasting theories had emerged with regard to this. Disengagement theory, proposed by Elaine Cumming and William Henry (1961), posited that ageing well means the acceptance and the desire for a process of progressive disengagement from social roles and activities. By contrast, activity theory viewed ageing successfully as the maintenance, for as long as possible, of activities and roles performed in middle-age (Havighurst, 1961).

Disengagement theory has since been criticised as embracing and reinforcing assumptions about inactivity and dependency of older adults on the rest of society (Hinterlong, 2008), and disproved by empirical evidence showing that it is common and often beneficial for individuals to take up new roles after mid-life (Fortuijn et al., 2006; Neugarten, Havighurst, & Tobin, 1968). However, activity theory was not without its critics. As Cumming and Henry argued, the assumption that older people would want to maintain active social roles is based on a view of middle-age as a more desirable status, which fails to conceive old age as a potential developmental stage in itself (Henry & Cumming, 1959). Moreover, activity theory was criticised for its lack of attention to the meaningfulness of the activity performed, as it implicitly assumes remaining "busy" to be an end in itself (Hinterlong, 2008).

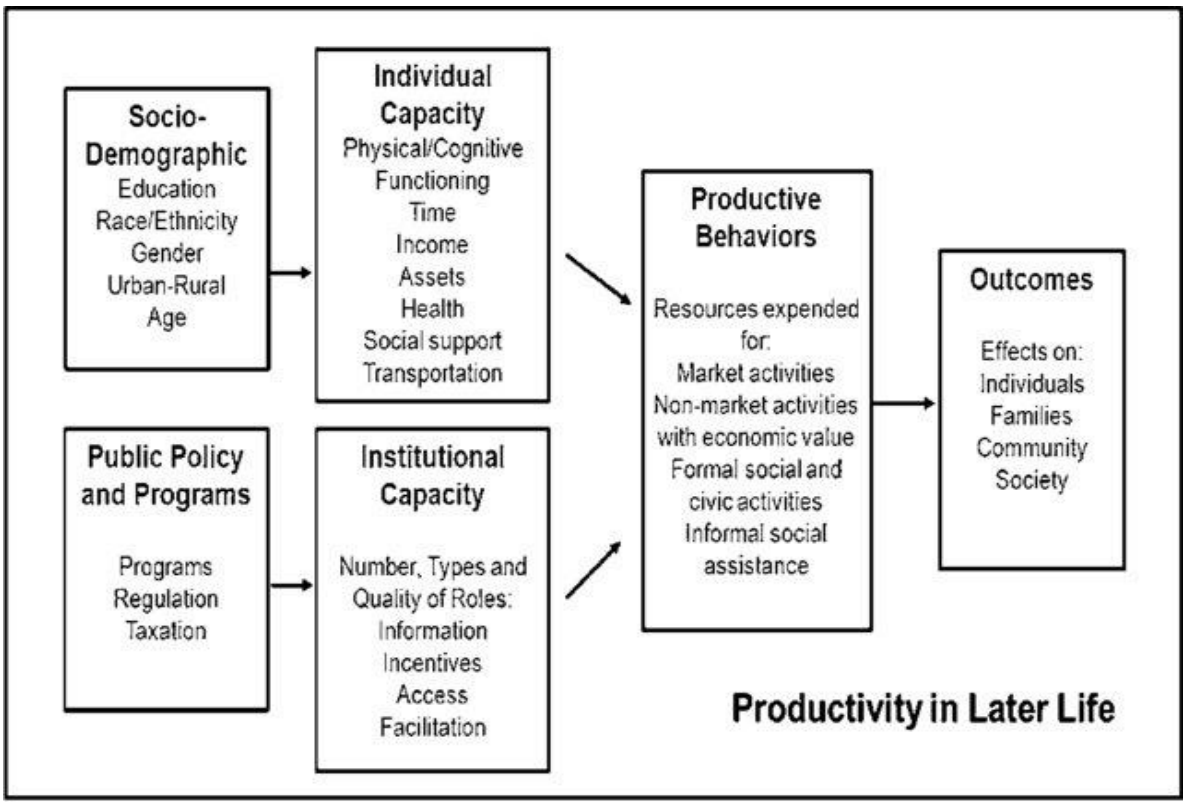
Continuity theory (Atchley, 1989) addressed this latter issue by positing that, since individuals maintain similar psychological characteristics and social behaviours throughout their lives, continuity with social roles previously held is key for ageing successfully. The theory of selective optimisation by Baltes and Baltes (1990) further developed this idea by stating that, ideally, older individuals reduce the number of activities they perform, but practice the remaining ones more often, adopting less time- and energy-consuming ways of performing them.

All of these earlier theories define "ageing well" in relation to participation in social roles and, with the exception of disengagement theory, they predict positive effects of active engagement on physical and psychological wellbeing. However, due to the scarcity of large-scale data on older adults' activities, health and wellbeing, until the HRS was released in the 1990s their theoretical insights were difficult to test, and empirical evidence was mostly limited to the description of activity participation in small surveyed areas (Neugarten et al., 1968). Moreover, early theories were either based on the assumption that society (or at least the American one, upon which they are centred) had the means to provide for the material support of older people (Havighurst, 1961), or made no particular assumption about older people's impact on the broader society. They viewed "ageing well" as an individual goal and an end in itself, which would benefit society indirectly through the improvement in the overall physical and psychological health of the older population.

From the 1980s onwards, rising concerns with declining economic productivity have led to a new research focus on how to maximise the productive participation of older people. This has been reflected in the emergence of theories that frame later-life activity engagement as directly benefitting society and the economy through the production of goods and services, and its potential health benefits as a strategy for halting the increase in healthcare costs associated with population ageing. Among these theories, the most widely known are successful ageing (Rowe & Kahn, 1997), active ageing (WHO, 2002), and productive ageing. The productive ageing framework distinguishes itself from the other two because, while successful and active ageing are mainly concerned with the maintenance of cognitive and physical functioning in later life, productive ageing is more explicitly focussed on the economically valued contributions of older adults to society.

Among the most widely adopted theoretical frameworks on productive ageing is the one elaborated by Sherraden, Morrow-Howell, Hinterlong and Rozario (2001), which is reproduced in Figure 1.1 below. This framework characterises productive ageing as the outcome of socio-demographic (individual) and policy (contextual) characteristics that influence individuals' ability to participate. In turn, productive ageing affects older adults themselves (in particular their health and wellbeing), their families and societies.

Figure 1.1: The productive ageing framework



Source: Sherraden, Morrow-Howell, Hinterlong and Rozario (2001: 277)

In its most optimistic connotation, (e.g. Gonzales et al., 2015), the productive ageing framework puts forward the view that enabling older adults to perform activities that make economic contributions to society will have multiple positive effects, such as offsetting the fiscal strains of a large older population, contributing to the betterment of families and civil society, and maintaining older adults' health and wellbeing. However, unconditional optimism about the potentials of productive ageing is not completely justified. The first and foremost criticism of the framework is that it carries an implicit assumption that older adults should be productive, which may lead to pressures on them to undertake activities they may prefer not to engage in (Estes & Mahakian, 2001). The "dark side" of productive ageing, as Moody (2001) puts it, is the implicit notion that lack of participation is intrinsically unproductive. This has led some critics to dismiss the notion of "productive" or "active" ageing in favour of "desired" ageing, where self-realisation rather than economic goals are the primary focus (Moulaert & Biggs, 2013).

A related controversy concerns how productive ageing should be defined. Narrow definitions of the concept include activities that can be assigned an economic value, or

equivalently that would have to be paid for if older adults did not perform them (Morrow-Howell, Hinterlong, Sherraden, & Rozario, 2001). Broader definitions also include any activity that increases the potential for older adults to be productive, such as education, religious participation and sport (Baker, Cahalin, Gerst, & Burr, 2005; Thanakwang & Isaramalai, 2013).

In this thesis, I restrict my attention to paid work, volunteer work, grandchild care and informal care for adults as productive activities. This set of activities adequately reflects the thesis' focus on the economic contributions of older adults to their families and societies. In my view, the economic focus of productive ageing is valuable as it provides a response to conceptualisations of productivity that are solely based on labour market participation. In terms of policy relevance, a definition that only considers activities that have economic value can be useful in suggesting alternatives to the "live longer, work longer" (OECD, 2006) policy framework.

Narrow definitions facilitate comparison across countries because they are based on activity indicators that are directly quantifiable and available from comparable surveys on ageing. In addition, a narrow definition reduces overlap with the concepts of successful and active ageing, both of which are more concerned with physical and mental health. I am not dismissing the importance of studying health and wellbeing in later life; rather, I argue that there is value in isolating older people's activities from their health effects. By remaining agnostic with respect to the potential effects of engagement for health and wellbeing, a narrow definition of productive ageing does not assume participation to be unequivocally beneficial for older individuals and their families, and it allows to investigate potential inequalities in productive ageing outcomes.

Independently of which set of activities one considers to be productive, productive ageing is necessarily a multidimensional concept, in the sense that it encompasses more than one aspect of older people's productivity. Therefore, besides decisions about which activities to include in its definition, another issue is whether and how to aggregate indicators of such activities into a composite measure representative of the concept.

Most empirical studies of productive ageing treat its various components as separate indicators, for instance by analysing paid work, volunteering and informal care as separate variables (Akintayo, Hakala, Ropponen, Paronen, & Rissanen, 2016;

Hinterlong, Morrow-Howell, & Rozario, 2007). By restating the concept in terms of its indicators, the practice of avoiding aggregation greatly simplifies the task of measuring productive ageing. However, one can think of instances where aggregation of activities into a composite measure is necessary. This may be the case when the aim is to assess or predict the extent of productive ageing achieved, and compare groups of individuals or countries with respect to it. In general, composite measures are useful for summarising complex phenomena by reducing their size without discarding information (OECD, 2008). As such, they facilitate interpretation, comparability and communication with broader audiences (OECD, 2008).

Composite measures are constructed by compiling individual indicators into a single index on the basis of some underlying model (OECD, 2008). However, in the case of productive ageing, it is unclear which model adequately reflects the definition of the concept. Empirical studies that attempt to combine different activities together usually do so by grouping them into binary indicators of whether older adults are "engaged" or not (Jung, Gruenewald, Seeman, & Sarkisian, 2010; Klumb & Maier, 2007), or by summing up the number of activities or the number of hours of productive involvement (Herzog et al., 1989; Hinterlong, 2008). These forms of aggregation implicitly assume that all activities have the same value with respect to productive ageing. However, this assumption is rarely justified or tested. In fact, there is no reason to assume that, for instance, one hour of care for a sick or disabled adult has the same productive value as one hour of volunteering for a local organisation.

More generally, it is unclear whether productive activities are hierarchically ordered and, relatedly, whether a measure of productive ageing should incorporate weights for each activity that reflect such ordering. As it is clear from existing conceptualisations (Sherraden et al., 2001), productive ageing is pragmatically defined by researchers' judgements about which activities to include, and whether and how to aggregate them. Thus, ideally, a measure of productive ageing should rely on researchers' assessments about the relative importance of each activity.

In Chapter 3 of this thesis, Professor Benjamin Lauderdale and I introduce a method for the weighting and aggregation of indicators into a composite measure based on researchers' judgements, and apply it to the concept of productive ageing. This

measurement method maximises validity by mapping existing indicators of productive activities – paid work, volunteering, informal care and grandchild care – directly onto researchers' judgements about their relative importance using a conjoint experiment approach. We show evidence that researchers with expertise in productive ageing view productive activities as hierarchically ordered, with some more important than others. This suggests that the weighting approaches commonly used for aggregation in productive ageing research may not adequately reflect the concept itself.

1.3.2. Empirical work on the determinants of productive ageing

Early empirical research on productive ageing mainly consisted in attempts to quantify older adults' contributions to society (Herzog et al., 1989; Herzog & Morgan, 1992; Morgan, 1986). More recent work describing the extent of productive ageing emphasises concurrent engagement in multiple productive roles, and it consists mainly of studies aimed at understanding different clusters of activity profiles among older people (Burr, Mutchler, & Caro, 2007; Dosman, Fast, Chapman, & Keating, 2006; Fernández-Ballesteros et al., 2011; J. H. Kim, 2018; Morrow-Howell et al., 2014).

A large body of empirical literature aims to assess the consequences of productive engagement for older people's health and wellbeing, and generally finds positive associations between overall engagement and physical and mental health (Baker et al., 2005; Hinterlong et al., 2007; Jung et al., 2010; Y. Li, Xu, Chi, & Guo, 2013). However, studies that distinguish between different types of activity suggest that only those that take place in a social context and are rewarded or reciprocated have a positive relationship with mental health and wellbeing. By contrast, non-reciprocated care work is associated with lower levels of wellbeing as measured by indicators of quality of life, life satisfaction and the absence of depressive symptoms (McMunn, Nazroo, Wahrendorf, Breeze, & Zaninotto, 2009; Wahrendorf, Von dem Knesebeck, & Siegrist, 2006).

While quantifying older adults' contributions and assessing their effects on health and wellbeing are important research aims in the productive ageing literature, in the empirical chapters of this thesis I focus mainly on the determinants of activity engagement and, in particular, on how individual characteristics and intergenerational family transfers relate to participation in productive roles in mid- and later life. The gerontological literature on the determinants of activity participation is extensive. For simplicity, I restrict my

attention to studies that are explicitly concerned with the determinants of productive ageing, and thus investigate participation in more than one activity at the same time.

Among these studies, socioeconomic status, indicated by education, wealth and income, is one of the strongest predictors of participation in activities performed outside the household such as paid and volunteer work (Bukov, Maas, & Lampert, 2002). This result has been found using data from Finland (Akintayo et al., 2016), France (Sabbath et al., 2016), Australia (Loh & Kendig, 2013) and the US (S. Kim, 2018; Morrow-Howell et al., 2014). However, two South Korean studies (J. H. Kim, 2013; O. E. K. Lee & Lee, 2014) find that high education is positively associated with volunteering, life-long learning and self-development, but not with paid work. Giang and colleagues (2018) examine the predictors of productive ageing in Vietnam and find that older adults with lower educational attainment are more likely to participate in economic activities, and attribute this to the fact that, in the country, only the more highly educated receive a pension, and thus do not need to work in order to earn a living in later life.

Unsurprisingly, various studies find good functional health to be related with participation in productive roles (Glass, Seeman, Herzog, Kahn, & Berkman, 1995; S. Kim, 2018; Sabbath et al., 2016). A recent study on China (Ko & Yeung, 2018) finds that early childhood health and nutrition indirectly affect the likelihood of participating in productive activities by influencing cognition and disabilities later in life. Age and gender are also consistently found to determine the type of activities performed. In Europe, older individuals and women are more likely to engage in household chores and family caregiving, and less likely to participate in activities performed outside the household (Fernández-Ballesteros et al., 2011; Schmidt et al., 2016; Van der Meer, 2006). Married individuals are generally more likely to be actively engaged, especially in volunteer work (Erlinghagen & Hank, 2006).

Among those studying the psychological predictors of participation, Caro and colleagues (2009) analyse data from a sample of older adults from Massachusetts and find that general motivation towards activity (as opposed to inactivity) correlates with participation in all the productive roles under study, as well as in multiple roles as the same time. Using SHARE data, Pollak and Sirven (2016) find that adults aged 50–69 who are employed and who receive intrinsic rewards at work, such as skill development

opportunities and involvement in decision-making, are also more likely to take part in volunteering and informal caregiving.

Most of the literature cited in the previous paragraphs investigates the individual characteristics associated with productive engagement, while relatively less attention has been paid to how family members' needs and family transfers are linked with activity participation. As I have already highlighted in the review of the literature on the individual-level mechanisms of intergenerational support (section 1.2.3), the relationship between giving financial or practical support to adult children and older parents' labour supply is under-investigated. The same is generally true for the link between family transfers and participation in productive roles.

In fact, only a few Asian studies explicitly consider the role of intergenerational exchanges. Kim (2013) analyses the correlates of productive engagement among older Korean women and finds that coresidence with adult children is associated with lower chances of working and with higher likelihood of participating in family activities such as household chores and informal care. Kim (2018) also finds that older Koreans not living with their adult children are more likely to work after age 65. For Vietnam, Giang et al. (2018) include transfers of financial and practical assistance to and from adult children among the correlates of productive participation and find that parents who help their children are more likely to engage in economic activity, while those who receive support from their children are less likely to do so.

In Chapter 4 of this thesis, I contribute to the literature on how intergenerational transfers of support correlate with older adults' participation in two productive activities: paid work and informal caregiving for others. Similarly to Giang et al. (2018), I include financial and practical support transfers to and from adult children among the predictors of participation in each of the two activities among parents aged 50 and older. I investigate these associations in a comparative perspective between Italy and Korea, with the aim of exploring whether differences in the relative level of social protection towards older adults between the two countries result in different associations between intergenerational support and productive participation.

1.3.3. Cross-national comparative research on productive ageing

Despite the fact that well-known theoretical frameworks on productive ageing explicitly incorporate country-level factors among its determinants (Morrow-Howell, Halvorsen, Hovmand, Lee, & Ballard, 2017; Sherraden et al., 2001), the amount of research comparing productive engagement across countries is scarce (Morrow-Howell & Wang, 2013). Such scarcity is an issue, because it hinders our understanding of how socio-political and cultural factors interact with older adults' participation and contributions to society. It is also in contrast with the aim of productive ageing research to suggest relevant alternatives to the dominant policy framework that equates economic productivity with formal employment (Morrow-Howell & Mui, 2013).

Fortuijn and colleagues (2006) note the lack of cross-national comparisons of productive ageing, and aim to fill this gap by comparing six European countries (Austria, Italy, Luxembourg, the Netherlands, Sweden and the UK). Their results show large similarities in the dimensions of activity involvement across contexts, but also highlight some differences. In particular, in Italy the distinction between gender roles is stronger, with men more likely to participate in activities outside the household, and women more involved in informal family care. Moreover, the distinction between involvement in family and community roles is less clear-cut than in other countries. In Sweden, community engagement and paid work tend to continue until more advanced ages and are less correlated with socio-economic differences, while in the UK the socioeconomic stratification in productive ageing participation is highest.

Hank (2011) conducts multilevel analyses of the determinants of unpaid productive activities using SHARE data and finds that, while his country-level measure of societal images of ageing is not correlated with participation, older people are more likely to be productively engaged in countries with greater political and religious freedoms and more generous welfare states. Warburton and Jeppsson Grassman (2011) study variations in productive ageing across Australia, Germany, Italy, Japan, Sweden and the UK. They find that the countries with higher welfare expenditure tend to have higher levels of overall engagement, especially in volunteering activities, while familistic contexts such as Italy and Japan are characterised by greater involvement in informal care. Teerawichitchainan et al. (2018) compare the factors associated with productive ageing

across Thailand, Vietnam and Myanmar. They argue that, due to its higher level of socioeconomic development and stronger governmental commitment to a national ageing policy, Thailand is better able to maximise the productive capacity of older adults with moderate or high levels of education, who are more likely to remain engaged in economically productive activities than their counterparts in Vietnam or Myanmar.

Chen and colleagues (2016) argue that the scarcity of cross-national comparative research on productive ageing is partly connected to the challenges associated with operationalising the concept in a way that is comparable across contexts and cultures. In fact, there is large variation across countries in how activities such as caregiving or volunteering are defined, or whether these activities are considered productive at all.

Productive ageing is a US-centred concept that embodies the American values of individuality, productivity and engagement. It is thus uncertain whether it can be directly applied to cultures in which the family or the inner dimension are more important (Moody, 2001; Peng & Fei, 2013). Some East Asian scholars have argued that the imitation of the Western model of productive ageing can serve as a useful starting point. Such view is reflected, for instance, in Lum's (2013) discussion of productive ageing in greater Chinese societies (China, Hong Kong and Taiwan). Other experts in the region are more sceptical. Uesugi (2010) has pointed out that, in Japan, the discussion around productive ageing is mainly focussed on paid work continuation, while the concept of volunteering is foreign, as demonstrated by the adoption of the English word for it. Similarly Lee and Lee (2014) have argued that, in Korea, traditional assumptions about family responsibilities imply that caregiving activities performed within the household are considered as duties rather than productive accomplishments. Luo and Chui (2016) explore productive ageing discourses among older Chinese adults in Hong Kong. They advance the argument that, contrary to the West, where productive ageing emphasises individuals' contributions to economic productivity, productive ageing in Confucian cultures is connected to self-restraint with the aim of avoiding becoming a burden on younger generations.

The issue of comparability in the conceptualisation of productive ageing is related to the difficulties with measurement and aggregation highlighted above (section 1.3.1). For instance, if the same activity has a different meaning across two or more countries, it is

not sensible to compare those countries with respect to that activity. Similarly, if the same activity is regarded as highly productive in some countries, but not in others, then a composite measure of productive ageing based on a particular assumption about the relative weight of that activity cannot be valid for all countries. Cultural norms and policies are among the contextual factors that may influence the relative value of a productive activity with respect to others. For example, general attitudes may imply that volunteering is viewed as a highly productive pursuit in some countries, and as a leisurely past-time in others. Similarly, grandchild care may be assessed as relatively more productive in countries with low provision of formal childcare, where it represents a substantial contribution to welfare, than in countries where the coverage and utilisation of childcare services are widespread.

Before engaging in cross-national comparative research on productive ageing, it is sensible to test for differences in the operationalisation of the concept across countries with different policies and cultural norms. However, so far, despite much theoretical discussion about comparability in productive ageing research (Chen et al., 2016; Morrow-Howell & Wang, 2013), differences in the relative value of productive activities across countries have not been tested. In Chapter 3, we assess the similarities and differences in the relative importance assigned to different productive ageing domains between a group of Italian and a group of Korean experts on the topic. The results reveal similarities as well as some interesting differences in the degree to which activities such as volunteering and grandchild care are assessed as productive.

1.4. Countries under study and approaches to cross-national comparisons

Throughout this thesis I adopt a cross-national comparative perspective to study intergenerational support and productive ageing. The cross-national comparisons in this study have three main purposes. First, my aim is to place older adults' participation in support exchanges and in socially productive roles within their socio-political, macroeconomic and cultural contexts. This is important because, as highlighted in the literature reviews above (sections 1.2 and 1.3), both phenomena are strongly linked to the societal context in which they take place (Kohli, 1999; Sherraden et al., 2001).

Second, by identifying and describing similarities and differences across countries in intergenerational support, productive ageing and how they interact with each other, I aim to make hypotheses about the potential influence of contextual factors on individual-level outcomes. Given the available data and the design of the study, the comparisons do not allow me to infer causality in relation to the effect of specific societal characteristics on intergenerational transfers and productive roles. However, by deriving hypotheses from the description of the contexts under study, I can lay the ground for causally-oriented work on the topic.

Third, my aim is to highlight the role of familism, as defined in section 1.2.1, among the contextual factors potentially related to intergenerational support and productive ageing. The degree of familism in social policies and norms determines the needs, incentives and obligations for family members to support one another (Saraceno & Keck, 2010). Familism also contributes to determine the extent of older adults' participation in productive activities within and outside the family, as well as the degree to which family care represents a contribution to welfare (Fortuijn et al., 2006; Warburton & Jeppsson Grassman, 2011). In line with this objective I explore differences in intergenerational support and productive ageing between familistic countries as well as across countries characterised by varying degrees of familism in welfare institutions.

1.4.1. Two approaches to cross-national comparisons

The first three empirical chapters of this thesis (Chapters 2, 3 and 4) are based on a comparison between Italy and Korea, while the last one (Chapter 5) uses SHARE data for 20 European countries. Both approaches have value, as well as drawbacks.

Gerring (2004) defines a case study as an in-depth study of one or more units, where the aim is to elucidate features of a larger class of units. As a methodological approach, my comparison between Italy and Korea resembles a two-unit case study. Following Seawright and Gerring's (2008) classification of case selection techniques, the two countries represent "typical cases" with respect to some characteristics of interest, and "diverse cases" with respect to others.

During the period considered (between the mid-2000s and the mid-2010s), Italy and Korea are "typical" with respect to population ageing and familism. In fact, both

countries have rapidly ageing populations and welfare institutions that assume a strong role of families as providers of support, making intergenerational transfers and productive ageing timely topics to investigate. Italy and Korea are also "diverse" with respect to other characteristics that are relevant for intergenerational support and productive ageing. As I argue in Chapters 2 and 4, their differences in the allocation of financial resources and services to middle-aged and older adults through pensions and other welfare policies are likely to be reflected in different patterns of exchange of money and time within families, as well as in different correlates of older adults' participation in productive roles. As I show in Chapter 3, Italy and Korea are also interesting to compare with respect to the operationalisation and measurement of productive ageing, because they represent socio-cultural contexts where productive activities may assume different importance relative to one another.

Cross-national comparative research involving a small number of countries (also referred to as small-N comparative research) has been criticised because the number of cases tends to be smaller than the number of contextual variables of interest, making inference about contextual-level characteristics unfeasible (Goldthorpe, 1997). However, it should be noted that inference about country-level characteristics is usually not the objective of small-N comparative studies. As Ebbinghaus (2005) explains, in small-N studies countries do not represent observations for analyses aimed at generalising beyond them. Instead, the purpose is usually to conduct intensive within-case analyses, the results of which are then compared across cases. He also argues that the deliberate selection of cases makes small-N studies better suited than large-N designs to account for the historical and political contingency of macro-level units.

The two-unit case study does not reduce contextual factors to their indicators, as it is the case in cross-national comparisons of many countries. In turn, relationships between macro-level factors and individual outcomes cannot be tested nor generalised (Hancké, 2009). In this thesis, I use the Italy-Korea comparison as an exploratory method (Sigle-Rushton, 2009), aimed at building an argument and hypotheses about the possible influence of the societal context on individual outcomes.

In Chapter 5, I use data from 20 European countries in SHARE to examine the relationship between grandchild care and grandparents' labour supply. In this paper I do

not discuss country-specific characteristics in detail, and I compare groups of countries based on coarse indicators of familism and de-familisation, such as the proportion of young children enrolled in formal childcare and the length of paid parental leave.

While it may be argued that large-N studies are superior to small-N designs for their ability to generalise relationships outside the contexts under study, this is not necessarily true. In fact, as Ebbinghaus (2005) remarks, the set of countries included in large-N studies is usually itself subject to historical, political or geographical contingencies, such as belonging to the OECD or being in Europe, suggesting caution in any generalisation to external units.

While the results from Chapter 5 cannot be generalised beyond the 20 countries under study, pooling countries together offers some advantages: it substantially increases sample size, improving the precision of my estimates and allowing me to stratify the analyses by sex. It also enables me to draw conclusions about the results that are broadly relevant for different childcare policy regimes in Europe, where the relationship between grandchild care and grandparents' labour supply is important to investigate in light of current changes in pension and childcare policies (Glaser & Hank, 2018). More generally, comparing more than two countries allows me to go beyond particular aspects of social policy towards a more general description of how societies with different welfare institutions differ in the extent of grandparents' involvement in paid work and family care.

1.4.2. Data availability, opportunities and challenges

In recent years there has been a rapid growth in the availability of harmonised survey data on middle-aged and older individuals across different countries (J. Lee, 2010), which has led to a spurt in the cross-national comparative research on ageing (Di Gessa & Grundy, 2017; S. Kim, Sargent-Cox, French, Kendig, & Anstey, 2012). Starting from the HRS in 1992, the longitudinal surveys on ageing now cover most of Europe as well as countries in Asia, Central and South America (see Table 1.1).

These surveys collect data about very similar topics, and are aimed at facilitating variable harmonisation with respect to respondents' demographic and health characteristics; their socioeconomic status, work and retirement; their participation in family care and social

activities; their family characteristics, exchanges and interactions with their family members, especially their children; and other topics, such as early life factors and expectations for the future. Thus, in principle, intergenerational support and productive ageing may be studied comparatively across all the countries listed in Table 1.1.

However, in practice, equalising indicators of interest across surveys is often a difficult task, due to differences in the coding of many variables. Taking exchanges of financial support with children in three commonly used surveys as an example, the SHARE questionnaire asks about transfers of €250 or more made over the 12 months preceding the interview, without reporting the amount. The HRS reports instead all transfers equal to or above $500 made in the past two years, and asks respondents about the exact amount. ELSA asks instead about any sum of money given to or received from children in the four weeks preceding the interview. With regard to productive ageing, participation in unpaid productive activities is often reported with different frequency categories across surveys. Taking the example of SHARE and the Korean Longitudinal Study of Ageing (KLoSA), which I compare in this thesis, informal care and help for adults is reported in hours per week in KLoSA, and in frequency categories in SHARE, with frequencies ranging from “never” to “about every day”. Volunteering participation is also reported using different frequency categories across the two surveys, making it problematic to harmonise and interpret these indicators.

Table 1.1: Longitudinal surveys on ageing

Survey	Country or area	Data collection
HRS Health and Retirement Study	United States of America	1992 – ongoing
MHAS Mexican Health and Ageing Study	Mexico	2001 – ongoing
ELSA English Longitudinal Study of Ageing	England & Wales	2002 – ongoing
SHARE Survey of Health, Ageing and Retirement in Europe	Austria, Belgium, Switzerland, Germany, Denmark, Spain, France, Greece, Italy, Netherlands, Sweden (since wave 1); Czech Republic, Poland (since wave 2); Estonia, Hungary, Portugal, Slovenia (since wave 4); Luxembourg (since wave 5); Croatia (since wave 6); Israel (waves 1 and 2 only); Ireland (waves 2 and 3 only)	2004 – ongoing
CRELES Costa Rican Longevity and Healthy Ageing Study	Costa Rica	2005 – 2009
KLoSA Korean Longitudinal Study of Ageing	South Korea	2006 – ongoing
JSTAR Japanese Study on Ageing and Retirement	Japan	2007 – ongoing
TILDA The Irish Longitudinal Study on Ageing	Ireland	2009 – ongoing
CHARLS China Health and Retirement Longitudinal Study	China	2011 – ongoing
LASI Longitudinal Ageing Study in India	India	2011 (pilot) – ongoing
ELSI-Brazil Brazilian Longitudinal Study of Ageing	Brazil	2015 – ongoing

Beyond practical issues with variable harmonisation, there are broader difficulties related to cross-national comparative research on ageing. As a general problem with comparing culture-specific variables, even if different surveys ask identical questions, these may be interpreted and answered differently across different cultural and linguistic contexts (Hantrais, 2009). This is true especially for self-reports, on which survey data relies heavily. For instance, Jürges (2007) assesses cross-country differences in self-rated health in SHARE and finds systematic tendencies to over-rate or under-rate one's own health across European countries.

A further issue with comparative research is that countries and societies are dynamic structures and, by focusing on differences across countries, one often poorly conceptualises change over time (Sigle-Rushton, 2009). For instance, in the case of Korea, family policies have been rapidly evolving over the past two decades (D. Lee, 2018). In particular, the rapid expansion in childcare coverage would call for a study of changes in family care (including grandchild care) over time. Similarly, comparisons usually treat countries as single units, thus ignoring internal diversity (Sigle-Rushton, 2009) and disregarding variation in local policies that may affect older adults' outcomes. In the case of Italy, the public provision of services such as childcare is highly fragmented across regions (Vogliotti & Vattai, 2015), which may call for separate analyses of grandchild care by territorial units. More generally, by focusing on elements of interest for the comparison, one necessarily ignores the idiosyncrasies.

While these challenges are important, there are substantial benefits to examining intergenerational support and productive ageing in a cross-national comparative perspective. The first and foremost justification for adopting a comparative approach is that the policy relevance of these issues in contemporary ageing societies makes it necessary to link individual transfers and activities to socio-political structures; to identify common and dissimilar patterns; to verify or disprove the generalisability of existing theories developed with reference to a specific context, such as the US in the case of productive ageing; and, if necessary, to come up with new theories and hypotheses (Chen et al., 2016; Tesch-Romer & Von Kondratowitz, 2006). Moreover, the improving quality of harmonised comparative data on ageing is promising. As the longitudinal studies mature, there are more opportunities for taking into account variations over time as well as across space. Methodological developments such as the

one proposed in this thesis (Chapter 3) can also help clarify and address definitional and measurement issues.

1.5. Structure of the thesis

In this introduction I have reviewed the current state of research on intergenerational support and productive ageing, highlighted the gaps in these bodies of research, and motivated my adoption of a comparative perspective to study these phenomena. In this final section I present the structure of the thesis, including an outline of how the four empirical chapters link together to form a coherent contribution. Table 1.2 gives the titles of the papers corresponding to each empirical chapter.

Table 1.2: Thesis chapters

Chapter	Title
2	Social policies and intergenerational support in Italy and South Korea
3*	Using expert judgements to measure "productive ageing" in Italy and South Korea
4	The correlates of paid work and informal caregiving after age 50: A comparison between Italy and South Korea
5	Intensive grandchild care and grandparents' labour supply in Europe

* co-authored with Benjamin Lauderdale

This structure reflects the framework I have used to study intergenerational support, productive ageing and the interrelations between the two. The first two papers address each issue separately, and serve to introduce the country comparison between Italy and Korea as well as the theoretical issues concerning intergenerational support (Chapter 2) and productive ageing (Chapter 3) respectively. The third and fourth papers (Chapters 4 and 5) provide relational evidence on the interaction between intergenerational support transfers and participation in productive roles among middle-aged and older parents and grandparents.

In Chapter 2, I develop the motivation for comparing Italy and Korea, and I describe the differences between the two countries in the extent and direction of intergenerational support transfers between parents aged 50 and over and their adult children. This paper contributes to the literature on cross-national comparisons of intergenerational transfer regimes by going beyond the divide between familistic and non-familistic societies, and by comparing two societies within the "familistic" group that allocate resources in different proportions to middle-aged and older adults.

In Chapter 3, I introduce the topic of productive ageing, and explore the issue of comparability in the measurement of this concept between the Italian and the Korean contexts. This paper makes a methodological contribution to the literature on productive ageing. It is a first attempt to generate a measure of the concept that, unlike existing scales, is reflective of the substantive importance that researchers attach to each productive activity. Moreover, the proposed method allows us to assess similarities and differences in the conceptualisation of productive ageing between Italian and Korean experts on the topic, thus providing an assessment of how comparable the concept is across the two contexts.

Chapter 4 builds upon the findings from previous chapters to investigate the correlates of participation in two productive activities in Italy and Korea. Given the differences in the societal transfers and benefits to older generations between the two countries highlighted in Chapter 2, I compare how individual socioeconomic resources and intergenerational transfers with adult children predict older parents' participation in productive roles. I restrict my attention to paid work and informal care and help for adults. As I show in Chapter 3, Italian and Korean academics attach similar degrees of importance to these activities when operationalising productive ageing, suggesting that they are comparable indicators of the concept across the two contexts.

In Chapter 5 I examine the association between productive roles performed within and outside the family by assessing how intensive grandchild care provision is linked with grandparents' labour supply in Europe. In this case, the European focus is more valuable than a comparison between Italy and Korea. In terms of policy relevance, the recent development of a subsidised childcare system in Korea implies that grandchild care is infrequent (Chapter 2) and not recognised as a highly productive accomplishment

(Chapter 3). By contrast, across Europe, the combination of shrinking welfare benefits for childcare and the policy objective of delaying retirement makes it necessary to assess the potential impact of intensive childcare commitments on grandparents' labour supply (Glaser & Hank, 2018).

In the conclusion of the thesis (Chapter 6), I highlight the links among the four empirical chapters and reflect upon their collective findings in terms of policy implications and further questions and challenges in ageing research.

2. Social policies and intergenerational support in Italy and South Korea*

Abstract

In this paper I compare transfers of financial, practical and coresidential support between parents aged 50 and above and their adult children in Italy and South Korea in 2012–2013. The two countries present welfare systems and labour market structures that make family members heavily reliant upon one another for support in cases of need. At the same time, social policies allocate financial transfers, services and subsidies in different proportions across age groups, favouring those born before the 1960s in Italy, and younger individuals in Korea. I argue that the generosity of social policies towards different generations may interact with exchanges of support between parents and children, resulting in differences in intergenerational support flows. I use data from nationally representative surveys to compare transfers of money, practical support (in the form of grandchild care, personal care and help) and intergenerational coresidence between the two countries. In Italy, where societal transfers favour older generations, support from parents to children in the form of monetary transfers and grandchild care is widespread, while children appear to mainly provide low-intensity forms of help to their ageing parents. In South Korea, where public transfers and services to older adults are limited, parents are more heavily dependent upon adult children for financial and practical support. The results suggest that societal and family transfers to different age groups complement one another by specialising in different functions. This paper contributes to the cross-national comparative literature on intergenerational support by exploring the interaction between social policies and parent-child transfers with reference to the allocation of resources to different generations.

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2.1. Introduction

In this paper I compare transfers of financial and practical support between parents aged 50 and above and their adult children in Italy and South Korea (henceforth referred to as "Korea") in 2012–2013. My aim is to explore whether and how differences in the way social policies allocate economic resources, services and income security across age groups have resulted in different intergenerational support regimes between the two countries.

Italy and Korea can be described as familistic societies, in the sense that families, as opposed to the state or the market, are important providers of financial support and care to dependent individuals (Saraceno, 2016). At the same time, during the period considered here, social policies allocated resources in different proportions across age groups, favouring those born before the 1960s in Italy, and younger adults in Korea.

Existing research on the interactions between social policies and intergenerational support investigates how the generosity of public transfers and services is linked with exchanges of money and time between older parents and their adult children. It focuses in particular on a distinction between Southern European countries, where families are heavily relied upon for support provision, and Northern European countries, where the welfare state relieves families from financial and care responsibilities through more generous services and subsidies (Deindl & Brandt, 2011; Igel et al., 2009).

In this paper I compare two familistic countries, one in Southern Europe and one in East Asia. I argue that the degree of social protection to different age groups may influence the overall direction of money and time transfers between middle-aged and older parents and their children. I compare Italy and Korea with respect to a range of policies including pensions, benefits, family services and labour market arrangements. I show that, around the mid-2010s, societal transfers favoured different age groups in each country. Then, using harmonised survey data, I compare intergenerational support across three dimensions: exchanges of money; exchanges of practical support (in the form of grandchild care, personal care and help with daily activities or household chores); and intergenerational coresidence, which facilitates support through in-kind transfers and cost-sharing.

The comparison between Italy and Korea is particularly interesting. On the one hand, both countries' approaches to welfare and their labour market structures imply that middle-aged and older parents and their adult children rely strongly upon one another for support in cases of need. On the other hand, differences in the degree of income security and access to services guaranteed to middle-aged and older adults relative to younger individuals appear to have contributed to net flows of financial and practical support in opposite directions along the generational line, from parents to children in Italy and from children to parents in Korea.

This paper extends the cross-national comparative literature on intergenerational support beyond European countries, and adds to this literature by illustrating how different aspects of social policy may influence and interact with transfers of money and time between middle-aged and older parents and their adult children.

2.2. Conceptualising intergenerational support

In this study I conceptualise intergenerational support as the giving and receiving of money, informal care and practical help between parents aged 50 and over and their adult children, directly and/or through shared living arrangements.

In Europe, financial support is predominantly directed from parents to children, as shown by studies that analyse data from the Survey of Health, Ageing and Retirement in Europe (SHARE) (Albertini et al., 2007; Attias-Donfut et al., 2005). Informal care and help follow more mixed trajectories. Parents in their 50s and 60s commonly help children by looking after grandchildren, while parents at more advanced ages often receive informal care from their offspring (Brandt & Deindl, 2013; Haberkern & Szydlik, 2010). The popularity of intergenerational coresidence varies across European countries in line with social policies and cultural preferences (Albertini & Kohli, 2013; Isengard & Szydlik, 2012). While this form of support can be a response to the needs of either or both generations, in Europe coresidence is usually found to be associated with children's financial needs (Isengard & Szydlik, 2012; Knijn, 2012).

Studies of intergenerational transfers in East Asia suggest that exchanges of support between parents and children follow different trajectories from those prevalent in Europe. Using data from the 2006 East Asian Social Survey (EASS), Lin and Yi (2013) show that in China, Japan, Korea and Taiwan intergenerational transfers in the form of financial support and help with household chores flow predominantly from adult children to older parents. While this is in line with the continuing influence of traditional norms of filial responsibility (Lin & Yi, 2013), some have argued that the high prevalence of filial support to ageing parents is also linked to the late development of pension systems in the region (C. S. Kim, 2008; Lin & Yi, 2011). Despite the decline in its prevalence in recent decades, intergenerational coresidence continues to represent a predominant form of upward support and a way of fulfilling filial responsibility towards ageing parents (Lin & Yi, 2013).

Studies investigating the determinants of intergenerational support conceptualise it as the product of interactions between circumstances at the individual, family and country level (Albertini, 2016; Szydlik, 2008). At the individual and family level, intergenerational support is the result of need and opportunity structures, so that the likelihood of transfers increases when one family member needs instrumental or financial help, and another member possesses the necessary resources. At the country level, welfare regimes have been hypothesised to influence exchanges of support alongside demographic and cultural factors (Szydlik, 2008).

The literature on the influence of societal transfers on family exchanges revolves around the concepts of "crowding-out" and "crowding-in" of family support by welfare policies. The crowding-out hypothesis predicts that increased public transfers and services to families will make family support less necessary, therefore reducing the overall volume of intergenerational exchange (Kohli, 1999). By contrast, crowding-in envisages a scenario in which increased generosity from the state prevents families from becoming overburdened and allows beneficiaries to redistribute resources to their family members, thus resulting in an overall increase in intergenerational transfers (Kunemund & Rein, 1999).

A large body of research on European countries has made use of multilevel analyses of SHARE survey data to test for these mechanisms, and found evidence in favour of both

(Brandt & Deindl, 2013; Deindl & Brandt, 2011; Igel et al., 2009). These studies find that in countries where welfare services and subsidies are extensive, exchanges between parents and children are more frequent, but less intense in terms of amounts of money and time commitments relative to countries with less generous welfare states (Albertini et al., 2007; Daatland & Lowenstein, 2005). In line with these results, the "specialisation hypothesis" between family members and the state in the provision of support has been developed with reference to the European context. Specialisation implies that larger societal transfers to families will crowd out essential, intensive support from relatives, but also promote more complementary, less demanding forms of help (Brandt & Deindl, 2013).

The specialisation hypothesis is closely related to the discussion on familism in welfare institutions in comparative social policy research. In this context, familism refers to the assumption, on the part of the state, that family members are responsible for financial and care support to one another (Leitner, 2003). In familistic welfare states, epitomised by Mediterranean countries such as Italy and Spain, social policies may foster family responsibility explicitly, through incentives such as cash-for-care arrangements and legal obligations, or implicitly, through the lack or inadequacy of services such as child care and long-term care (Leitner, 2003). By contrast, strong de-familisation is characterised by a universalistic approach to the provision of family services and subsidies, which is commonly associated with the social-democratic model of welfare found in Scandinavian countries (Esping-Andersen, 1990, 1999).

In line with this distinction, existing comparative studies on the relationship between social policies and intergenerational support are predominantly based on the dichotomy between the North and South of Europe. They find that Scandinavian countries display more frequent family transfers, but lower average intensity of support, whilst in Mediterranean countries family support is less frequent, but more intensive because aimed at more critical needs. The United Kingdom (UK) and Central European countries perform somewhere in between these two extremes (Albertini & Kohli, 2013; Haberkern & Szydlik, 2010; Igel et al., 2009).

Other aspects of the relationship between social policies and parent-child transfers remain relatively unexplored. The existing literature focuses mainly on how the overall

generosity of welfare provision is reflected into different intergenerational support regimes. However, differences in parent-child transfer regimes across countries can also be ascribed to the generosity of public services and transfers towards specific age groups in society.

High income security, protection against poverty and the availability of affordable care services for a particular group in the population may result in that group receiving less financial and care support from family members, but also being able to redistribute more resources within the family (Attias-Donfut et al., 2005). It is therefore interesting to consider whether and how the specialisation hypothesis applies when comparing countries with similar approaches to welfare, but where social policies allocate resources differently across age groups. These policies include pensions, benefits to working-age individuals and labour market structures alongside social services and cash transfers.

Moreover, the existing comparative literature is largely focussed on Western Europe, where basic old-age security is generally guaranteed by public or private pensions and old-age benefits (Kohli & Kunemund, 2003). However, these types of transfers are still relatively underdeveloped in East Asia (Lin & Yi, 2011). One can therefore expect the distribution of economic resources between generations to differ substantially between the two regions, which makes it interesting to compare their regimes of intergenerational family exchange.

2.3. Contextualising intergenerational support in Italy and South Korea

Improvements in life expectancy and persistently low fertility have resulted in Italy having one of the most aged populations in the world, and Korea one of the most rapidly ageing (UN, 2017). This makes exchanges of support between middle-aged and older individuals and their children a highly relevant issue in both countries. Understanding the prevalence of exchanges between family members of different generations can help estimate the resources available to provide for the needs of growing numbers of older adults, as well as quantify the contributions of older adults to the welfare of younger individuals. Around the mid-2010s, Italy and Korea can be described as rapidly ageing

societies in which family members rely heavily upon one another in responding to financial and care needs.

In the following discussion, I compare two generations in Italy and Korea, which are defined both by their role in the family (i.e. older parents and adult children) and by the amount of resources they receive from the welfare state (Kohli, 1996). I argue that, around the mid-2010s, social policies, labour market arrangements and macroeconomic trends allocated resources in different proportions to each generation, favouring those born before the 1960s in Italy and those born after that period in Korea.

2.3.1. Reliance on intergenerational family support

Despite their geographical distance, Italy and Korea share strong affinities with respect to the importance assumed by intergenerational exchanges of support within families.

Regarding their approach to welfare provision, both countries can be considered familistic (Saraceno, 2016). For Italy, Lynch (2014) identifies two main features of the welfare state that emerged after the Second World War. The first is its Bismarkian structure, with social policies financed through contributions from employers and workers, and benefits strongly tied to economic activity. The second is its male-breadwinner orientation, which assumes a family structure in which the husband is employed in the formal sector, and the wife is a homemaker caring for dependent children and older adults.

These features have resulted in a familistic model based on state support for family care through cash transfers and tax exemptions, and very limited provision of formal services (Lynch, 2014; Saraceno, 2016). These essential characteristics have persisted until the present day. However, reforms carried out in the 1990s and after the 2009 financial crisis have revised the rules around pension eligibility, liberalised the labour market and increased regional variation in the availability of formal care by decentralising the provision of services, as discussed below.

In Korea, as various experts point out (Fleckenstein & Lee, 2017; S. Kwon & Holliday, 2007; D. Lee, 2018), the state did not explicitly engage in family policy until the early 2000s. Before then, welfare provision was based on the strong assumption that families

would be the key providers of social protection (D. Lee, 2018). Between the 1940s and the late 1980s, social policies were heavily subordinated to the objective of economic growth (Holliday, 2000). Social insurance was only guaranteed to industrial workers in strategic sectors, to promote the smooth operation of the labour market, and to the army, teachers and government officials to secure their political favour for the authoritarian government (S. Kwon & Holliday, 2007). Labour market outsiders, especially women, were excluded from welfare provision under the assumption of a male-breadwinner family model (Fleckenstein & Lee, 2017).

The late 1980s and 1990s saw a shift in policy objectives towards supporting families in need, through developments in child care and long-term care services. However, family policies remained far from universalistic as coverage was restricted to selected groups in need (D. Lee, 2018). After the 1997 financial crisis, and especially since the early 2000s, the Korean welfare state has begun to address economic, demographic and social changes – such as the low fertility rate, the increasing proportion of older adults and the rise in female employment – by explicitly engaging in de-familisation (D. Lee, 2018). This has mainly been done through the market, with the state subsidising market-based services rather than directly providing services or financial assistance to families (Saraceno, 2016).

In both countries, familistic welfare has developed under the assumption of a male-breadwinner model in which men are employed in the formal sector and considered responsible for financial support, while women provide care for children and older adults that are not self-sufficient. In Italy, weak and regionally fragmented social policies coexist with extensive legal obligations for relatives to provide support to dependent individuals (Naldini & Saraceno, 2008). In Korea, despite the rapid developments in family policy, the gender division of financial and care responsibilities remains strong (León et al., 2016), and legal obligations continue to promote the supporting role of the family, especially for financial and practical assistance to older individuals (H. J. Park, 2015). Housing policies contribute to fostering family members' interdependence, since the scarce provision of mortgages and housing finance makes parental bequests and inheritances the main channels of access to homeownership (Di Feliciantonio & Aalbers, 2017; Ronald & Jin, 2010).

In Italy and Korea, familism coexists with highly segmented labour markets, characterised by a division between secure and long-term formal employment on the one hand, and an informal sector with little social protection on the other (Garibaldi & Taddei, 2013; Hwang & Lee, 2012). In Italy, dualism is the result of a process of labour market liberalisation that, since the 1990s, has progressively made it easier for firms to hire on a fixed-term basis. The reform process has introduced flexibility at the margin, with temporary contracts created without affecting the position of workers in long-tenure jobs (Berloffa & Modena, 2012). In a context of low economic growth, the 2008 financial crisis has resulted in a sharp increase in unemployment and in the deepening of earnings differentials between those in long-tenure jobs and those employed on a fixed-term basis (Jin, Fukahori, & Morgavi, 2016).

Labour market liberalisation is also at the root of the Korean dualism, which is based on a distinction between the formal corporate sector and the informal sector, with very little mobility between the two (Jones & Fukawa, 2016). The marked growth of precarious work in Korea has occurred after the 1997 financial crisis, which led to social polarisation and extensive casualisation of labour, in particular though the spread of self-employment (Hwang & Lee, 2012).

In both countries, labour market dualism has fostered socioeconomic inequalities. The occupationally segmented nature of the Italian and Korean welfare states implies that formal sector workers receive the main share of social protection (Estevez-Abe et al., 2016). Workers in low-paid, temporary and non-regular jobs, as well as the self-employed, are less protected against unemployment and poverty, despite being disproportionately more exposed to both. In 2012–2013, the dates to which the data used in this paper refer, unemployment benefits in both countries were of short duration, and eligibility criteria required recipients to have made contributions to the system for a period of one and a half to two years preceding unemployment, systematically excluding the long-term unemployed and informal sector workers (Corsini, 2012; Hwang & Lee, 2012). Despite more recent labour market reforms, Italy and Korea continue to have unemployment benefits for poorer households that are among the lowest in the Organisation for Economic Cooperation and Development (OECD, 2017a). Moreover, income support measures such as tax credits and cash allowances for low-income

households are tied to the receipt of earnings from employment, excluding self-employed and informal sector workers from coverage (Hwang & Lee, 2012; Saraceno, 2016).

The familistic approach to welfare and the poor social protection guaranteed to those outside formal employment imply that, in Italy and Korea, intergenerational transfers of money and time between family members are an important source of support for those in need. In addition, both countries are characterised by strong family norms shaping expectations of mutual support between parents and children, even when compared to countries that are relatively similar in terms of cultural values. Analyses of attitudinal and value surveys indicate that, relative to Spain and Japan respectively, Italy and Korea display higher levels of agreement about the importance of family obligations, lower individualism and less equal gender roles (Arpino & Tavares, 2013; Iwai & Yasuda, 2011).

2.3.2. Differences in societal transfers to older and younger generations

In both Italy and Korea, labour market dualism and the spread of the informal sector since the early 2000s have contributed to the widening of socioeconomic differences between generations. However, in Italy, informal employment has primarily affected younger people. Fixed-term contracts largely apply to new jobs, since those in long-tenure positions remain protected by rigid legislation (Berloffa & Modena, 2012). The proportion of temporary workers is highest among people in their twenties and thirties regardless of their level of education, and youth unemployment is widespread (Jin et al., 2016). By contrast, in Korea, those born before the 1960s have become over-represented in the informal sector. The rapid technological development of the country has relegated many of them to low-paying service jobs (Jones & Fukawa, 2016). Moreover, the seniority wage structure enforced in the corporate sector means that firms find it profitable to lay off workers in their fifties, commonly by offering one-off severance payments; these funds are often invested by their recipients into opening small businesses or restaurants, which are highly prone to failure (J. J. Yang, 2014).

The Italian and Korean pension systems differ in the extent to which they provide income security in later life. In Italy, public expenditure on old-age benefits as a percentage of Gross Domestic Product (GDP) is the highest in the OECD (2016b). Public pensions constitute the main pillar of the pension system and, combined with a set of means-tested

benefits for low earners and survivors, they achieve virtually universal coverage of the population aged 65 and over. Average replacement rates are high, at around 80% of previous earnings (OECD, 2015b). A pension reform in 2011 increased retirement age through periodic adjustments, abolished old-age retirement and introduced penalties for early exit, and set up a new pension calculator based on the contributions to the system over the working life rather than on the salary received in the last years of employment. However, these changes have not affected individuals who were already retired, thus mainly reducing pension generosity for those born in the 1960s or afterwards.

By contrast, in Korea, later-life protection is scarce. Social security provision is split between the National Pension System (NPS) and private corporate pensions, though the latter are often replaced by severance payments, as noted above. Replacement rates in the NPS are low, around 45% of previous earnings, and neither public nor private pensions cover more than one third of those aged 65 and over (OECD, 2015b). Old-age poverty benefits are also underdeveloped. In the period considered, the Basic Pension scheme offered payments of up to 10% of the average earnings of those covered by the NPS, not enough to guarantee economic security; and the Basic Livelihood Security scheme had very low coverage as, to be eligible, recipients had to prove that they had no family member who could support them (Jones & Fukawa, 2016).

The differences in the two countries' pension systems are reflected in differences in middle-aged and older people's participation in the labour market (OECD, 2015b). Around 2015, Italians retired on average earlier than state pension age, due to high replacement rates, low penalties for early exit, and the difficulties faced by older people in finding re-employment after dismissal (Jin et al., 2016). Koreans, on the other hand, retired on average ten years later than state pension age, often induced to continue working in the informal sector by low pension coverage and replacement rates (J. J. Yang, 2014).

Family policies in the two countries have also contributed to a differential allocation of resources across age groups. In Italy, with regard to long-term care, the 'accompanying allowance' is a cash transfer providing financial support to people who are not self-sufficient. In 2013 this allowance covered around 10% of those aged 65 and over and,

given the very low coverage of formal care services, it represented the main channel of support for frail or dependent older people (Da Roit et al., 2013).

In the field of child care, on the other hand, Italy lacks a coherent policy plan. The decentralisation of childcare services to local authorities has led to coverage rates of care for under-threes ranging from around 30% in the wealthier Northern regions to less than 5% in parts of the South (Vogliotti & Vattai, 2015). At the country level, childcare allowances are provided to low-income families, but the level of benefits is low and, as mentioned above, the eligibility criteria exclude self-employed and informal sector workers. Existing tax deductions for families with children are non-refundable, thus excluding low-income households (Saraceno, 2016). Due to the low level of support provided to families, those with young children are more likely to be in poverty, especially in the case of large families sustained by a single earner working in an informal or fixed-term job (Barbieri, Cutuli, & Tosi, 2012).

In Korea, parents of children under the age of six are eligible for childcare subsidies covering between 30% and 100% of childcare expenditure, depending on family income. In 2012, the state subsidised parental leave and reduced working hours to facilitate work–family reconciliation for parents, and local authorities provided additional services for families on a low income or with disabled children (Chin, Lee, Lee, Son, & Sung, 2012). Tax deductions are also granted to parents of children under the age of 20, with additional refundable tax credits for low-income households.

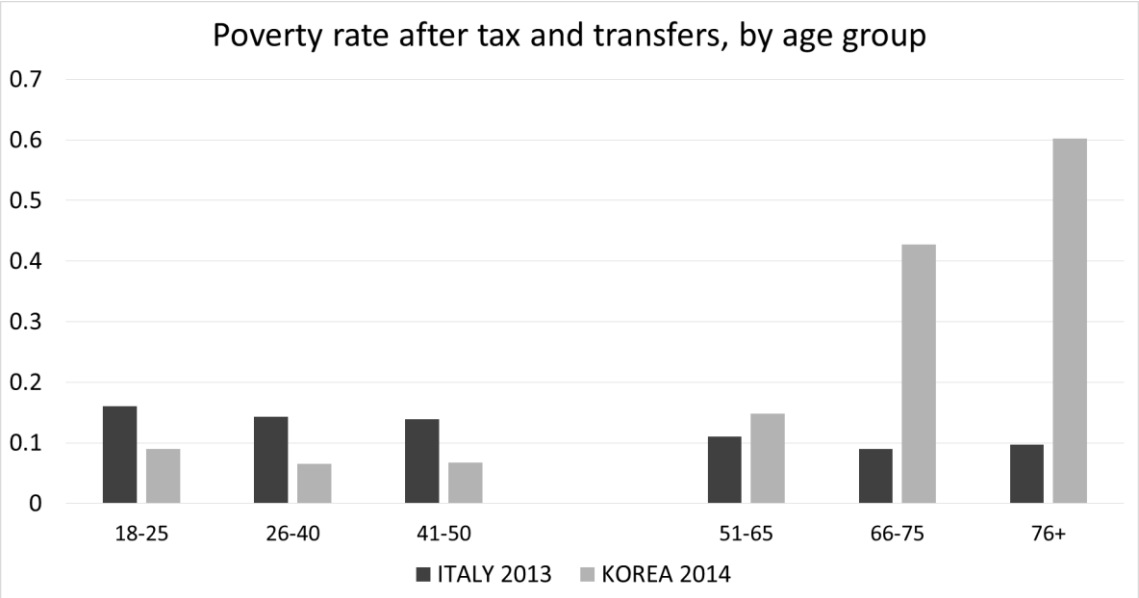
The large expansion in service provision and coverage achieved in childcare has not been matched in the Korean long-term care sector. A compulsory long-term care insurance system, in place since 2008, has funded the rapid expansion of market-based care for frail older people. However, coverage rates are still among the lowest in the OECD (2015a). As of 2012–2013, major drawbacks of the system were the high share of costs borne by beneficiaries (around 15–20% of the total), the absence of a centralised care management system and the low quality of services provided (Chon, 2014).

Public support for higher education funding is also relevant to the societal allocation of resources across age groups. In both countries, public spending on tertiary education is low by OECD (2017b) standards, at about 1% of GDP. This implies that parental investments are the predominant means of financing higher education. In Italy, tuition

fees in public universities are inexpensive relative to both the OECD and the European averages (OECD, 2017b). In Korea, by contrast, the high cost of attending elite institutions, combined with a heavy focus on educational investments among families and the strong link between the type of university attended and labour market outcomes, lead many lower-income parents to become heavily indebted and to seek employment in the informal sector after official retirement to finance post-secondary education for their children (D. H. Kim & Choi, 2015).

As a result of these factors, in the mid-2010s the income security of those born before the 1960s relative to that of younger people differs widely between the two countries. Figure 2.1 shows that, around 2013–2014, in Italy poverty rates decline with age, reaching a minimum for the 66–75 age group. In Korea, instead, they rise steeply after the age of 50, as around 60% of people over 75 lived on less than 50% of the median household income (OECD, 2016c).

Figure 2.1: Proportions living with less than 50% of median household income (OECD, 2016c)



2.4. Comparing intergenerational support between Italy and Korea

As I have argued in the previous section, Italy and Korea present comparable welfare models and labour market structures. Their similarities are such that, in a 2016 issue of the Journal of European Social Policy (Estevez-Abe et al., 2016; Ferrera, 2016), the two countries have been classified as belonging to the same "family of nations" alongside Japan and Spain. With respect to intergenerational support, Italy and Korea in the mid-2010s are interesting to compare because, while in both countries families are an important source of welfare, social policies allocate resources in different proportions across generations. The comparison is valuable because, so far, similarities and differences in intergenerational support regimes across countries have predominantly been examined in relation to the overall generosity of the welfare state. Comparing two countries where families are important in the provision of welfare can shed light on other societal characteristics that interact with parent-child transfers of financial and practical support.

The two-country comparison is a valid alternative to the multilevel analyses commonly employed in comparative research on intergenerational transfers (e.g. Brandt & Deindl, 2013; Deindl & Brandt, 2011; Igel et al., 2009). Comparing two countries to one another allows to better contextualise the results, despite the obvious drawback that country-level characteristics cannot be used as explanatory variables in the analysis. However, from a methodological perspective, multilevel analyses suffer from a related problem: as Bryan and Jenkins (2016) show, the country-level coefficients obtained from random-effects models with few (e.g. less than 25 or 30) countries may not give reliable estimates of the quantities of interest.

In this paper, I use the two-country comparison to build descriptive evidence on how the crowding-out, crowding-in and specialisation hypotheses discussed above apply to the relationship between parent-child transfers of support and the societal allocation of resources across age groups in familistic societies. The samples under study include people who were aged 50 or above in the year of the survey interview, which is 2012 for Korea and 2013 for Italy. The choice of 50 as the cut-off age is in line with the aim of studying intergenerational support transfers among Italian and Korean parents born before (or around) 1960. These groups are interesting to compare because, in Italy, they

have benefitted from generous societal transfers, while in Korea they are relatively disadvantaged. Moreover, such broad definition of middle-to-older age facilitates an examination of age differences in intergenerational transfers, and allows for comparisons of parents with a range of diverse needs and resources.

2.4.1. Datasets and analysis

I use cross-sectional survey data on financial, practical and coresidential support transfers taken from wave 5 of the Italian sample of SHARE and from wave 4 of the Korean Longitudinal Study of Ageing (KLoSA) (KEIS, 2014; SHARE, 2013). SHARE and KLoSA are multidisciplinary surveys on the demographic, socioeconomic, health and family characteristics of older adults, which allow for cross-country comparison by asking very similar sets of questions. SHARE wave 5 was collected in Italy in 2013, while KLoSA wave 4 refers to Korea in 2012.

The target population of SHARE Italy includes individuals aged 50 and above and not living in an institution at baseline, and their spouses regardless of age (Borsch-Supan & Jurges, 2005). KLoSA targets instead the population aged 45 and above, excluding younger spouses and people living in institutions at baseline (KEIS, 2014). When comparing financial support, filial help and coresidence, I restrict the analytical samples to respondents aged 50 and above who have at least one living child. After applying these restrictions, the samples consist of 4,097 Italian and 7,307 Korean parents. The analysis of grandchild care provision is restricted to 1,773 Italian and 5,391 Korean grandparents aged 50 and over. To more accurately test for differences between Italy and Korea in the prevalence of support given and received by the pre- and post-1960 generations, I further restrict the samples to individuals aged 50 and above whose oldest child is less than 50 years old. This produces sample sizes of 3,285 Italian parents (1,150 grandparents), and 5,214 Korean parents (3,317 grandparents). The results obtained from these smaller samples are not substantially different, and I report them in the Appendix for comparison.

All questions in SHARE and KLoSA are asked directly to middle-aged and older individuals, who represent the main units of analysis for this study. In the case of married or cohabiting couples where both partners are in the survey, some of the questions regarding exchanges of support with children are only asked to a designated member of

the couple, either the "family respondent" or the "financial respondent", who is selected at random. For every type of financial and practical support, in the sections below I explain and justify the coding choices I have made in order to render the variables directly comparable between the two surveys.

For the statistical comparisons, I merge the two analytical samples together after harmonising all the relevant variables. I use χ^2 tests in order to compare transfers of money, grandchild care and filial help to middle-aged and older parents. Since intergenerational coresidence may be a response to the needs of either or both generations (Isengard & Szydlik, 2012), I regress the probability of living with children on a set of parental, child and household characteristics using binary logistic models. Given the stark gender differences in the division of financial support and informal care highlighted above for both countries, I describe all the data separately for mothers and fathers. Moreover, I examine differences across age groups by splitting the samples into four groups of respondents aged 50–59, 60–69, 70–79, and 80 and above.

SHARE and KLoSA are affected by longitudinal drop-out between the baseline wave and the wave used in this study. For the Italian subsample of SHARE, the attrition rate is around 47%, while in KLoSA it is around 25%. In order to restore the representativeness of the samples with respect to the variables of interest, I make use of the calibrated survey weights provided by both surveys (Borsch-Supan & Jurges, 2005; KEIS, 2014), and report weighted as well as unweighted estimates in the results tables.

2.4.2. Financial support

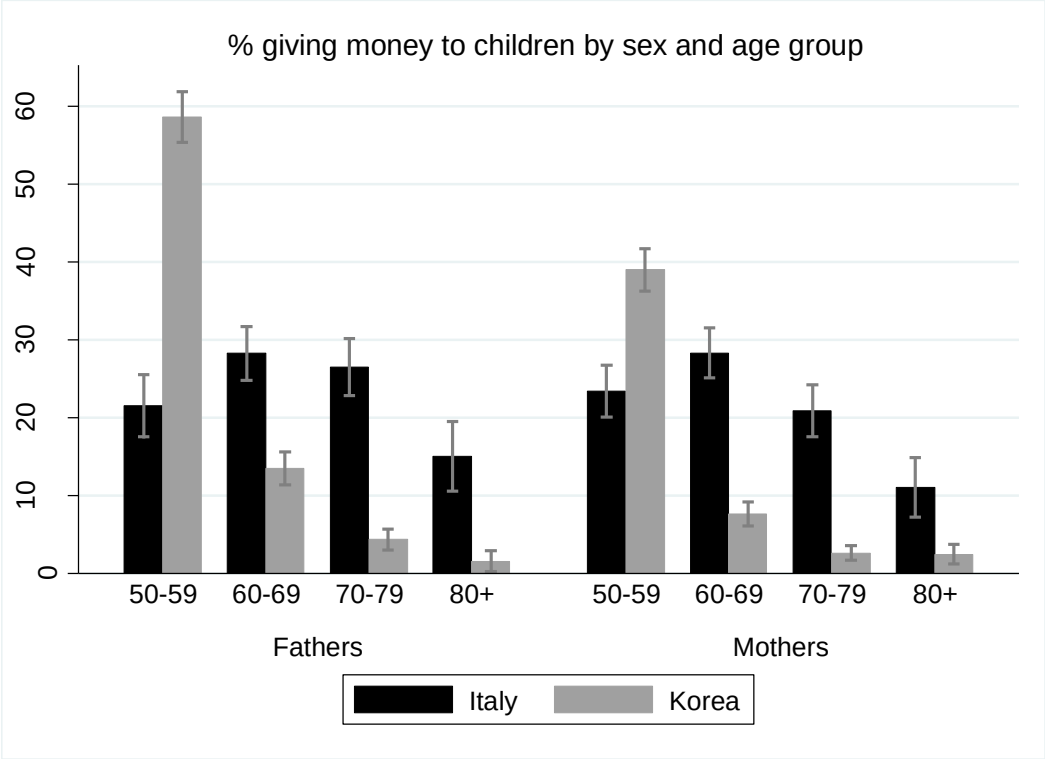
In SHARE and KLoSA, intergenerational transfers of money are measured by questions asking whether, in the year before the interview, respondents have exchanged monetary gifts with any of their children. SHARE only reports gifts of €250 or more. Applying Purchasing Power Parity (PPP), this corresponds to 285,700 Korean Won in 2012. Thus, to achieve comparability, I only consider monetary transfers equal to or above this sum reported in the Korean survey. Since in both surveys only one member of the couple answers the questionnaire section about informal financial support, for individuals whose partner is in the sample I recode responses so that both partners have the same value. For the comparison, I code financial support to and from children as binary variables indicating whether the respondent (and/or their partner) gave or received the equivalent

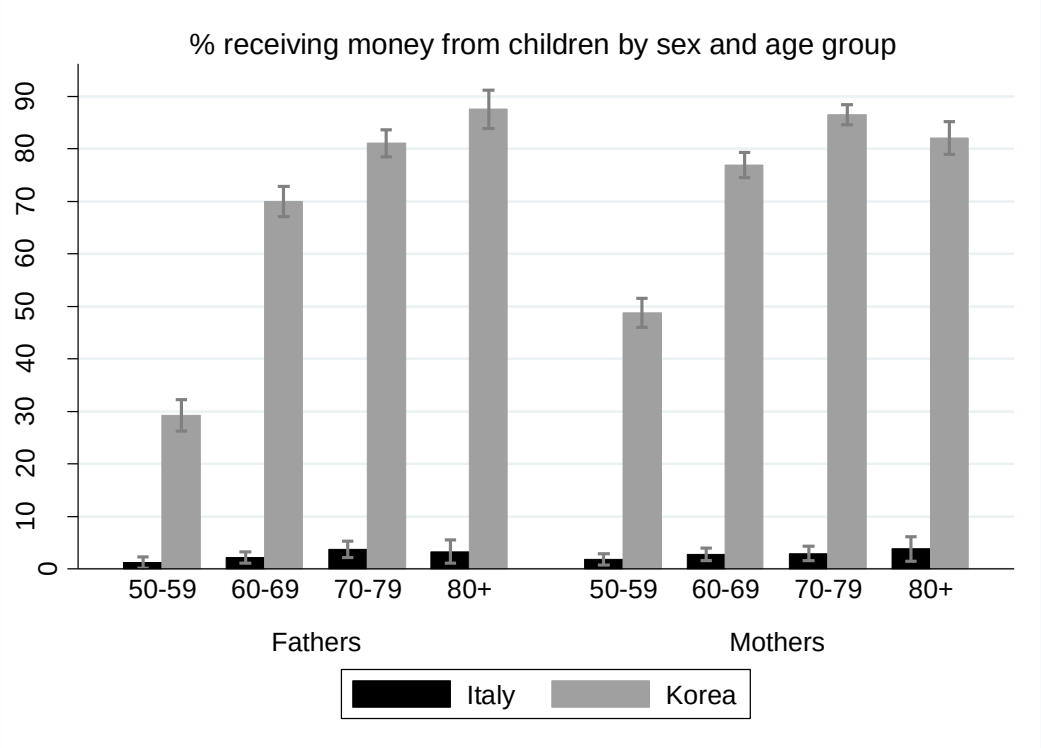
of €250 or more to/from any of their children in the year before the interview. Figure 2.2 shows the results in terms of percentages of parents giving and receiving money (with 95% confidence intervals).

In line with previous research (Albertini et al., 2007; Deindl & Brandt, 2011), in Italy monetary gifts are predominantly from parents to children, and peak between the parental ages of 60 and 69, possibly owing to the receipt of lump-sum retirement payments and to the greater financial support needs of children attempting to set up their own independence. In Korea, by contrast, relatively low proportions of parents financially support their children beyond age 60. Financial assistance from children is widespread, and it increases steeply with parental age.

These results indicate evidence of crowding out of family transfers by state support. In particular, generous pensions and old-age benefits combined with low support to younger working-age individuals in Italy may be reflected in a net downward flow of monetary gifts, from parents to children. By contrast, societal transfers that favour corporate workers in their thirties and forties and the low old-age benefits in Korea are reflected in an upward balance of intergenerational money transfers. In support of the specialisation hypothesis, de-familisation for older age groups in Italy appears to not only crowd out financial support from children, but also to enable middle-aged and older parents to redistribute money to their offspring.

Figure 2.2: Exchanges of financial support between parents aged 50+ and their children (Italy 2013; Korea 2012). Means and 95% confidence intervals for the percentage of parents giving / receiving financial support in each country by 10-year age group, separately by sex.





Note: SHARE Italy codes financial transfers of €250 or above; in KLoSA, only financial transfers equal to or above 285,700 Won are considered. For couples where both partners are in the sample, the same values are reported for both members of the couple.

2.4.3. Provision of care for grandchildren

The provision of care from grandparents to grandchildren is a good indicator of practical support from middle-aged and older adults to their children's families. In both surveys, grandchild care is measured by questions asking respondents who have grandchildren whether, in the year preceding the interview, they have looked after any of them in the absence of either parent. In KLoSA, this question is asked to all grandparents, but respondents are asked to only report care provided to grandchildren aged ten or younger. In SHARE, the question is only asked to grandparents who are the designated "family respondent" in the survey. Since no information is available on whether the family respondent's partner also provides grandchild care, I restrict the SHARE sample to grandparents who are family respondents. For comparability with KLoSA, I also recode the grandchild care variable as provision of care to any grandchild aged ten or younger.

Table 2.1 shows the sample proportions and χ^2 tests for the probability that a grandparent looks after any young grandchild in the absence of either parent, as well as the weighted sample estimates. The results indicate that this activity is significantly more common in Italy than in Korea among grandparents of all ages. These results are not surprising given that formal childcare provision is nearly universal in Korea and sporadic in Italy. They suggest the existence of a crowding-out mechanism by which widespread service provision for young families makes the caring role of grandparents unnecessary. At the same time, the higher economic security of middle-aged and older Italians relative to their Korean counterparts may also allow them to dedicate time to grandchild care, which may not be possible for Korean grandparents forced to continue working for pay by financial necessity.

Table 2.1: Proportions of grandparents aged 50+ looking after any grandchild aged 0–10, by sex (Italy 2013; Korea 2012)

Grandmothers aged 50+					
Age group	**Sample proportions (%)**			**Weighted estimates (%)**	
	Italy	Korea	p-value from χ^2 test of difference	Italy	Korea
50-59	22.78	8.33	0.000	23.20	9.27
60-69	13.14	6.23	0.000	13.36	6.50
70-79	6.63	1.72	0.000	5.92	1.91
80+	2.94	0.31	0.014	2.29	0.15
Total	10.27	3.88	0.000	8.89	4.84
n	1,081	3,275			
Grandfathers aged 50+					
Age group	**Sample proportions (%)**			**Weighted estimates (%)**	
	Italy	Korea	p-value from χ^2 test of difference	Italy	Korea
50-59	12.90	1.41	0.000	11.83	2.02
60-69	15.24	1.56	0.000	14.76	1.33
70-79	7.39	1.24	0.000	6.83	1.34
80+	2.37	0.18	0.002	1.97	0.38
Total	9.39	1.23	0.000	8.71	1.33
n	692	2,116			

Note: for SHARE Italy, only grandparents who are "family respondents" are considered since they are the only respondents answering the section about grandchild care.

2.4.4. Care and help from children to parents

I measure practical support from adult children to parents using an indicator for the receipt of help and personal care by middle-aged and older parents from at least one child. In SHARE wave 5, this can be obtained by combining responses to two sets of questions. The first asks the subsample of family respondents whether, over the past year, anyone living outside their household has given them (and/or their partner) personal care or help with daily activities such as paperwork and household chores, and to identify who gave such help. The second asks all respondents whether, over the three months before the interview, anyone living in the same household has helped them with personal care, and who that was. In KLoSA, all respondents are asked to name the five people who helped them the most with personal care or daily activities over the year preceding the

interview. Since in SHARE it is impossible to distinguish whether the family respondent, their partner, or both members of the couple have received informal help from their children, for respondents whose partner is in the sample I recode all variables in SHARE and KLoSA so that they take the same value for both members of the couple. Alternative approaches have been used in the literature, such as attributing care receipt to the partner with more functional or mobility limitations (Suanet, Broese Van Groenou, & Van Tilburg, 2012). In this case, I attribute care receipt to both members of the couple since any help given to someone in need or with limitations is also a form of practical assistance to that individual's partner.

Following Igel et al. (2009), in order to distinguish between "low-intensity" help with household chores and more demanding personal care, I report the results separately for parents in good functional health and for those suffering from limitations with Activities of Daily Living (ADL) (Katz, 1983). For respondents whose partner is also in the sample, this variable distinguishes couples for whom neither member has functional limitations, and couples in which either or both partners are functionally impaired. The distinction between functionally healthy and impaired parents partly accounts for the fact that greater proportions of Italian parents (around 15% of the sample) compared to Koreans (around 5%) report having ADL limitations, which could otherwise result in a misinterpretation of the differences in the receipt of help and personal care. The results are shown in Tables 2.2 and 2.3.

For all age groups, Italian parents are significantly more likely than Korean parents to receive practical assistance from their children if they are in good functional health (Table 2.2). Filial support to parents with functional limitations is instead greater in the Korean sample (Table 2.3). However, differences are only significant for the overall samples and for individuals in their sixties, which may partly be due to the relatively small numbers of respondents with functional limitations.

Table 2.2: Proportions of parents aged 50+ with no functional limitations receiving help or personal care from any child, by sex (Italy 2013; Korea 2012)

Mothers aged 50+ (no ADL limitations)

Age group	**Sample proportions (%)**			**Weighted estimates (%)**	
	Italy	Korea	p-value from χ^2 test of difference	Italy	Korea
50-59	3.50	0.66	0.000	3.20	0.72
60-69	3.66	0.70	0.000	4.03	0.58
70-79	11.04	2.91	0.000	11.20	2.90
80+	26.83	10.47	0.000	26.12	10.27
Total	7.02	2.39	0.000	8.10	1.88
n	1,794	3,848			

Fathers aged 50+ (no ADL limitations)

Age group	**Sample proportions (%)**			**Weighted estimates (%)**	
	Italy	Korea	p-value from χ^2 test of difference	Italy	Korea
50-59	2.59	0.80	0.011	2.11	0.93
60-69	2.65	0.31	0.000	3.28	0.26
70-79	6.98	1.31	0.000	7.22	1.30
80+	16.67	7.63	0.006	16.91	7.79
Total	5.18	1.36	0.000	4.97	1.06
n	1,563	2,940			

Note: for couples where both members are in the sample, responses are coded for whether the respondent or his/her partner receive any help or care from a child, and the sample is restricted to couples where neither member suffers from functional limitations.

Table 2.3: Proportions of parents aged 50+ with one or more functional limitations receiving help or personal care from any child, by sex (Italy 2013; Korea 2012)

Mothers aged 50+ (1+ ADL limitations)					
Age group	**Sample proportions (%)**			**Weighted estimates (%)**	
	Italy	Korea	p-value from χ^2 test of difference	Italy	Korea
50-59	10.42	16.67	0.450	16.81	19.97
60-69	9.62	29.17	0.002	13.41	29.02
70-79	30.71	36.36	0.346	32.01	36.37
80+	58.27	48.97	0.116	58.01	49.19
Total	32.25	39.45	0.040	39.58	37.98
n	431	327			
Fathers aged 50+ (1+ ADL limitations)					
Age group	**Sample proportions (%)**			**Weighted estimates (%)**	
	Italy	Korea	p-value from χ^2 test of difference	Italy	Korea
50-59	8.70	27.27	0.152	4.17	30.95
60-69	8.24	24.14	0.024	6.74	26.58
70-79	17.20	25.00	0.208	17.16	24.65
80+	39.81	43.06	0.665	35.43	42.42
Total	22.01	31.77	0.015	21.07	30.73
n	309	192			

Note: for couples where both members are in the sample, responses are coded for whether the respondent or his/her partner receive any help or care from a child, and the sample is restricted to couples where either or both members suffer from functional limitations.

Around the mid-2010s, the provision of formal long-term care services is limited in both countries. However, middle-aged and older Italians who are not completely self-sufficient receive an "accompanying allowance" that may allow them to hire private carers, mostly migrant workers (Di Rosa, Melchiorre, Lucchetti, & Lamura, 2012). In Korea, by contrast, receiving care from family members may be the only option for those with lower socioeconomic resources suffering from functional limitations.

In the case of long-term care, both countries' approaches to welfare are familistic, in the sense that they encourage and emphasise family responsibility. In Italy, cash-for-care transfers to the families of functionally impaired individuals appear to have encouraged more complementary forms of help from adult children to their healthy parents. By contrast, in Korea, where in 2012 familism was rather implicit in the absence of affordable long-term care services, filial support appears to have been mainly directed at

parents with personal care needs as indicated by having functional limitations. This is in line with the specialisation hypothesis applied to the societal allocation of resources to different age groups.

2.4.5. Intergenerational coresidence

Finally, I compare the probability of living with at least one adult child between Italian and Korean parents aged 50 and above. I measure this through a binary variable indicating whether, at the time of the interview, respondents live with any of their children aged 20 or older. For cases in which both members of the couple are in the sample, the variable takes the same value for both.

As highlighted in the discussion above, coresidence between middle-aged and older parents and their adult children can be an important form of intergenerational support, operating through in-kind transfers and/or cost sharing; but it is often hard to identify its main beneficiaries. I therefore use binary logistic regressions to investigate the associations between parental, child and household characteristics and shared living arrangements. Among the parental characteristics, I consider age group (using the same 10-year groups as for the other types of support); marital status, categorised into whether respondents are married, widowed or not married (including never married, separated and divorced); educational attainment, split for comparability into "high" and "low" according to whether respondents have attended secondary or higher schooling or not; work status, indicating whether respondents report working for pay at the time of the interview; and three indicators of health, including whether respodents report being in "good" or better health; their number of functional limitations with ADLs; and their depressive status, defined as having three or more depressive symptoms on the CES-D scale (Radloff, 1977) in KLoSA, and four or more depressive symptoms on the Euro-D scale (Prince et al., 1999) in SHARE.

Among the children's characteristics, I consider the age of the youngest child, as well as binary indicators for whether all children are married, whether all children work for pay, and for whether any of the children have children of their own (i.e. the presence of grandchildren). At the household level, I include household wealth, adjusted for household size and split into five equal quantile groups; and whether the household is

located in a rural as opposed to urban area. As for all other types of support, I report the results separately for mothers and fathers.

For each group, I fit separate logistic regression models for Italian and Korean parents, and compare the regression coefficients between the two models. The assumption required in order to test for differences in the coefficients between the models fitted on the Italian and Korean samples is that the residual variances of the two models are the same. The comparison may be done in two alternative ways. The first is to estimate the two models separately, and then combine the estimation results (obtaining a single parameter vector and variance-covariance matrix) using the seemingly unrelated ("suest") command in Stata 15 (StataCorp, 2017; Weesie, 1999), which allows to perform standard statistical tests for the equality of coefficients (t-tests, F-tests and χ^2 tests depending on the variable of interest). This approach eases interpretation, as the estimates can be presented separately alongside the statistical tests. The second approach is to fit a model on the pooled Italian and Korean data, and then interact all coefficients with a dummy variable for whether the observation refers to Italy or Korea. This achieves greater efficiency since the model is fitted on a larger dataset, but coefficients are presented in terms of offsets (or differences between the two countries). Given that results do not differ substantively when using either approach, in the following I report the estimates obtained from the first approach. For all the models I only report the weighted estimates.

The results, shown in Tables 2.4 and 2.5, indicate that intergenerational coresidence is slightly more prevalent in Korea, especially for mothers (among whom 48% of Koreans and 41% of Italians live with a child).

In both countries, coresidence is less likely to occur when children are older, married or employed, and when they have children of their own. This probably reflects the fact that, in both contexts, children's financial independence and family situation are important determinants of shared living arrangements.

A few differences emerge when comparing the parental characteristics associated with coresidence: in Korea, parents aged 80 and older are significantly more likely to live with their children, and widowed parents are also more likely to do so, although the differences in coefficients with Italian parents are not statistically significant in this case.

This may suggest that Korean parents are induced to live with their children by advanced old age and widowhood, while this is not true for Italians. Finally, among Korean parents, coresidence is more likely to occur in wealthier households in urban areas. This may suggest that older Koreans are more likely to live with those adult children who are able to financially support them. However, since there is no information on who is the main earner in the household, it could also be that wealthier parents are more likely to support their adult children through shared living arrangements. Overall, while in both countries coresidence appears to be a response to children's needs, in Korea it seems to be also associated with parents' needs and with the household's financial ability to support its dependent members.

Table 2.4: Fully-adjusted, weighted logistic regressions for the probability of living with children (mothers aged 50+)

Coresidence with at least one child **Subsample: fathers aged 50+**	**SHARE Italy** **Odds ratios (SE)**	**KLoSA Korea** **Odds ratios (SE)**	**p-value from test of equality of coefficients**
% living with at least one child	41.36	47.65	
Parental characteristics			
Age group: (ref: 50-59)			
60-69	0.740 (0.160)	0.962 (0.128)	0.295
70-79	0.764 (0.225)	1.044 (0.190)	0.367
80+	1.052 (0.423)	2.664 (0.695) ***	0.053
Marital status (ref: married)			
Widowed	1.824 (0.354) **	2.270 (0.267) ***	0.335
Never married, separated or divorced	0.430 (0.132) **	1.268 (0.477)	0.027
High education (ref: elementary or less)	0.720 (0.119) *	0.948 (0.101)	0.162
Currently working	0.987 (0.202)	0.920 (0.090)	0.920
Good or better self-rated health	1.027 (0.167)	1.036 (0.098)	0.960
Number of functional limitations (ADL)	1.129 (0.088)	1.185 (0.058) ***	0.600
Depressive status	0.960 (0.152)	0.841 (0.073) *	0.464
Children's characteristics			
Age of the youngest child	0.920 (0.012) ***	0.976 (0.009) **	0.000
All children are married	0.081 (0.017) ***	0.164 (0.017) ***	0.002
All children work for pay	0.523 (0.078) ***	0.639 (0.057) ***	0.250
Presence of grandchildren	0.571 (0.088) ***	0.438 (0.059) ***	0.195
Household characteristics			
Wealth quintile group (ref: lowest)			
2nd	0.964 (0.221)	1.487 (0.200) **	0.103
3rd	0.766 (0.178)	1.414 (0.193) *	0.023
4th	0.602 (0.146) *	1.673 (0.233) ***	0.000
5th (highest)	0.581 (0.135) *	1.355 (0.191) *	0.002
Household in rural area	1.083 (0.159)	0.331 (0.035) ***	0.000
Number of observations	1,889	3,680	

~, *, **, *** = p<0.10, p<0.05, p<0.01, p<0.001 respectively. Standard errors are reported in brackets.

Table 2.5: Fully-adjusted, weighted logistic regressions for the probability of living with children (fathers aged 50+)

Coresidence with at least one child **Subsample: mothers aged 50+**	**SHARE Italy** **Odds ratios (SE)**	**KLoSA Korea** **Odds ratios (SE)**	**p-value from test of equality of coefficients**
% living with children	50.79	52.37	
Parental characteristics			
Age group: (ref: 50-59)			
60-69	0.704 (0.219)	1.005 (0.164)	0.309
70-79	1.017 (0.406)	1.372 (0.330)	0.521
80+	0.897 (0.448)	3.124 (1.076) ***	0.040
Marital status (ref: married)			
Widowed	1.705 (0.653)	1.628 (0.400) *	0.918
Never married, separated or divorced	0.130 (0.046) ***	0.254 (0.080) ***	0.156
High education (ref: elementary or less)	0.676 (0.131) *	0.987 (0.135)	0.111
Currently working	1.013 (0.274)	1.037 (0.133)	0.940
Good or better self-rated health	0.678 (0.126) *	1.025 (0.115)	0.058
Number of functional limitations (ADL)	1.089 (0.083)	1.009 (0.061)	0.438
Depressive status	1.177 (0.254)	0.941 (0.101)	0.353
Children's characteristics			
Age of the youngest child	0.900 (0.015) ***	0.931 (0.012) ***	0.104
All children are married	0.069 (0.017) ***	0.132 (0.019) ***	0.023
All children work for pay	0.483 (0.085) ***	0.573 (0.064) ***	0.410
Presence of grandchildren	0.509 (0.097) ***	0.544 (0.082) ***	0.786
Household characteristics			
Wealth quintile group (ref: lowest)			
2nd	1.439 (0.371)	1.367 (0.236) ~	0.867
3rd	1.237 (0.322)	1.632 (0.276) **	0.372
4th	1.143 (0.300)	1.656 (0.286) **	0.238
5th (highest)	0.735 (0.191)	1.085 (0.193)	0.215
Household in rural area	1.038 (0.167)	0.317 (0.042) ***	0.000
Number of observations	1,609	2,860	

~, *, **, *** = p<0.10, p<0.05, p<0.01, p<0.001 respectively. Standard errors are reported in brackets.

2.5. Conclusion

In 2012–2013, Italians born before or around 1960 were guaranteed a minimum level of economic security and service provision. This provision has partly crowded out financial and care support from their adult children, but it has also allowed parents to redistribute resources to younger generations by transferring money and providing grandchild care. In Korea, by contrast, those born before the 1960s have been disadvantaged by the spread of precarious employment before the expansion of the welfare state. Monetary transfers and personal care from adult children partly substituted for the lack of societal support to older generations. However, this may have contributed to a decrease in the volume of intergenerational exchange by reducing the ability of parents to provide support, as well as their adult children's availability to carry out less essential functions, such as helping with household chores.

The differences between Italy and Korea indicate that intergenerational exchanges within families tend to complement the generosity of societal transfers to different age groups. Overall, the results suggest that specialisation between family support and welfare generosity, which is commonly found in studies comparing European countries (Brandt & Deindl, 2013; Igel et al., 2009), is also relevant to policies that allocate resources towards different age groups through pensions, formal care services, cash transfers, benefits, taxation and the labour market. This implies that policy developments in all these areas can usefully take account of the potential redistributive effects of intergenerational family transfers.

The analysis on which this paper is based has limitations. Due to the limited size of the SHARE and KLoSA surveys, I treat Italy and Korea as homogenous contexts, overlooking within-country regional disparities in socioeconomic conditions and access to services that are relevant to the allocation of resources across generations (OECD, 2016a, 2017d). As a general limitation with cross-national comparative research, the concept of intergenerational support may not be directly translatable across different cultures. For example, variations in family norms between Italy and Korea may partly be driving the differences in intergenerational support patterns. In particular, despite the rapid process of modernisation, the Confucian value of "filial piety", which prescribes adult sons' financial responsibility over their ageing parents, remains present in Korea as

in the rest of East Asia (Lin & Yi, 2013). However, as some have also pointed out in relation to filial piety (H. J. Park, 2015; K. S. Park, 2013), it is often impossible to distinguish specific cultural norms from the policy agenda they are used to justify.

The argument I make here is based on descriptive evidence, and it refers to Italy and Korea at a specific point in time. Further research involving many more countries would be necessary to test for any relationship between intergenerational support transfers and the extent to which social policies allocate resources to different age groups. With regard to Italy and Korea, intergenerational inequalities among current cohorts are likely to be transformed in the future, as young people's employment is more responsive to crises, whereas social security systems tend to be slow in reacting to emerging social risks. An analysis of cohort trends would therefore be necessary to assess how changes in the relative level of public support to different generations in each country are reflected in changes in intergenerational support flows.

This two-country comparison adds to the literature on intergenerational support by going beyond the European framework in relation to which the specialisation hypothesis has been developed, and by exploring the interactions between social policies and intergenerational transfers with reference to a broad range of policies that, in 2012–2013, allocated income security, resources and services in different proportions across age groups.

Appendix: Replication of all tables and figures with samples restricted to parents whose oldest child is younger than 50 years old

Table 2A 1: Proportions of grandparents aged 50+ looking after any grandchild aged 0–10, by sex (Italy 2013; Korea 2012)

Grandmothers aged 50+					
Age group	**Sample proportions (%)**			**Weighted estimates (%)**	
	Italy	Korea	p-value from χ^2 test of difference	Italy	Korea
50-59	24.66	8.33	0.000	24.90	9.27
60-69	13.93	6.56	0.000	14.27	6.82
70-79	9.89	3.23	0.002	9.07	3.51
80+	0.00	0.00	1.000	0.00	0.00
Total	14.89	6.38	0.000	14.66	7.13
n	665	1,835			
Grandfathers aged 50+					
Age group	**Sample proportions (%)**			**Weighted estimates (%)**	
	Italy	Korea	p-value from χ^2 test of difference	Italy	Korea
50-59	15.38	1.41	0.000	14.05	2.02
60-69	15.92	1.57	0.000	15.70	1.34
70-79	9.27	1.60	0.000	8.63	1.67
80+	0.00	0.00	1.000	0.00	0.00
Total	12.16	1.55	0.000	11.95	1.53
n	485	1,482			

Note: for SHARE Italy, only grandparents who are "family respondents" are considered since they are the only respondents answering the section about grandchild care.

Table 2A 2: Proportions of parents aged 50+ with no functional limitations receiving help or personal care from any child, by sex (Italy 2013; Korea 2012)

Mothers aged 50+ (no ADL limitations)

Age group	**Sample proportions (%)**			**Weighted estimates (%)**	
	Italy	Korea	p-value from χ^2 test of difference	Italy	Korea
50-59	3.50	0.66	0.000	3.21	0.72
60-69	3.76	0.73	0.000	4.14	0.60
70-79	8.40	1.24	0.000	8.22	1.49
80+	7.14	0.00	0.539	9.14	0.00
Total	4.51	0.76	0.000	4.53	0.74
n	1,485	2,625			

Fathers aged 50+ (no ADL limitations)

Age group	**Sample proportions (%)**			**Weighted estimates (%)**	
	Italy	Korea	p-value from χ^2 test of difference	Italy	Korea
50-59	2.60	0.80	0.011	2.14	0.93
60-69	2.66	0.31	0.000	3.29	0.26
70-79	6.33	1.30	0.000	6.27	1.34
80+	8.57	0.00	0.227	10.65	0.00
Total	3.85	0.71	0.000	3.65	0.74
n	1,378	2,400			

Note: for couples where both members are in the sample, responses are coded for whether the respondent or his/her partner receive any help or care from a child, and the sample is restricted to couples where neither member suffers from functional limitations.

Table 2A 3: Proportions of parents aged 50+ with one or more functional limitations receiving help or personal care from any child, by sex (Italy 2013; Korea 2012)

Mothers aged 50+ (1+ ADL limitations)

Age group	**Sample proportions (%)**			**Weighted estimates (%)**	
	Italy	Korea	p-value from χ^2 test of difference	Italy	Korea
50-59	10.64	16.66	0.470	17.03	19.97
60-69	9.90	30.43	0.002	13.93	30.62
70-79	25.37	37.04	0.258	25.01	34.78
80+	37.50	100.0	0.236	42.35	100.0
Total	15.70	29.59	0.004	19.77	28.72
n	223	98			

Fathers aged 50+ (1+ ADL limitations)

Age group	**Sample proportions (%)**			**Weighted estimates (%)**	
	Italy	Korea	p-value from χ^2 test of difference	Italy	Korea
50-59	8.70	27.27	0.152	4.17	30.95
60-69	8.24	24.14	0.024	6.74	26.58
70-79	14.71	30.61	0.038	16.14	30.93
80+	21.74	50.00	0.369	18.58	41.27
Total	12.06	28.57	0.001	10.87	29.38
n	199	91			

Note: for couples where both members are in the sample, responses are coded for whether the respondent or his/her partner receive any help or care from a child, and the sample is restricted to couples where either or both members suffer from functional limitations.

Table 2A 4: Fully-adjusted, weighted logistic regressions for the probability of living with children (mothers aged 50+)

Coresidence with at least one child **Subsample: fathers aged 50+**	**SHARE Italy** **Odds ratios (SE)**	**KLoSA Korea** **Odds ratios (SE)**	**p-value from test of equality of coefficients**
% living with at least one child	48.85	51.22	
Parental characteristics			
Age group: (ref: 50-59)			
60-69	0.893 (0.204)	1,254 (0.185)	0.210
70-79	1.072 (0.360)	1.747 (0.417) *	0.236
80+	0.912 (0.726)	47.15 (90.61) *	0.058
Marital status (ref: married)			
Widowed	2.068 (0.507) **	2.250 (0.379) ***	0.777
Never married, separated or divorced	0.500 (0.166) *	1.285 (0.525)	0.073
High education (ref: elementary or less)	0.714 (0.132) ~	0.970 (0.122)	0.171
Currently working	0.829 (0.197)	0.959 (0.108)	0.580
Good or better self-rated health	1.104 (0.208)	0.976 (0.110)	0.575
Number of functional limitations (ADL)	1.143 (0.107)	1.028 (0.103)	0.439
Depressive status	0.985 (0.183)	0.881 (0.093)	0.601
Children's characteristics			
Age of the youngest child	0.893 (0.015) ***	0.942 (0.012) ***	0.012
All children are married	0.056 (0.016) ***	0.120 (0.017) ***	0.015
All children work for pay	0.471 (0.082) ***	0.604 (0.068) ***	0.229
Presence of grandchildren	0.471 (0.082) ***	0.542 (0.078) ***	0.353
Household characteristics			
Wealth quintile group (ref: lowest)			
2nd	0.966 (0.268)	1.539 (0.268) *	0.156
3rd	0.922 (0.258)	1.320 (0.223) ~	0.272
4th	0.609 (0.178) ~	1.676 (0.293) **	0.003
5th (highest)	0.527 (0.141) *	1.240 (0.212)	0.007
Household in rural area	1.256 (0.210)	0.281 (0.038) ***	0.000
Number of observations	1,488	2,469	

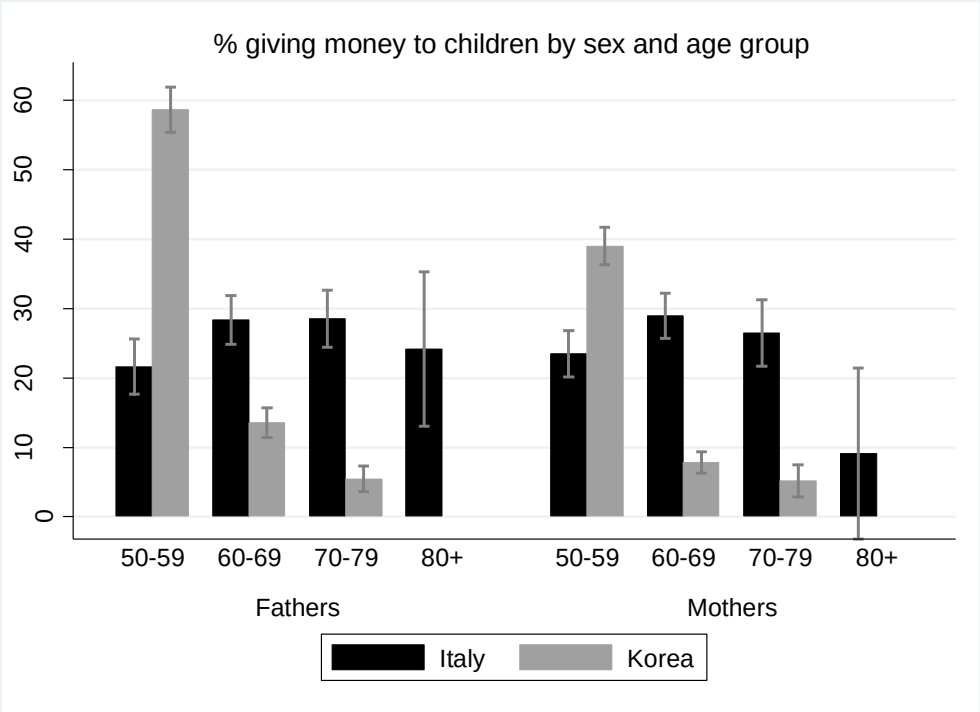
~, *, **, *** = p<0.10, p<0.05, p<0.01, p<0.001 respectively. Standard errors are reported in brackets.

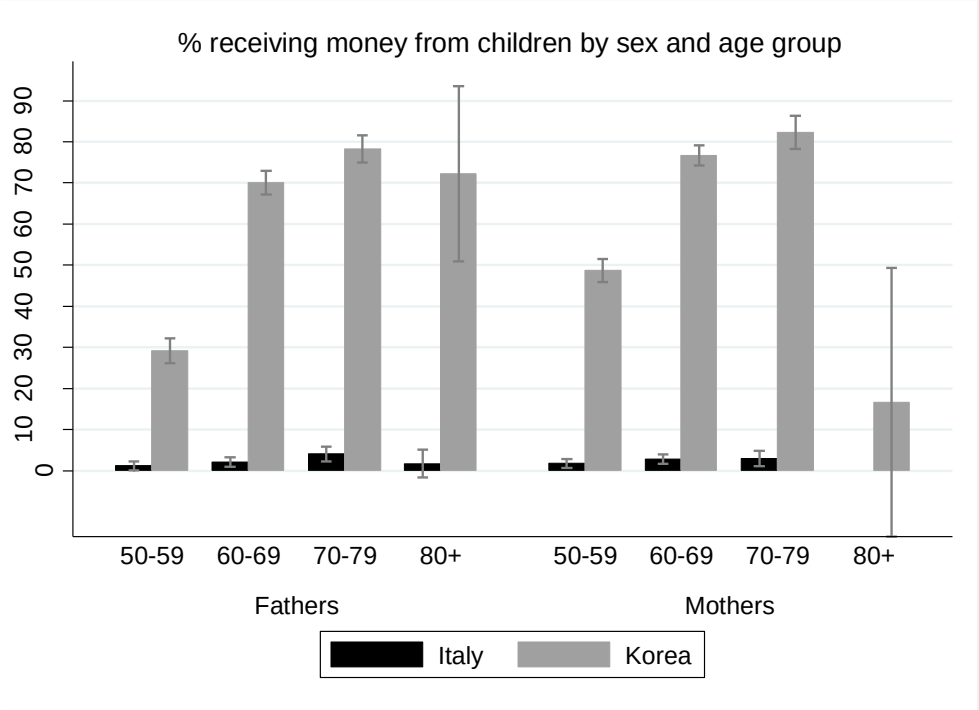
Table 2A 5: Fully-adjusted, weighted logistic regressions for the probability of living with children (fathers aged 50+)

Coresidence with at least one child **Subsample: mothers aged 50+**	**SHARE Italy** **Odds ratios (SE)**	**KLoSA Korea** **Odds ratios (SE)**	**p-value from test of equality of coefficients**
% living with children	56.07	55.69	
Parental characteristics			
Age group: (ref: 50-59)			
60-69	0.726 (0.233)	1.080 (0.186)	0.275
70-79	1.086 (0.449)	1.563 (0.408) ~	0.457
80+	0.624 (0.409)	5.492 (3.903) *	0.025
Marital status (ref: married)			
Widowed	1.861 (0.795)	1.304 (0.403)	0.500
Never married, separated or divorced	0.121 (0.044) ***	0.247 (0.080) ***	0.145
High education (ref: elementary or less)	0.658 (0.795) *	0.967 (0.154)	0.141
Currently working	1.004 (0.275)	1.065 (0.152)	0.850
Good or better self-rated health	0.735 (0.148)	1.006 (0.124)	0.185
Number of functional limitations (ADL)	1.160 (0.107)	1.011 (0.087)	0.277
Depressive status	1.259 (0.298)	0.935 (0.110)	0.259
Children's characteristics			
Age of the youngest child	0.894 (0.016) ***	0.920 (0.013) ***	0.205
All children are married	0.076 (0.021) ***	0.103 (0.018) ***	0.355
All children work for pay	0.076 (0.021) ***	0.539 (0.068) ***	0.524
Presence of grandchildren	0.498 (0.098) ***	0.586 (0.093) ***	0.519
Household characteristics			
Wealth quintile group (ref: lowest)			
2nd	1.329 (0.363)	1.453 (0.279) ~	0.789
3rd	1.332 (0.384)	1.643 (0.302) **	0.540
4th	1.334 (0.387)	1.750 (0.329) **	0.432
5th (highest)	0.695 (0.193)	1.088 (0.208)	0.184
Household in rural area	1.144 (0.199)	0.287 (0.042) ***	0.000
Number of observations	1,385	2,299	

~, *, **, *** = p<0.10, p<0.05, p<0.01, p<0.001 respectively. Standard errors are reported in brackets.

Figure 2A 1: Exchanges of financial support between parents aged 50+ and their children (Italy 2013; Korea 2012). Means and 95% confidence intervals for the percentage of parents giving / receiving financial support in each country by 10-year age group, separately by sex.





Note: SHARE Italy codes financial transfers of €250 or above; in KLoSA, only financial transfers equal to or above 285,700 Won are considered. For couples where both partners are in the sample, the same values are reported for both members of the couple.

3. Using expert judgements to measure "productive ageing" in Italy and South Korea

Abstract

The use of composite measures for multidimensional concepts is increasingly popular in academia and policy-making. However, aggregating indicators into a scale that adequately reflects their substantive importance towards the concept to be measured is a difficult task. We propose a method for the generation of composite scales based on a conjoint experiment on experts and apply it to the concept of "productive ageing". We ask academics with a research interest in productive ageing to complete a series of pairwise comparisons on hypothetical profiles of older people participating in different combinations of productive activities, and to different extents. By ranking profiles in the pair as more, similarly or less productive relative to each other, the experts implicitly reveal the weights to place on each activity. We model responses on the full set of activities, revealing their relative weights, and use these to construct a scale. This study represents a first attempt to generate a measure of productive ageing that is responsive to the relative importance that academics assign to different activities. The proposed method maximises validity by mapping existing indicators directly onto experts' judgements about the relative weight of such indicators. It also allows us to assess systematic differences in the operationalisation of productive ageing between a group of Italian and a group of South Korean academics, by constructing separate scales for each expert and by country of origin. The results suggest that socio-cultural factors may influence academics' definition and operationalisation of productivity in later life.

3.1. Introduction

Composite measures are widely used in academic and policy research to quantify and analyse multidimensional concepts that cannot be captured by studying their constituent attributes separately (Greco, Ishizaka, Tasiou, & Torrisi, 2018; OECD, 2008). In ageing research, a prominent example of a multidimensional concept is 'productive ageing', defined as older people's participation in activities that produce services or goods that have value for others (Bass et al., 1993). This concept is highly relevant in light of demographic trends and concerns with productivity decline in high-income countries. However, it is yet to be formalised into a single measure, partly due to difficulties in the weighting and aggregation of activities for the construction of a composite scale.

Measurement strategies can be broadly divided into unsupervised and supervised methods. Unsupervised or data-driven approaches generally aim to measure a latent construct by combining a set of indicators that are correlated with it and, accordingly, with one another. By contrast, supervised measurement approaches involve decisions, usually of subject-matter experts, that determine the weights to be assigned to each indicator towards the construction of a scale. Since productive ageing is pragmatically defined by researchers' choices about which indicators to include and how to combine them (Sherraden et al., 2001), its measurement should ideally be based on researchers' judgements. However, methods involving strong supervision are rarely used, partly because they tend to exert significant cognitive stress on the decision-makers (Greco et al., 2018). Thus, existing studies of productive ageing commonly treat different activities as separate indicators or use arbitrary combinations of those indicators.

In this paper, we propose a strategy for supervised measurement that substantially simplifies the decision-making task. We develop a measurement method that takes the form of a conjoint experiment on experts, and apply it to the operationalisation of productive ageing with reference to Italy and South Korea. We consider participation in paid work, volunteering, grandchild care and informal care and help to adults as indicators of productive ageing. To construct our measure, we take these indicators from major ageing surveys and ask six Italian and five South Korean academics with a research interest in productive ageing to complete a series of pairwise comparisons on hypothetical profiles of older people participating in different combinations of these

activities, and to different extents. By ranking a profile as ‘more productive’, ‘similarly productive’ or ‘less productive’ relative to another such profile, the experts implicitly reveal the relative weights to place on each activity. We model responses on the full set of activities, revealing the weights assigned to them by each expert. These weights can then be used to assess the level of agreement among academics about the relationship between the indicators and the concept of interest, and, ultimately, to generate a measure of productive ageing from the available indicators.

With respect to our specific application, this study represents a first attempt to generate a productive ageing scale that is responsive to the relative importance that academics put on different activities. More generally, we make a methodological contribution to the literature on composite measures by proposing a strategy for supervised measurement that is straightforward to implement and that easily allows to test for differences among decision-makers, providing a structured way for scholars to assess agreement and disagreement about the empirical realisation of multidimensional concepts.

3.2. Background

3.2.1. Productive ageing: definition and measurement

The academic discourse on productive ageing has developed over the last thirty years as a reaction to the growing policy focus on increasing older people’s ‘productivity’ in the labour market in response to population ageing in high-income countries (Herzog et al., 1989). The productive ageing framework highlights the societal importance of broader forms of participation by defining productive activities as those producing goods and services, or developing other people’s capacity to do so, whether for pay or not (Bass & Caro, 2001; Bass et al., 1993). Narrow definitions of productive ageing only include activities that can be assigned economic value, such as paid work, volunteering, and caregiving (Hinterlong, 2008). Broader definitions also include activities that develop older people’s potential to be productive, such as education, training and self-care, and some go as far as including any activity that has a social or spiritual dimension, such as shopping, hobbies and religiosity (Fernández-Ballesteros et al., 2011; Thanakwang & Isaramalai, 2013).

Productive ageing is a multidimensional concept, in the sense that several activities might contribute to an individual's overall level of productivity, and each of these activities is easier to measure individually than is the overall concept. Empirical work on productive ageing requires researchers to first define and justify which activities are considered productive; then to aggregate indicators of such activities into a single measure. Aggregation requires assigning weights to each indicator that express their relative importance towards the concept, as well as the trade-offs among them (OECD, 2008). Deriving weights is a difficult task, because the relative importance of each activity towards productive ageing is not predetermined, and it may vary according to who defines the concept, and to which context the concept is being applied. For an example of the latter problem, we might imagine that the relative extent to which paid work and child care work are assessed as productive could depend on the structure of old-age pensions and child care provision in a given social context. Since weights are essentially value judgements, weighting should be done along the lines of some theoretical framework (OECD, 2008). However, in practice, for productive aging and for many other social science concepts that are measured in similar ways, weighting decisions are often poorly justified.

Because of the difficulties connected with weighting, research on productive ageing often resorts to analysing activities as separate variables. This strategy is most commonly used in studies of the effects of activity participation for health and wellbeing (Hinterlong et al., 2007; Y. Li et al., 2013), but it is also common practice in studies of the predictors of productive participation, in which case activities are used as separate dependent variables (Akintayo et al., 2016; Hank, 2011). This approach to measuring productive ageing is sometimes preferred as it does not require the researcher to attach arbitrary values to each activity. In turn, though, it does not reveal much about the extent of productive ageing achieved, as it restates the research question in terms of the indicators rather than the concept. As a solution to this problem, some studies of the health effects of participation combine multiple activities together into binary indicators of whether respondents are 'involved' or not, usually restricting the definition of involvement to those who participate with a certain frequency (Jung et al., 2010; J. H. Kim, Kim, & Kim, 2013). However, this coarse approach to aggregating indicators still does not take into account differences in productive roles.

Alternatives to no or simple binary aggregation are summing up the number of activities (Baker et al., 2005; Caro et al., 2009) or the number of hours (Herzog et al., 1989; Loh & Kendig, 2013) of productive involvement. These methods present complementary drawbacks: summing up the number of activities is fine for assessing participation in multiple roles, but it is problematic as a measure of the extent of involvement, as intense participation in a single role is valued less than sporadic participation in various activities. Summing up the total number of hours solves this problem, but by assigning fundamentally different forms of participation equal weight (Bukov et al., 2002). Studies of productive ageing by Glass and colleagues (1999) and Davis et al. (2012) have attempted to build productive ageing indices that rank subjects based on type, diversity and frequency of participation. Still, no attempt is made to assign a value to each activity and, as a general problem with these types of aggregations, individuals with very different forms and intensities of involvement end up being clustered together in the same group or percentile of the distribution.

A way of aggregating components that explicitly gives a relative weight to each of them is to assign activities a monetary value. While the standard procedure for doing this with paid work is to consider an average wage typically given for that type of work, the monetary value of unpaid productive activities needs to be estimated, usually by calculating the amount of money that would be needed to purchase equivalent goods or services on the market (Fernández-Ballesteros et al., 2011; Herzog & Morgan, 1992). Despite representing sensible strategies for assessing the relative importance of each activity towards a measure of 'productivity', monetary valuation methods are not the only defensible kind of valuation (Morrow-Howell et al., 2001). Older people's participation may have value beyond monetary terms, and may be especially likely to provide private goods to its recipients. For instance, activities such as grandchild care may be valued far more by the recipients than their market cost, and, because they also tend to have a consumption component, individuals may spend considerably more time and effort on them than what is required on the market (Herzog & Morgan, 1992). In addition, even assuming that monetary values adequately reflect the substantive importance of different activities, the monetary value of productive participation is undoubtedly a poor proxy to use in empirical analyses of its predictors or consequences.

These kinds of debates may lead researchers back to unsupervised methods, as a way of avoiding difficult measurement questions by "letting the data decide". For example, Paúl, Ribeiro and Texeira (2012) make use of principal components analysis to identify and aggregate indicators of active ageing in a study of Portugal. In the resulting measure, various indicators of activity are given a score proportional to the amount of co-variation each of them explains in the sample. However, there is no reason to expect that the weights resulting from these methods will actually be a good measure of the concept of interest; in the example below, we show how badly they can go awry.

3.2.2. Definition and context for this study

We adopt a relatively narrow definition of productive ageing as producing services or goods that have value for others, and consider paid work, volunteering, grandchild care and informal care or practical help to adults as productive activities. We exclude activities such as learning and self-care because they are predominantly consumption-related, albeit in recognition of their potential for developing older people's capacity to be productive. Narrow definitions offer a good compromise between the need, on the one hand, to make the concept relevant for policy-making in countries predominantly concerned with the economic consequences of population ageing; and that, on the other, to rectify the age and gender biases inherent in treating paid work as the only form of productive accomplishment (Herzog et al., 1989). Moreover, narrow definitions have the advantage of facilitating comparison and replication (Morrow-Howell et al., 2001).

Because the relative value assigned to each activity may differ by sociocultural context (Chen et al., 2016), comparative studies of productive ageing are rare and mostly limited to comparing countries within the same geographical region (Feng, Son, & Zeng, 2015; Hank, 2011). However, cross-regional comparative research is valuable as it can help untangle the relationships between sociocultural structures and older people's productive engagement. A necessary step towards making sensible comparisons is to assess the degree of scholarly agreement and disagreement about the realisation of the concept between different contexts. Agreement among academics about the relative importance of productive activities towards an aggregate measure would validate cross-regional comparisons; strong disagreement would instead suggest that alternative conceptualisations should be used in different contexts.

In this application, we compare formalisations of productive ageing between a group of Italian and a group of South Korean academics. Italy and Korea make good cases for comparison. In both countries, productive ageing is topical in light of demographic ageing (OECD, 2017e). At the same time, there is reason to believe that scholarly assessments of the relative importance of each activity domain towards its measurement differ. The academic discourse on productive ageing in Italy has developed in the context of the low provision of public and subsidised family services in the country (Saraceno, 2016). Older people who look after their grandchildren or care for disabled adults provide services that would otherwise have to be paid for, and increase the productive capacity of others by substituting for their time. In particular, recent research on older Italians has paid increasing attention to the role of grandchild care in facilitating young mothers' labour force participation (Arpino et al., 2014; Bratti, Frattini, & Scervini, 2018). In Korea, recent studies in social gerontology have proposed the adoption of definitions of productivity beyond paid work (J. H. Kim, 2013; J. H. Kim et al., 2013). However, as Lee and Lee (2014) argue, the growth-oriented policy focus, combined with patriarchal cultural values around the family, imply that unpaid family care may not be considered a socially recognised productive accomplishment, and that conceptualisations of productivity may focus more strongly on activities performed outside the household.

3.2.3. Measurement strategy

Composite scales can be generated using unsupervised or supervised approaches. Unsupervised or data-driven methods use observed associations among a defined set of indicators to identify the measure that best explains variation in those indicators. Examples of data-driven methods include principal components analysis, factor analysis and multivariate regression (Greco et al., 2018). These approaches generally aim to measure a latent construct by combining a set of correlated indicators (Bartholomew, Steele, Galbraith, & Moustaki, 2008). This is a sensible strategy for concepts like subjective wellbeing (Kapteyn, Lee, Tassot, Vonoka, & Zamarro, 2015) or health (Klomp & De Haan, 2010), for which a plausible argument can be made that a latent construct actually exists for which we have a variety of noisy indicators (e.g. various types of self-reports). However, in the case of productive aging, it would be difficult to argue that older people have a latent level of productivity that stochastically determines their participation in various activities. In fact, the concept does not obviously reflect any

latent construct, as it is pragmatically defined by the choices made by researchers about which activities count as productive, and how to aggregate them (Sherraden et al., 2001). Further, because individuals are subject to time constraints, different activities are unlikely to be positively correlated with one another, which hinders the practical use of unsupervised approaches when one aims to construct a single scale for productive ageing.

Supervised or participatory measurement methods involve decisions by researchers or other experts that determine the weights to be assigned to each indicator towards the construction of a scale, and are generally more adequate than data-driven approaches for the operationalisation of pragmatically defined concepts. As outlined above, empirical studies of productive ageing have often relied on forms of supervision, for instance by assuming that all activities are worth the same (Baker et al., 2005) or that they are worth their market value (Herzog & Morgan, 1992). However, since these assumptions are often unjustified, it is unclear whether measures obtained through such supervision are valid, in the sense that they adequately quantify the concept that the researcher is aiming to capture.

Given that productive ageing is essentially defined by measurement choices, validity is maximised through strong supervision, which involves making detailed decisions about the relative weight of each indicator towards the construction of a scale. Ideally, measurement supervision should be carried out by subject-matter experts, individuals with substantial knowledge of the relevant indicators and their relative importance. Given that productive ageing is mainly used in policy and academia, researchers, as opposed to the general public, are the main users of the concept. Thus, they are the most appropriate candidates to be considered as "experts" for conducting measurement supervision in this application.

Examples of participatory approaches that involve strong supervision include the budget allocation process, where experts are assigned a budget to distribute among various indicators according to their relative importance (Hoskins & Mascherini, 2009); and the analytic hierarchy process (Saaty, 1977), where participants are asked to compare pairs of indicators based on an ordinal preference scale, with levels ranging from 'equally important' to 'much more important'. These existing methods can help in the generation

of valid scales, as they make the subjectivity behind the weighting process explicit. However, they can exert significant cognitive stress on the decision makers, and may become unmanageable as the number of indicators increases (Greco et al., 2018). Moreover, they may lead to inconsistent or biased results in cases where the participatory audience does not clearly understand the supervision framework (OECD, 2008).

In what follows, we propose a conjoint experiment approach for the eliciting of weights from experts that makes the subjectivity behind the weighting process transparent and that is straightforward to implement. The method allows us to assess agreement and disagreement among experts about the relative importance of the indicators towards the concept to be measured, and to construct a productive ageing scale from the available indicators. We use the method to compare assessments of productivity between a group of Italian and a group of Korean academics, and we test for "cultural" differences in the conceptualisation of productive ageing by generating separate scales by the experts' country of origin. Finally, we compare our expert-generated scales to those obtained by applying a weakly supervised (the sum of activities) and a data-driven (factor analysis) approach to the same data.

3.3. Method

Conjoint analysis is a multivariate method of data analysis in which respondents are asked to evaluate an object or concept as a bundle of attributes (Hair, Anderson, Tatham, & Black, 1998). In conjoint experiments (Green & Rao, 1971), respondents are asked to compare or rate profiles combining multiple attributes that vary randomly across repetitions of the task, enabling researchers to estimate the relative influence of each attribute on the resulting choice. Since its aim is to decompose respondents' preferences for different profiles into individual indicators, conjoint analysis is often referred to as a decomposition method (Greco et al., 2018). It was first developed in relation to marketing research, and since the 1970s it has been widely used to study how consumers make trade-offs among competing products and suppliers (Green, Krieger, & Wind, 2001). More recently, conjoint experiments have been also applied to the study of attitudes in political science, as in the case of natives' attitudes towards different types of immigrants (Hainmueller & Hopkins, 2015).

In this paper we use a conjoint experiment for the measurement of a multidimensional concept, productive ageing, for which the component attributes are known, but the relative weight to be assigned to each attribute towards the construction of a scale is unknown. We consider four activity domains – paid work, volunteering, grandchild care and informal care for adults – as indicators of productive ageing. Our aim is to elicit experts' judgements about the relative importance of each activity towards the construction of a productive ageing scale.

Each expert is assumed to possess knowledge of a latent scale that measures how 'productive' an older individual is based on that individual's frequency of participation in each of the four activities considered. Eliciting such latent scale directly is difficult, as it requires experts to make explicit decisions about the quantification of the value of each activity (Green & Rao, 1971). However, the expert can more easily assess two profiles of older individuals relative to each other on the productive ageing scale based on their frequency of participation in the four activities. The scale can thus be elicited by having the expert repeatedly compare between pairs of older adults whose frequencies of participation in each productive activity vary across repetitions of the task.

Conjoint analysis can be carried out either at the individual respondent level (in this application, experts) or via aggregation across respondents (Hair et al., 1998). This allows us to estimate and compare different scales for each expert, as well as a 'consensus' scale pooling responses from all the experts. Moreover, it allows us to assess whether there are differences in the conceptualisation of productive ageing between a group of Italian and a group of Korean academics, by estimating separate scales for each group.

Importantly, in our coding task, experts are asked to choose "the most productive" between two profiles of older adults of whom they can only observe the frequency of participation in each of the four activity domains considered. Thus, we exclude information on any demographic or socioeconomic characteristic of the older adults, which may affect how "productive" the experts judge them to be. The rationale behind this choice is that one of our primary aims is to compare conceptualisations of productive ageing across experts and concepts. By including other characteristics of the survey respondents, our resulting measure would also capture judgements about the relative

productivity of different groups in society (e.g. older men and women, or different socioeconomic groups), which are likely to differ across experts and contexts.

Very few studies have previously used conjoint analysis for the generation of weights for composite measures. Ülengin and colleagues (2001) use a hybrid conjoint approach to model preferences towards different urban living environments. However, in their application, the conjoint experiment is not directly used to derive weights towards a single measure of urban environment quality, but rather as a preliminary step to determine different clusters of preferences among the surveyed respondents. A report on the Index of Multiple Deprivation by Dibben and colleagues (2007) comes closer to the idea developed here. The authors administer a discrete choice experiment to a sample of English residents, asking them to compare pairs of hypothetical profiles of individuals displaying one of two mutually exclusive characteristics in relation to various indicators of deprivation (such as "not unemployed" vs. "unemployed", "decent housing" vs. "non-decent housing", etc.). In their coding task, the profiles in each pair display opposite traits in relation to every indicator.

Our study contributes to this literature in several ways. First, our conjoint coding task involves comparisons between realistic profiles of older individuals taken from the same nationally representative surveys of the older population that are commonly used in empirical research on productive ageing (Hank, 2011; O.E.K. Lee & Lee, 2014). The profiles presented in our coding task use exactly the same indicators provided by these survey datasets to describe the activity participation of respondents, rather than coarsened indicators as in Dibben et al. (2007). Second, we allow for the possibility of any two profiles participating in different sets of activities to be judged "similarly productive", which facilitates the coding task and avoids the risk of arbitrary responses. Third, since our aim is to measure a concept defined by academics, we administer our conjoint experiment to subject-matter academic experts, rather than to the general public. Having used the experiment to directly connect the supervision task to the data that are used in productive aging research, we are then able to use our method to compare quantifications of the concept across experts and between two different socio-cultural contexts.

3.3.1. Data

The first step for data collection was the generation of 'productivity profiles' of older adults participating to different extents in paid work, volunteering, grandchild care and help or care to adults. We took the data for the generation of profiles from the Korean Longitudinal Study of Aging (KLoSA) (http://survey.keis.or.kr/eng/klosa/klosa01.jsp) and from the Italian sample of the Survey of Health, Ageing and Retirement in Europe (SHARE) (http://www.share-project.org/) at baseline. These surveys contain information on various socio-demographic characteristics of older people in each country, and also include modules on respondents' participation in different productive roles. The target population of KLoSA at baseline consists of individuals aged 45 and above in 2006, excluding younger spouses as well as people living in institutions (KEIS, 2014). The first wave of SHARE targets all Italians aged 50 and above and not living in an institution in 2004, and their spouses regardless of age (Borsch-Supan & Jurges, 2005). We restricted our samples to respondents in both surveys aged 50 and above at baseline, excluding younger spouses. KLoSA has a sample size of 10,248 individuals, while the Italian SHARE sample consists of 2,558 respondents.

KLoSA and SHARE contain similar information on respondents' participation in paid work, volunteering for charities, religious and political organisations, provision of care to grandchildren, and provision of informal care or practical help to adults. However, the two surveys differ in how frequency of participation in each activity is categorised. In KLoSA, paid work, grandchild care and informal care are measured in hours per week, and frequency of volunteering is measured on a scale from "nearly every day" to "never". In SHARE, by contrast, only paid work is measured in weekly hours, and all other activities are measured using frequency scales. Table 3.1 shows our categorisation of frequencies for each activity, separately by survey. Based on these categories, we derived two separate coding tasks, one using the KLoSA categories and the other one using the SHARE categories.

We used the Shiny package in R to build an interactive web application that presents coders with a comparison of two profiles of older adults, A and B, described by their frequency of participation in each of the four productive activities under study. For each pair, the coder is asked to select whether 'A is more productive than B', 'A and B are

similarly productive', or 'B is more productive than A' based on A's and B's productivity profiles. The coder's selection, along with information relative to the productivity profile of both individuals in the pair, is then saved as an observation in our dataset. Conjoint experiments often use an independent randomization, but this would lead to implausible combinations of activity frequencies in our application. Thus, in order to obtain interesting comparisons and to avoid excessive repetition of the same productivity profiles across comparisons, we assign each unique productivity profile found in the surveys equal probability of being selected in every repetition of the task. A screenshot of the online coding task presented to each expert, with an example pairwise comparison, is presented in the Appendix (Figure 3A 1).

We collected data from five Korean and six Italian academics, whose identities are anonymised as listed in Table 3.2. We recruited experts by initially contacting academics whose curriculum vitae and publication history indicate a research interest in productive ageing. Some of the respondents were also able to suggest other colleagues to recruit. We asked each academic to keep in mind the definition of productive ageing relative to her or his own country of origin when taking part in the conjoint coding task, regardless of whether they were performing the task containing the KLoSA or the SHARE categories. The Korean academics completed the task between July and August 2017, and the Italian academics completed it between October and December 2017.

Table 3.1: Frequency categories for each activity in the KLoSA and SHARE tasks

	KLoSA	SHARE
Paid work	Never 1-10 hours/week 11-20 hours/week 21-30 hours/week 31-40 hours / week More than 40 hours/ week	Never 1-10 hours/week 11-20 hours/week 21-30 hours/week 31-40 hours / week More than 40 hours/ week
Volunteer for charities, religious or political organisation	Never Less than once per month 1-3 times per month 1-3 times per week Nearly every day	Never Less than once a week Once or twice a week About every day
Grandchild care	Never 1-10 hours/week 11-20 hours/week 21-30 hours/week 31-40 hours / week More than 40 hours/ week	Never Less than once a month Once or twice a month Once or twice a week About every day
Informal care or help to adults	Never 1-10 hours/week 11-20 hours/week 21-30 hours/week 31-40 hours / week More than 40 hours/ week	Never Less than once a month Once or twice a month Once or twice a week About every day

Table 3.2: Coders' characteristics and dates for the conjoint task, by country

Coder	Country of PhD	Country of institutional affiliation	Date of coding
South Korean experts			
K-1	United States	Republic of Korea	03.07.2017
K-2	United States	Republic of Korea	11.07.2017
K-3	United States	Republic of Korea	12.07.2017
K-4	United States	Republic of Korea	20.07.2017
K-5	United States	Republic of Korea	16.08.2017
Italian experts			
I-1	Italy	Italy	22.10.2017
I-2	Italy	Italy	23.10.2017
I-3	United Kingdom	United Kingdom	23.10.2017 & 11.12.2017
I-4	Italy	Italy	13.11.2017
I-5	Italy	Spain	15.11.2017
I-6	Germany	Germany	01.12.2017

All the Korean and three of the Italian experts (I-4, I-5 and I-6) performed comparisons exclusively on the KLoSA categories. Two Italian academics (I-1 and I-2) performed comparisons exclusively on the SHARE categories, and one Italian academic (I-3) performed the task with both sets of categories. Table 3.3 shows the number of pairwise comparisons performed by each expert, by country and task completed. The largest number of repetitions performed was 145 and the smallest was 51. Our final sample consists of 1,021 pairwise comparisons, 683 of which performed on the KLoSA and 338 of which on the SHARE task.

Table 3.3: Number of comparisons by country, task and coder (total = 1021)

Country	**Italy**							**Korea**				
n	648							373				
Task	**SHARE**			**KLoSA**				**KLoSA**				
n	338			310				373				
Coder	**I-1**	**I-2**	**I-3**	**I-3**	**I-4**	**I-5**	**I-6**	**K-1**	**K-2**	**K-3**	**K-4**	**K-5**
n	82	145	111	70	75	65	100	101	51	65	104	52

3.3.2. Model

We model the choices made by the experts using ordinal logistic regression models for the choice between 'A is more productive than B', 'A and B are similarly productive', and 'B is more productive than A'. The predictors that enter the model are constructed from the randomly assigned attributes of A and B. We construct dummy variables X_A and X_B from the assignments for A and B respectively, omitting the "never" category for each activity, and then define the matrix of predictors for the ordinal logistic regression $X_{BA} = X_B - X_A$, a matrix consisting of values -1, 0, and 1. This means that each coefficient in the resulting regression corresponds to an additive effect (on the log-odds of B being considered relatively more productive than A) of B moving from never engaging in an activity to a higher level of that activity or of A moving from that higher level to never, holding constant both A and B's other activities. For our analysis pooling multiple coders, we hierarchically model the coefficients for each coder for each indicator category as normal draws from a "consensus" coefficient with estimated variance.

Having estimated the coefficients for each indicator category, we use these to generate a measure of productive ageing for each respondent in KLoSA or SHARE by calculating βX_i given that respondent's observed set of indicators. This yields a cardinal measure of productive ageing that reflects the relative weights that the experts implicitly place on different indicator categories in their codings. This measure is on a log-odds scale defined by the expert's choices. The usual arguments for translating the log-odds into odds do not apply in this context because we are not ultimately interested in the effects of activity indicators on the experts' responses, but rather on the measurement of a latent productive aging scale. Since it is easier to think in terms of additive scales rather than multiplicative scales, working with βX_i is preferable to working with $\exp(\beta X_i)$.

We compare our expert-derived productive ageing scales to those obtained using measurement methods that involve weak or no supervision. First, we obtain a scale by summing up the number of activities that older individuals in each survey perform. This is a widely used strategy in productive ageing research (Baker et al., 2005) and a necessary choice for those analysing surveys such as SHARE and KLoSA, where not all activities are reported in hours per week.

Second, we compare our scale to measures obtained using unsupervised methods of aggregation that are only based on the degree of co-variation among activity indicators in the data. We treat paid work, volunteering, grandchild care and informal care as ordered categorical variables, using the same frequency categories as those used for the conjoint coding task and described in Table 3.1. For each survey, we generate a matrix of the polychoric correlations among the four ordinal variables, and perform principal components analysis (PCA) or factor analysis (FA) on that matrix. We focus on the first principal component and the one-factor model, which is also the optimal model as suggested by the "very simple structure" criterion (Revelle & Rocklin, 1979). Similar results are obtained deriving factor loadings for a single-factor model using an ordinal response factor analysis model rather than working with the polychoric correlations.

3.4. Results

We begin by estimating the ordinal logistic model for the coders' selections separately for each coder, and then construct the implied productive ageing scores for each respondent in KLoSA or SHARE (depending on which categories the coder used). As a test of reliability, we tabulate the correlations between these scores across coders (Tables 3.4 and 3.5)[1]. Table 3.4 compares the four Italian and five Korean experts who coded comparisons using the indicator categories from KLoSA. Among the Italian experts (I-3 to I-6), the six pairwise correlations range from 0.91 to 0.98. Among the Korean experts (K-1 to K-5), the ten pairwise correlations range from 0.81 to 0.92. Table 3.5 shows that the three Italian experts who coded comparisons using the indicator categories from SHARE all generated measures that are correlated with one another at 0.94 to 0.96. This indicates a very high level of intercoder reliability: there is not much consequential variation in how the coders weighed the different indicator categories. These results provide strong evidence that the approach of having experts complete pairwise comparison tasks can be effective at generating reliable scales. These high correlations resulted from an average of just 93 pairwise comparisons per coder, which was the work of just 20–30 minutes for most of the coders.

[1] In this context, where we aim to measure a latent quantity for which neither the overall mean nor variance of the scores is well defined, correlation coefficients are the appropriate measure of reliability.

Table 3.4: Correlation (ρ) of KLoSA productive ageing scores constructed from codings of each coder. Comparisons of Italian with Korean experts enclosed in thick border. Correlations of experts' scores with scores obtained from equal weighting (EW) and factor analysis (FA) in the last two columns

	I-3	**I-4**	**I-5**	**I-6**	**K-1**	**K-2**	**K-3**	**K-4**	**K-5**	**EW**	**FA**
I-3	1.00	0.93	0.95	0.96	0.67	0.93	0.78	0.90	0.85	0.63	-0.29
I-4		1.00	0.91	0.98	0.77	0.93	0.87	0.97	0.92	0.68	-0.48
I-5			1.00	0.91	0.67	0.93	0.73	0.88	0.81	0.57	-0.35
I-6				1.00	0.76	0.94	0.85	0.96	0.91	0.68	-0.42
K-1					1.00	0.83	0.90	0.81	0.87	0.89	-0.38
K-2						1.00	0.83	0.92	0.92	0.70	-0.38
K-3							1.00	0.88	0.92	0.83	-0.43
K-4								1.00	0.89	0.69	-0.61
K-5									1.00	0.76	-0.36

Table 3.5: Correlation (ρ) of SHARE productive ageing scores constructed from codings of each coder. Correlations of experts' scores with scores obtained from equal weighting (EW) and factor analysis (FA) in the last two columns.

	I-1	**I-2**	**I-3**	**EW**	**FA**
I-1	1.00	0.96	0.95	0.82	0.41
I-2		1.00	0.94	0.73	0.35
I-3			1.00	0.74	0.36

Table 3.6 shows the coefficients from the analyses pooling all coders who performed the KLoSA and SHARE tasks, respectively. The coefficients can be used to illustrate how a scale for comparing relative levels of productive ageing between two or more older individuals in KLoSA or SHARE can be obtained by adding up coefficients for those individuals' attributes. For example, an individual working for 31-40 hours per week and looking after grandchildren for 11-20 hours per week in KLoSA would get a score of 5.09 (= 3.77+1.32), lower than an individual working for the same amount of hours but providing care or help for a sick or disabled adult for 11-20 hours, who gets a score of 5.58 (= 3.77+1.81).

Table 3.6: Coefficients and standard errors from ordered logistic regression of experts' responses on the full set of activity indicators, by coding task (KLoSA vs. SHARE)

	KLoSA task	SHARE task
Paid work (reference: never)		
1-10 hours/week	1.44 (0.31)	0.78 (0.43)
11-20 hours/week	1.31 (0.23)	2.47 (0.43)
21-30 hours/week	2.39 (0.27)	3.55 (0.46)
31-40 hours/week	3.77 (0.28)	5.05 (0.50)
More than 40 hours/week	3.93 (0.26)	5.21 (0.51)
Volunteering (reference: never)		
Less than once/month	0.18 (0.22)	
1-3 times/month	0.99 (0.20)	
1-3 times/week	0.93 (0.18)	
Nearly every day	2.23 (0.25)	
Less than once/week		0.95 (0.30)
Once or twice/week		1.10 (0.31)
About every day		2.33 (0.37)
Grandchild care (reference: never)		
1-10 hours/week	0.59 (0.25)	
11-20 hours/week	1.32 (0.26)	
21-30 hours/week	1.45 (0.32)	
31-40 hours/week	1.77 (0.31)	
More than 40 hours/week	2.29 (0.24)	
Less than once/month		0.43 (0.38)
Once or twice/month		0.44 (0.40)
Once or twice/week		1.61 (0.34)
About every day		3.45 (0.43)
Informal care or help (reference: never)		
1-10 hours/week	0.79 (0.23)	
11-20 hours/week	1.81 (0.26)	
21-30 hours/week	1.86 (0.28)	
31-40 hours/week	2.57 (0.31)	
More than 40 hours/week	3.08 (0.28)	
Less than once/month		0.32 (0.31)
Once or twice/month		0.71 (0.34)
Once or twice/week		0.95 (0.32)
About every day		2.77 (0.37)
Intercepts		
-1 | 0	- 1.03 (0.12)	- 1.17 (0.20)
0 | 1	1.02 (0.12)	0.92 (0.19)
Number of observations	683	325
Number of coders	9 (5 Korean, 4 Italian)	3 (3 Italian)

For each of the four activities, the magnitude of the coefficients on various frequencies relative to the "never" category suggests that experts' judgements are internally consistent, with higher weight assigned to higher frequency of participation within each activity domain, and negligible inconsistencies in the ranking of frequencies. The 'consensus' coefficients from the analysis pooling all the Korean and Italian coders who performed the KLoSA task give an indication of the relative importance assigned by these experts to each of the four activity domains.

Participation in paid work for more than 40 hours per week as opposed to never is associated with the largest increase in the log-odds of a profile being considered relatively more productive than another profile (3.93), followed by paid work participation for 31 to 40 hours per week (3.77). Thus, the five Korean and four Italian experts who performed the task using the KLoSA categories seem to agree that paid work is the most important productivity domain.

Provision of informal care is the second-ranked activity overall. Providing care or practical help to someone for more than 40 hours per week as opposed to never is associated with an increase in the log-odds of being selected as relatively more productive by 3.08, and the corresponding increase for caregiving for 31 to 40 hours per week is 2.57.

The coefficients on looking after grandchildren for more than 40 hours per week and on volunteering for charities, religious or political organisations every day, as opposed to never participating in each activity, have similar magnitudes (2.29 and 2.23 respectively), making them the third-and fourth-ranked activities.

A likely explanation for these findings is that productive ageing was developed as a reaction to concerns about the financial sustainability of pensions and healthcare systems: paid work continuation and informal caregiving may therefore represent activities through which older people themselves "make up" for the relative increase in the number of pensioners and long-term care recipients (Morrow-Howell & Wang, 2013). Volunteering and grandchild care are generally thought of as having higher consumption or leisure components (Arpino & Bordone, 2017), which may also explain why the expert coders implicitly view them as less intrinsically productive.

Among the three Italian coders who performed the task using the SHARE categories, paid work is also by far the most productive activity. However, these experts assign relatively more importance to grandchild care and relatively less to informal caregiving than their colleagues who performed the task using the KLoSA categories. This may be because of the different categories used in the indicators, or it may be related to the fact that, as outlined above, the low provision of formal childcare in Italy implies that grandparents are an important source of flexible and affordable childcare for working families (Bratti et al., 2018).

Going beyond the consensus estimates, when we compare Italian and Korean experts to one another, we see greater evidence of disagreement. The twenty "cross-cultural" pairwise correlations in the individual scales enclosed in the thick border in Table 3.4 range from 0.67 to 0.97. Given that some of these are substantially lower than the "within-cultural" correlations discussed above, this is an initial indication that there may be some systematic differences between the weights that the Korean and Italian coders put on at least some indicator categories. In order to understand these differences, we estimate a hierarchical model that pools the data from the nine coders who completed comparisons using the KLoSA indicator categories. In this model, we assume that Italian and Korean experts are drawn from different populations of experts, each of which have a common mean coefficient for each indicator category. In Figure 3.1, we plot the estimates for the "consensus" scales of Italian versus Korean experts.

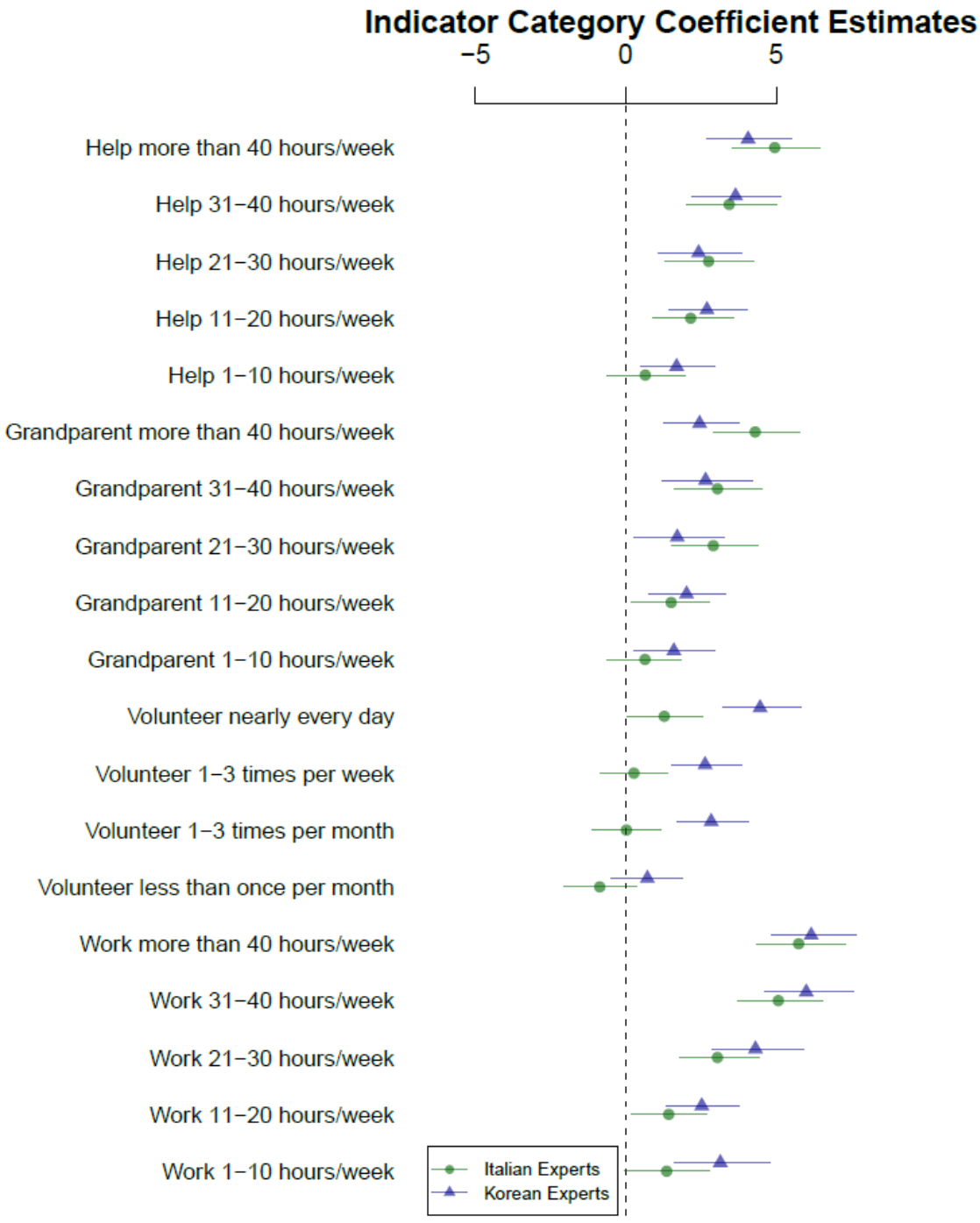
The coefficient estimates from the hierarchical model indicate that, while the differences in the evaluation of paid work and informal caregiving are small, there is evidence of differences in the relative importance of volunteering and grandchild care provision between the Korean and Italian coders. In particular, the importance assigned to volunteer work is substantially higher for Korean than for Italian experts. According to the responses given by the four Italian coders, only older adults who participate in volunteer work "nearly every day" are considered significantly more productive than those who do not perform any volunteering at all.

Conversely, in relation to grandchild care provision, while Italian experts assign progressively higher weight to higher frequencies of participation, Korean coders appear to assign a flat degree of credit across all non-zero frequencies, with 40 or more hours of

weekly grandchild care valued as not significantly more productive than 1–10 hours per week of participation.

Given the small number of coders from each country we cannot be very confident that these differences would be maintained in a broader population of experts. Still, these patterns are a potential explanation for the observed patterns in the pairwise correlations of scores generated from individual coders. The differences between Korean and Italian coders in the importance assigned to volunteer work and grandchild care provision are also in line with our expectation that the relative weights assigned by experts to various productive roles may partly depend on the socio-cultural context to which the definition of productive ageing is applied. In Italy, grandparental care may be considered particularly important for welfare generation (Arpino et al., 2014), while volunteer work may be considered more as a recreational activity. In Korea, family care may be seen as an "obligation" rather than a productive accomplishment of older people (O.E.K. Lee & Lee, 2014). This would explain why, while those not looking after grandchildren at all are penalised as significantly "less productive" than those who do some grandchild care, spending progressively greater amounts of time in this activity is not significantly associated with being considered more productive.

Figure 3.1: Coefficient estimates for Italian versus Korean experts coding using the KLoSA indicator categories



The productive aging scores elicited through the conjoint coding task can be compared to the scores obtained through weakly supervised and unsupervised methods of aggregation on the same set of activities. In a weakly supervised scale obtained by summing up the number of activities in which older adults participate, all activities are assigned equal weight, independently of the frequency with which they are performed. Tables 3.4 and 3.5 report the correlations between the expert-derived scores and the equal weighting scores in the "EW" columns.

For the KLoSA task (Table 3.4), these correlations range from 0.57 to 0.89 and are generally lower than the correlations of experts' scores with one another. The same is also true for the SHARE coding task, as shown by the correlations under the "EW" column in Table 3.5, which range from 0.73 to 0.82. Overall, the correlations between expert-derived scales and those obtained with the equal weighting approach are reasonably high, indicating that experts value participation in multiple roles when assessing the degree of productive ageing. However, with the exception of expert K-1, all expert-derived scales are more strongly correlated with one another (regardless of country of origin) than with the equal weighting scale. As we have already demonstrated, experts value some activities (e.g. paid work) as more productive than others (e.g. grandchild care), and higher frequencies of participation as corresponding to higher levels of productivity (Table 3.6).

Lastly, we compare our expert-derived scales to those obtained through unsupervised methods of weighting and aggregation. As we have argued above, we do not expect these data-driven methods to provide valid measures of productive ageing. However, we believe it is worth making the comparison to illustrate our point, since these methods have previously been used to derive measures in the literature on older adults' activity participation (Paúl et al., 2012). Table 3.7 shows the factor loadings for a single-factor model obtained by performing PCA, FA and Markov-Chain Monte Carlo (MCMC) ordinal factor analysis on the KLoSA and SHARE data, respectively. The matrices of polychoric correlations among the four activities for each dataset are reported in Appendix Tables 3A.1 and 3A.2. The standardised factor loadings represent the correlation of each activity with a latent variable, or factor, which summarises (co)variation in the data. The results clearly indicate that the loadings obtained from

factor analysis are unlikely to reflect the relative importance of each activity towards the construction of a productive ageing scale.

Table 3.7: Standardised factor loadings for each productive activity for the one-factor model using i) principal components analysis ii) factor analysis iii) Markov Chain Monte Carlo ordinal factor analysis, KLoSA and SHARE data

	PCA on polychoric correlation matrix	**FA on polychoric correlation matrix**	**MCMC ordinal factor analysis**
		KLoSA (n = 10,254)	
Paid work	– 0.783	– 0.703	– 0.723
Volunteering	+ 0.305	+ 0.118	+ 0.117
Grandchild care	+ 0.757	+ 0.468	+ 0.755
Informal care & help	+ 0.342	+ 0.149	+ 0.169
Proportion of variance explained	0.349	0.187	0.191
		SHARE (n = 2,508)	
Paid work	+ 0.237	+ 0.100	+ 0.160
Volunteering	+ 0.607	+ 0.285	+ 0.291
Grandchild care	+ 0.627	+ 0.357	+ 0.349
Informal care & help	+ 0.738	+ 0.640	+ 1.239
Proportion of variance explained	0.341	0.157	0.165

In the Korean dataset, the single factor is not positively associated with participation in all four activities, with paid work having a negative association with all the other activities. This is also shown by matrix of the polychoric correlations among the four activities (Appendix Table 3A 1). This suggests that, among older Koreans, paid work participation is negatively correlated with unpaid productive activities. This is likely due to the fact that paid work represents a substantial time commitment, and it is common among older adults with low socioeconomic resources in the country (Yang, 2014). Thus, the first principal component (and the latent factor) represent a contrast between paid and unpaid work, rather than a measure of individuals' productivity. In addition, we observe that none of the proposed measures explain a large proportion of variation in the data, with the first principal component explaining about 35% of the total variance.

For Italian SHARE respondents, we do find a single factor that is positively correlated with higher frequencies of participation all four activities. However, paid work participation is assigned the lowest weight (i.e. the lowest factor loading) among all activities, suggesting that the latent factor that best explains variation in the data is at most weakly related to productivity. The matrix of polychoric correlations (Appendix Table 3A 2) shows that the correlations are higher among unpaid productive activities than between paid work and unpaid activities, perhaps because healthier, younger or more active individuals are better able to engage in unpaid productive roles. Paid work is negatively correlated with grandchild care, a result previously found in empirical studies using SHARE (Hank & Buber, 2009). As observed for the the Korean data, the proportion of variance explained by the first principal component or single factor is relatively low, confirming our claim that these measures do not represent good summaries of the data.

Given these results, it is unsurprising that the correlations between the scores assigned by each expert through the supervised conjoint experiment and the unsupervised factor scores are low, as shown in the "FA" columns of Tables 3.4 and 3.5. For the KLoSA data, the correlations range between 0.29 and 0.61 in absolute value (which sign to use is ambiguous because of the reversed loading on paid work), while for the SHARE data they range between 0.35 and 0.41. Given how much lower these correlations are than those within expert scales and between each expert and the equal weighting approach, it is clear that the statistical associations among the four activities are unlikely to reflect their substantive correlation with a latent measure of productive ageing. This highlights the importance of adopting some form of measurement supervision for the construction of scales for multidimensional concepts that are meant as pragmatic summaries rather than as reflecting a latent factor that generates the observed indicators.

3.5. Discussion

In this paper we described an approach to measurement supervision that takes the form of a conjoint experiment on experts and applied it to the concept of productive ageing. The method maps indicators of productive activities directly onto experts' judgements about the relative importance of such activities. Thus, as long as the experts' choices between

any two profiles are in line with their beliefs about the relative importance of each productive domain, and experts perform enough repetitions of the task, the method generates valid measures of the concept.

The experts' judgements elicited through the coding task are internally consistent, as shown by the fact that frequencies of participation in each activity are largely ordered within and across experts. We tested for reliability by comparing individual expert-derived scales to one another. The results indicate that there is a high degree of agreement among experts about the relative importance of the four different activity domains towards the construction of a productive ageing scale. However, they also reveal the existence of potential "cultural" differences in the relative importance assigned to volunteering and grandchild care provision between Korean and Italian experts, suggesting some degree of caution about the use of multidimensional indices of productive ageing in cross-national comparative research (Chen et al., 2016).

The proposed method offers several advantages compared to the various measurement strategies most commonly employed for multidimensional concepts like productive ageing. Unlike most strong supervision methods, it does not require experts to make difficult direct assessments of the relative weights to put on different indicators, instead giving them relatively straightforward pairwise comparisons of units involving the available set of indicators. At the same time, it does not require supervision over cases involving information beyond the indicator set, which could potentially introduce biases. Our approach also easily allows for the testing of differences between experts, providing a structured way for scholars to assess agreement and disagreement about the empirical realisation of aggregate concepts.

Unlike weakly supervised methods of aggregation such as equal weighting, our approach allows to assign a weight to each indicator that is reflective of its relative importance towards the construction of a scale based on experts' judgements. The comparison of our expert-derived scales with those derived using the commonly adopted "equal weighting" approach shows that the correlations between the two types of measures are reasonably high. However, out of the 12 expert-specific scales derived here, 11 of them are more strongly correlated with one another than with the "equal weighting" scale obtained by the simple sum of activities. In terms of implications for applied empirical research on

productive ageing, the results show that the inexpensive approach of using the sum of activities as a measure of the concept may be adequate in cases where one can ignore the fact that different activities have a different weight, such as in single-country studies of the predictors of any productive engagement. On the other hand, as our results show, experts view some productive activities as more important than others, and equal weighting approaches cannot capture this aspect of the concept. This may be particularly important in cross-national comparative research, and whenever the objective is to quantify the level of productive ageing achieved by different groups of individuals in society.

The method offers clear advantages relative to entirely data-driven measurement strategies, as demonstrated by the comparison of the expert-derived productive ageing scales to the one obtained using factor analysis. In general, weighting based on the co-variation among indicators is best avoided as a measurement strategy when the existence of a latent underlying construct is not obvious, and when the indicators are jointly subject to a constraint such as time allocation.

There are some limitations to recognise regarding the methodology that we propose. First of all, we have demonstrated our method using pairwise comparisons derived from only five Korean and six Italian coders. Therefore, it is important to reiterate that the conclusions drawn about the potential differences in the conceptualisation of productive ageing across different socio-cultural context are hypothetical, and not generalisable beyond our sample of experts. Moreover, when interpreting the results from the pooled dataset of pairwise comparisons, it is important to keep in mind that comparisons obtained from the same coder are not independent of one another – however this is partly accounted for in the hierarchical structure of the model when comparing coefficients between the group of Korean and Italian experts (Figure 3.1).

Some of the limitations relate to indicator availability and selection. We took the data for the generation of profiles from widely used datasets on ageing. This allowed us to obtain comparisons over plausible profiles, while disregarding information on all other characteristics of the profiles. The underlying assumption is that the definition of productive ageing is independent of individual characteristics other than one's participation in productive roles. This assumption is likely to be unrealistic, as we know

that experts view individual's level of productivity as depending on characteristics such as their age and gender (Herzog et al., 1989). However, as argued above, including additional information on the survey respondents would have introduced biases in our measure of productive ageing, as our primary aim is to compare the relative importance of different productive activities towards a measure of the concept across experts and contexts. If one's focus was to compare conceptualisations of productive ageing between, say, individuals of different age groups, the relevant information could be easily included in the coding task.

In the datasets we looked at, activities are coded using different categories, with volunteer work being the only activity categorised on a frequency scale in the Korean dataset, and paid work the only one measured in hours in the Italian dataset. If the scale on which activities are measured influences experts' judgements on the comparisons, this may constitute a threat to the validity of the scale. However, since ageing datasets such as KLoSA and SHARE are widely used in research on productive ageing (e.g. Hank, 2011; O.E.K. Lee & Lee, 2014), this can be considered more broadly as a limitation of the available data rather than one that is specific to our measurement strategy.

A second important kind of limitation is that the pairwise comparison method may encourage or discourage certain approaches to coding among the experts, though we do not think it is obvious which way such biases would go. One could imagine that simply showing all the indicators together implicitly indicates that they all deserve some (or even similar) weight. On the other hand, to code more quickly, coders might be inclined to look at the indicator they think is most important (in this case, likely paid work) and then only use the other categories as tie breakers. Relatedly, depending on how the coders proceed, it may make sense to model the responses differently than we have done. Our analysis assumed a logistic additive response model with no interactions between indicators, but in principle the coders might have followed coding rules that are poorly described by that model, putting higher or lower weight on particular combinations of indicators especially. With enough pairwise codings, more complex response functions could be estimated, but getting sufficient data to reliably recover these is likely to exhaust coders' patience, with limited benefits for the measurement of most concepts.

If one wanted to construct a scale using a very large number of indicators, it might be unwise to show experts profiles including all of those indicators at once, although recent tests on conjoint experiments suggest that respondents can cope with more indicators than one might fear (Bansak, Hainmueller, Hopkins, & Yamamoto, 2018). If the number of indicators became very large, one might instead show random subsets of indicators for each pairwise comparison, and then rely on modelling to bridge the information about the relative importance of different indicators into a common scale.

To conclude, the use of conjoint coding experiments on experts is helpful for improving both the reliability and the validity of multidimensional scale measurements, as well as facilitating assessments of both of these core aspects of measurement quality. As such, the method can be applied to a variety of different situations in which the researcher wishes to generate a measurement for a multidimensional concept, and to assess inter-coder variation in the definition of a scale.

Appendix: Supplementary tables and figures

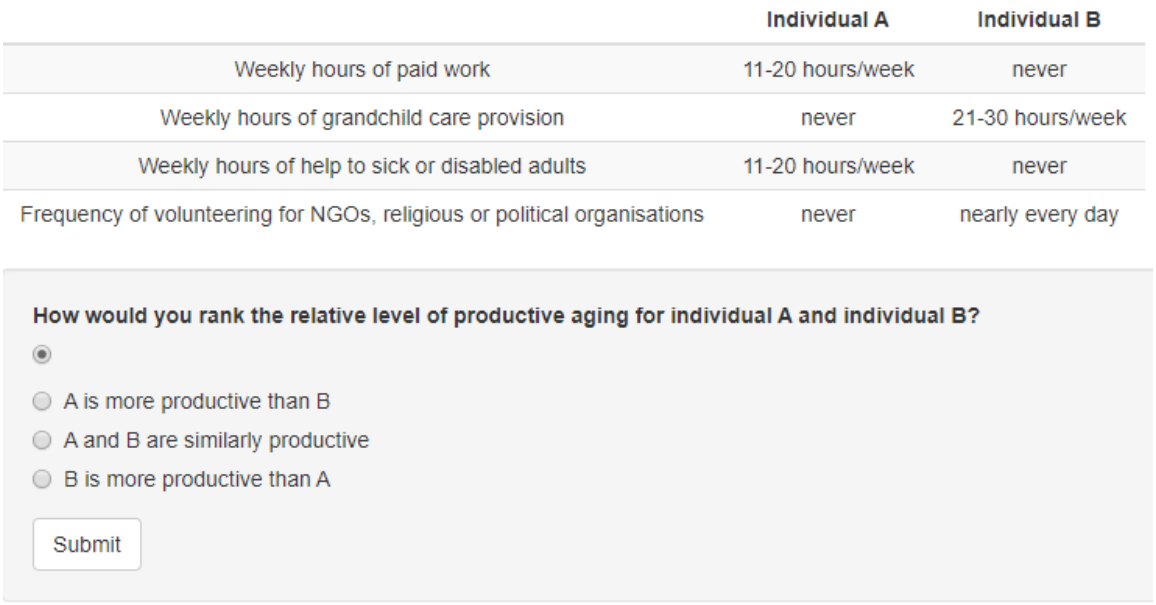
Table 3A 1. Matrix of polychoric correlations among the four activity types in the KLoSA dataset (n = 10,254)

	Paid work	**Volunteering**	**Grandchild care**	**Informal help**
Paid work	1			
Volunteering	- 0.063	1		
Grandchild care	- 0.329	0.084	1	
Informal help	- 0.120	0.022	0.046	1

Table 3A 2. Matrix of polychoric correlations among the four activity types in the SHARE dataset (n = 2,508)

	Paid work	**Volunteering**	**Grandchild care**	**Informal help**
Paid work	1			
Volunteering	0.127	1		
Grandchild care	- 0.090	0.118	1	
Informal help	0.089	0.158	0.240	1

Figure 3A 1. A screenshot of the coding task presented to experts



	Individual A	Individual B
Weekly hours of paid work	11-20 hours/week	never
Weekly hours of grandchild care provision	never	21-30 hours/week
Weekly hours of help to sick or disabled adults	11-20 hours/week	never
Frequency of volunteering for NGOs, religious or political organisations	never	nearly every day

How would you rank the relative level of productive aging for individual A and individual B?

- A is more productive than B
- A and B are similarly productive
- B is more productive than A

Submit

4. The correlates of paid work and informal caregiving after age 50: A comparison between Italy and South Korea

Abstract

The socioeconomic resources and the amount of support available to middle-aged and older adults are commonly associated with their participation in socially productive activities such as paid work and informal caregiving. However, the sign of these associations is likely to depend on the general level of societal transfers towards older age groups through pensions, old-age benefits and long-term care transfers. To date, very few studies have tested for differences in the correlates of productive activities between countries. In this study I compare how socioeconomic status and exchanges of financial and practical support with adult children correlate with paid work and informal caregiving among parents aged 50 and over in Italy and South Korea, two familistic societies characterised by very different levels of societal support towards older generations. I harmonise and pool data from the Italian sample of the Survey of Health, Ageing and Retirement in Europe and from the Korean Longitudinal Study of Aging. I use random-effects logistic regressions to model the probabilities of participation in paid work and informal caregiving, and test for differences in the correlates of these activities between the two countries. In Italy, highly educated mothers and parents who support their adult children financially are more likely to be employed and to provide informal care and help to others. In South Korea, paid work is more common among mothers in low socioeconomic status who do not receive support from their children, as well as among parents who help their children financially. The results show that, in familistic societies like Italy and Korea, intergenerational transfers are linked with older people's participation in productive roles. The different socioeconomic gradients in paid work participation between Italian and Korean mothers suggest that positive connotations of productive ageing may be inadequate for contexts where old-age income security is low.

4.1. Introduction

Population ageing in high-income countries has sparked concerns about the increasing cost of pensions and long-term care systems. However, the characterisation of all older adults as dependent members of society overlooks their economic contributions to it through paid and unpaid work (Sanderson & Scherbov, 2015; Siren & Casier, 2018). Productive ageing is defined as older adults' participation in activities that produce services or goods that have value for others, whether for pay or not (Bass et al., 1993). Among the productive activities older individuals may engage in, paid work and informal caregiving for others are particularly relevant for policy because they directly contribute to mitigate the potential costs associated with an ageing population.

Globally, improvements in life expectancy and physical functioning mean that there is a growing capacity for older people to participate in productive activities (Morrow-Howell & Wang, 2013). At the same time, a simplistic view of productive engagement in later life as a positive accomplishment disregards the fact that individuals may be induced to work for pay or help others by low resources and lack of support, and ideologically prioritises economic goals over their wellbeing (Moulaert & Biggs, 2013). Understanding the factors associated with paid work and informal caregiving among individuals aged 50 and over can help identify which groups should be more strongly supported with their participation in these roles.

Previous research has investigated individual, family and societal factors as correlates of productive ageing (Hank, 2011; S. Kim, 2018; Sabbath et al., 2016). However, few studies have looked at how the individual and family characteristics associated with productive participation differ across countries (Teerawichitchainan et al., 2018). While socio-demographic characteristics such as age, gender, health status and family composition can be expected to correlate with productive engagement in similar ways across different countries (Hank, 2011; Teerawichitchainan et al., 2018), the associations between the socioeconomic resources and support available to older adults and their participation in productive activities are likely to depend on the policy context.

In fact, previous evidence from non-comparative studies suggests that in countries where pensions, old-age benefits and cash transfers guarantee a minimum level of income security to older adults, individuals with high skills and resources are more likely to

participate in paid work and social roles in mid- and later life (Arpino & Solé-Auró, 2019; S. Kim, 2018). By contrast, in settings where old-age security is scarce, participation appears to be related to low financial resources and lack of support from family members (Giang et al., 2018).

Socioeconomic characteristics such as education and wealth determine the resources available to middle-aged and older adults, and have been identified as predictors of productive ageing in theoretical and empirical research (S. Kim, 2018; Sabbath et al., 2016; Sherraden et al., 2001). In addition, for any given level of education or wealth, transfers of financial and practical support with family members, in particular adult children, are likely to correlate with the amount of money and time available to older parents (Szydlik, 2008), and thus be associated with their participation in paid work and informal care and help to others (Giang et al., 2018).

In this paper I compare how socioeconomic status and intergenerational transfers with adult children are associated with paid work and informal caregiving among parents aged 50 and above in Italy and South Korea (henceforth referred to as "Korea"). In both countries, welfare and labour market features imply that families are heavily relied upon for financial and practical support to their dependent members (Saraceno, 2016), which suggests that transfers of support with adult children relate to the amount of time and money available to middle-aged and older parents. On the other hand, between 2005 and 2015, the two countries differ substantially in the degree to which pensions and benefits allocate resources to individuals over 50, who are relatively protected in Italy but vulnerable to poverty in Korea.

Results from previous research comparing conceptualisations of productive ageing between Italy and Korea (Chapter 3) indicate that, unlike other productive activities like volunteering and grandchild care, paid work and informal caregiving are comparable between these two countries. In fact, Italian and Korean researchers with expertise in the topic attach similar degrees of importance to each of these two activities with respect to productive ageing, and consider both of them to be highly productive pursuits of older adults. For this reason, and because of the strong policy relevance assumed by paid work and caregiving in later-life in ageing societies (OECD, 2017c; 2017e), I select paid work and informal caregiving for comparison between the two contexts.

This paper adds to the literature on the determinants of productive activities by comparing the correlates of paid work and informal care provision between two different contexts. The aim of the comparison is to generate hypotheses about how productive ageing profiles relate to the level of societal protection towards older adults. The results can inform policies aimed at maximising the productive capacity of older people across different countries.

4.2. Background and context

4.2.1. Correlates of paid work and informal care

The existing body of research on the predictors of working and informal caregiving in later life highlights how demographic and health characteristics are associated with participation in these roles. Data from Europe, East and South-East Asia and the United States (US) indicate that, among individuals aged 50 and over, those who are younger and male are more likely to work, while those at more advanced ages and women are more likely to be caregivers (J. H. Kim, 2018; Kobayashi, Sugihara, Fukaya, & Liang, 2018; Rodrigues, Huber, & Lamura, 2012; Teerawichitchainan et al., 2018). Gender differences in work and care participation appear to decline with age (Van der Meer, 2006). Older adults who are married, as well as those in good physical and mental health, are generally more likely to participate in productive roles (Glass et al., 1995; S. Kim, 2018; Sabbath et al., 2016). However, there is evidence of a higher prevalence of mental health problems in older people who care for sick or disabled adults (Hank, 2011; Sherwood, Given, Given, & Von Eye, 2005). The fact that these associations have been detected in countries as diverse as Vietnam (Giang et al., 2018), Finland (Akintayo et al., 2016) and Australia (Loh & Kendig, 2013) suggests that they generally hold across different contexts.

On the other hand, empirical evidence suggests that the association between socioeconomic resources and productive participation differs across countries. In Europe, individuals of higher socioeconomic status living in urban areas are more likely to remain employed for longer (Akintayo et al., 2016; Komp, Van Tilburg, & Broese Van Groenou, 2010), and high educational attainment is strongly linked with participation in

productive roles including informal caregiving (Arpino & Solé-Auró, 2019). By contrast, a recent study of productive ageing in Vietnam (Giang et al., 2018) finds that individuals with no or little education are more likely than higher-educated individuals to participate in economic activity after age 50. Korean studies also find that, although income is positively associated with work continuation (J. H. Kim, 2018; O. E. K. Lee & Lee, 2014), education has a negative (O. E. K. Lee & Lee, 2014) or no (J. H. Kim, 2013, 2018) association with economic activity in later life.

A possible interpretation for these differences may be related to the level of societal support towards older generations. In Europe, where older adults are guaranteed social protection at least to a minimum standard, participation in productive activities may be more common among those with higher skills and socioeconomic resources, who have better job opportunities and stronger labour market attachment (Arpino & Solé-Auró, 2019). By contrast, in countries where pension coverage is limited and old-age benefits are scarce, participation in economic activity may be associated with financial necessity among individuals of lower socioeconomic status (Giang et al., 2018; J. J. Yang, 2014). So far, differences between contexts with very different levels of social protection to older adults have not been directly tested.

Alongside older people's individual characteristics, family composition and the characteristics of family members also matter for their participation in employment and informal caregiving. Married individuals may decide to work and provide care based on their partner's health and employment status (Szinovacz & Deviney, 2000). Family characteristics such as the presence and number of children, having one or both parents still alive and the composition of the household are empirically established as predictors of informal caregiving (Sabbath et al., 2016; Schmidt et al., 2016), and they have also been found to correlate with participation in productive roles outside the household (J. H. Kim, 2018).

Recent studies of productive ageing in Asia have also emphasised the importance of intergenerational transfers with children as correlates of productive participation. In Korea, J.H. Kim (2018) finds that parents not living with adult children are more likely to participate in paid work as well as in unpaid productive roles within the household, and argues that lack of filial support is likely to be linked with productive participation

among older individuals. Giang et al. (2018) find that, in Vietnam, older parents who receive money and practical assistance from their adult children are less likely to work than those who do not. In the same study, parents who provide support to their children have higher probabilities of working, which may reflect the fact that financial responsibility over children incentivises older parents' economic activity.

Research on grandchild care in Europe and the US also shows that helping adult children by looking after grandchildren leads to lower labour supply among older adults (Frimmel et al., 2017; Rupert & Zanella, 2018). However, it is unclear whether the associations between these various types of intergenerational transfers and older parents' participation in paid work and informal caregiving hold in similar ways across different contexts.

In this paper I address the gaps in the existing literature by exploring differences in how socioeconomic status and parent-child transfers of financial, practical and coresidential support correlate with paid work and informal caregiving after age 50 in Italy and Korea.

4.2.2. Italy and Korea

Italy and Korea have among the fastest rates of population ageing and the lowest levels of fertility in the world (UN, 2017). This has given rise to policy agendas focussed on incentivising older adults' participation in the labour market and limiting their reliance on the long-term care system (European Commission, 2018a; OECD, 2017c, 2017e), making the correlates of paid work and informal caregiving highly relevant issues to investigate in both countries.

Despite their geographical distance, Italy and Korea share striking similarities in welfare and labour market features that have led some authors to classify them as belonging to the same "family of nations" (Estevez-Abe et al., 2016; Ferrera, 2016). Four main characteristics summarise these similarities (Estevez-Abe et al., 2016). First, both countries have familistic approaches to welfare provision, in the sense that policies tend to assume that families are responsible for much of the financial and care support to their dependent members (Leitner, 2003; Saraceno, 2016). Second, both have fragmented labour markets, characterised by a distinction between the formal and the informal sector, with little mobility between the two. Third, welfare benefits are strongly tied to economic activity in the formal labour market, thus excluding informal sector and temporary

workers, as well as the non-employed, from social protection. Fourth, since their modernisation, they have been characterised by a slow integration of women in the labour market, and by welfare systems based on a male-breadwinner model in which men work and provide financial support, and women provide care for dependent family members (León et al., 2016; Saraceno, 2016).

As I discuss elsewhere in this thesis (Chapter 2), from its origins the Italian familistic welfare model has been based on the financing of social policies through employment contributions, and on the strong link between social benefits and economic activity (Lynch, 2014). This has been combined with a very limited provision of formal services to families. The Korean welfare state, by contrast, has rapidly emerged since the early 2000s with the subsidisation of market-provided family services predominantly targeting young families with children (Fleckenstein & Lee, 2017; D. Lee, 2018). At the same time, social security benefits in the country remain strongly tied to economic activity in the formal labour market.

The familistic features of both societies suggest that transfers of money and time between middle-aged and older parents and their adult children are intensive, often responding to critical financial or care support needs (Igel et al., 2009). Thus, intergenerational transfers are likely to be related to the amount of resources available to parents aged 50 and above of any socioeconomic status, both because they affect them and because they are influenced by them. Moreover, gender differences in the division of roles imply that there are likely to be differences between men and women in the degree and, possibly, in the correlates of participation in paid work and informal care and help.

Alongside the similarities, Italy and Korea are interesting to compare with respect to the correlates of paid work and informal caregiving because of their substantial differences in pensions, old-age benefits and long-term care systems between the mid-2000s and the mid-2010s, which I have discussed in greater detail elsewhere (Chapter 2: Floridi, 2018). In particular, the two countries are interesting to compare with respect to two generations of individuals: those born before and those born after the 1960s. These generations are identified not only by their role within the family (i.e. older parents and adult children), but by the extent to which, during the period considered here, social policies concerning

work and care allocated resources in different proportions to each of them, favouring older individuals in Italy, and younger individuals in Korea.

In Italy, those born before the 1960s have benefitted from employment growth, strong social protection and long-tenure jobs in the formal sector during their lifetime. Labour market liberalisation since the 1990s has predominantly affected newcomers to the labour force, leaving younger generations disproportionately exposed to unemployment or to working in temporary jobs in the wake of the 2008 financial crisis (Jin et al., 2016).

Average pension replacement rates are around 80% of previous earnings, and public pensions achieve virtually universal coverage in combination with old-age and survivor benefits (OECD, 2015b). While recent pension reforms are currently raising retirement age in an attempt to align it with longer life expectancy, between 2005 and 2015 the average effective age of exit from the labour market has been consistently lower than state pension age (OECD, 2015b), as individuals were able to retire on a full pension after contributing to the system for a limited number of years. As evidence of the imbalance of public transfers towards those born before the 1960s, around 2013 poverty rates in Italy peaked in the 18–25 age group and declined with age, reaching a minimum among those aged 66–75 (OECD, 2016c).

Over the same period Korea has, by contrast, the highest old-age poverty rate among all OECD (2016c) countries. Pensions have low average replacement rates (around 45% of previous earnings), and around 2015 neither public nor corporate pensions covered more than a third of the over-65 population each (OECD, 2015b; J. J. Yang, 2014). This is related to the fact that pension receipt is strongly tied to having worked in the formal sector, which excludes many, especially women, from coverage (Y. Yang & Chung, 2014). In addition, skill mismatches and the seniority wage structure enforced in corporate firms discourage employers in the formal sector from hiring and retaining older workers (Jones & Fukawa, 2016). Mandatory early retirement practices are widespread, and firms often encourage early retirement by offering one-off severance payments instead of pensions (J. J. Yang, 2014).

Besides the low pension coverage, old-age public benefits in Korea are also limited. As of 2014, the Basic Livelihood scheme was tied to the absence of family support, and did not provide payments large enough to guarantee an adequate standard of living (J. J.

Yang, 2014). The scarcity of public support implies that many older adults continue working in the informal sector long after reaching state pension age (OECD, 2015b). In fact, people born before the 1960s are overrepresented in the agricultural and informal service sectors (Jones & Fukawa, 2016).

With regard to long-term care, between the mid-2000s and the mid-2010s the two countries are characterised by two different forms of familism (Leitner, 2003). In Italy, the "accompanying allowance" provides financial support to people who are not self-sufficient, and it is the main channel of support for frail older adults and their carers (Da Roit et al., 2013). This represents an explicit form of familism, in the sense that family care responsibilities are financially supported by the state (Leitner, 2003). However, since there is no rule on how the cash subsidies should be spent, it is common for families to invest them into hiring private carers, who are often irregular migrant workers (Di Rosa et al., 2012).

In Korea, since 2008, a long-term care insurance system has funded the expansion of market-based care for frail older people, but the high share of costs to be borne by beneficiaries (around 15–20% of the total) has excluded the poorest individuals from coverage (Chon, 2014). A recent OECD (2017f) study has found that, in the country, formal long-term care remains unaffordable for families at the bottom 20% of the wealth distribution. This means that familism is implicit in the absence of affordable care services (Leitner, 2003) and those of lower socioeconomic status who have care needs rely strongly on their family members, especially daughters and daughters-in-law (K. Kim, Zarit, Fingerman, & Han, 2015).

4.2.3. Aims and hypotheses of the study

In this paper I compare how educational attainment, household wealth, and exchanges of financial, practical and coresidential support with adult children are associated with the probabilities of participating in paid work and informal caregiving among parents aged 50 and over in Italy and Korea. The comparison is particularly interesting because, despite having similarly familistic approaches to welfare, the two countries present stark differences in the amount of social support guaranteed to older generations relative to younger adults. For this reason, for the analysis of intergenerational support, I focus on transfers of money and time between individuals aged 50+ and their adult children, as

opposed to exchanges between older adults and other kin, including their own parents. I do, however, control for broader family characteristics of older individuals, including the presence of parents still alive.

This study is among the first to compare the correlates of productive activities between countries (see Teerawichitchainan et al., 2018), and the first to compare them between one Southern European and one East Asian familistic context. While many of the similarities and differences between these two contexts have been highlighted in the welfare state literature (Estevez-Abe et al., 2016), little is known about how they compare with respect to productive ageing and, more broadly, to the individual-level behaviours of older adults. Given that Southern Europe and East Asia are the two regions of the world where population ageing is at its most advanced stages (UN, 2017), such comparisons are of substantive interest for research and policy.

I focus my attention on Italian and Korean parents born before 1960 who were aged 50 and older between 2004/5 and 2014/5. This enables me to study a group of people for whom differences in welfare provision between the two countries are more relevant. I do not distinguish between individuals who are before and past retirement age because, as I have noted above, for the period considered effective retirement ages are not aligned with the state pension age in either country (OECD, 2015b). Based on my discussion of the differences between Italy and Korea and on the previous evidence from single-country analyses of the correlates of productive ageing reported above, I expect to observe differences between Italian and Korean parents in both the level and the correlates of paid work and informal caregiving after age 50.

Since in Korea the effective average age of exit from the labour market is about ten years later than in Italy throughout the period of interest, I expect Korean parents to be more likely than Italian parents to participate in paid work after age 50. Given that, between 2005 and 2015, Italy has a larger population of individuals aged 65 and above with potential informal care needs relative to Korea (UN, 2017), I expect Italians to be more likely to engage in informal care and help to adults than Koreans. In both countries, I expect men to be more likely to work and women to be more likely to provide informal care in line with traditional gender divisions of labour, which may be particularly persistent among older age groups.

As discussed above, the differences in the coverage and generosity of pensions and old-age benefits suggest that, in Italy, those with higher educational attainment and wealth may be more likely to be employed after age 50 thanks to better opportunities and stronger attachment to the labour market. By contrast, in Korea, relatively disadvantaged older adults may be induced to work for pay by financial necessity (J. J. Yang, 2014).

In Italy, where younger adults tend to have greater financial support needs, giving money to children may correlate with work continuation among parents. On the other hand, I do not expect the receipt of financial assistance from children to be linked with paid work among Italians. By contrast, in Korea, the low public support to older generations suggests that paid work participation may correlate with the absence of financial support from adult children.

While Italy and Korea display different types of familism in long-term care policies, in both countries I expect parents in poorer households to be more likely to provide informal care. In Italy, better-off families are generally more likely to invest their cash-for-care transfers into hiring care workers (Saraceno, 2010), thus not providing care for family members themselves. In Korea, the wealthier are simply more likely to afford formal care services (OECD, 2017f).

However, controlling for socioeconomic status, there may be differences between Italians and Koreans in how intergenerational transfers correlate with informal caregiving for others. Public financial support for caregivers in Italy may mean that those who provide care for sick or disabled adults are also able to support their children through financial or practical support (such as grandchild care provision), while I do not expect to observe this for Korean parents. In Korea, receiving money from adult children may be positively associated with informal care provision, for instance if adult children financially subsidise their parents' caregiving role.

4.3. Method

4.3.1. Data

I use data from the Italian sample of the Survey of Health, Ageing and retirement in Europe (SHARE) (http://www.share-project.org/) and from the Korean Longitudinal Study of Ageing (KLoSA) (http://survey.keis.or.kr/eng/klosa/klosa01.jsp). Both datasets are part of a family of harmonised longitudinal surveys on ageing based on the US Health and Retirement Study (HRS). The target population of SHARE Italy includes individuals aged 50 and above not living in an institution at baseline, and their spouses regardless of age (Borsch-Supan & Jurges, 2005). KLoSA targets instead the population aged 45 and above, excluding younger spouses and people living in institutions at baseline (KLI, 2007).

In line with the study objectives, I restrict the analyses to respondents in both surveys born before 1960 and aged 50 or more at the time of each interview, excluding younger spouses. Given the interest in how parent-child transfers are associated with paid work and informal caregiving, I only consider respondents with at least one living child. Because of the aforementioned gender differences in paid work and informal care participation, I analyse all data separately for mothers and fathers.

SHARE Italy has a baseline sample size of 2,558 individuals, which was augmented by refreshment samples in subsequent waves. The baseline sample of KLoSA consists of 10,248 respondents, with no refreshment samples between the first and last available wave. The baseline response rates are around 55% for the Italian and 89% for the Korean survey (Borsch-Supan & Jurges, 2005; KLI, 2007).

The data cover the period 2004–2015 for Italy (SHARE waves 1–6) and 2006–2014 for Korea (KLoSA waves 1–5). Using longitudinal data for the analysis allows me to study a ten-year period during which the Italian and Korean welfare states allocated resources differently between older and younger generations. Relative to a comparative analysis performed using cross-sectional data (such as the one presented in Chapter 2 of this thesis), this comparison is less subject to year-specific differences in outcomes between the two countries, such as those due to reforms or macroeconomic events. Therefore, the

similarities and differences in the correlates of paid work and informal caregiving can be interpreted in light of the broader institutional characteristics of the two countries.

I use five waves of each survey, excluding waves that only contain retrospective information. Attrition is present, with around 48% of Italian and 27% of Korean respondents dropping out between the first and last observation point for reasons other than death. Both datasets provide calibrated survey weights to adjust for baseline non-response and longitudinal drop-out. To check whether the samples adequately represent the populations of interest, I estimate both weighted and unweighted models (Solon, Haider, & Wooldridge, 2015). Since the results differ between the two sets of models, I only report weighted estimates that account for attrition. Thus, while analysing data from multiple waves increases the total number of observations, the analytical samples are restricted to individuals with complete cases (i.e. those observed at all waves), which effectively shrinks sample sizes.

After excluding respondents younger than 50 and/or born after 1959, as well as childless respondents and those with missing information on any of the variables of interest, the longitudinal samples consist of 4,514 Italians (2,430 mothers and 2,084 fathers) and 8,639 Koreans (4,846 mothers and 3,793 fathers). Since the longitudinal survey weights are only available for respondents who were interviewed at all waves, the weighted analyses are further restricted to 831 Italian respondents (475 mothers and 356 fathers) and 5,985 Korean respondents (3,421 mothers and 2,564 fathers).

4.3.2. Measures

SHARE and KLoSA contain information on the demographic, socioeconomic and health characteristics of the respondents, and include sections on their exchanges of financial and practical support with their children. To be able to test for differences in the correlates of paid work and informal caregiving between the two countries, I harmonise all the relevant variables for the analysis.

Outcome variables. I code binary indicators for paid work and informal caregiving, and use them as separate dependent variables. I classify respondents as participating in paid work if, at the time of each interview, they work for pay for any number of hours per week. For informal caregiving, I code an indicator of whether respondents have provided

any personal care or informal help to someone living within or outside their household during the 12 months preceding each interview. In SHARE, this is the combination of responses to two sets of questions. The first asks respondents whether, over the past 12 months, they have given personal care or practical household help to anyone living outside their household. The second asks them whether, over the three months preceding the interview, they have regularly provided personal care to a sick or disabled adult in their household. In KLoSA, respondents report whether, over the past 12 months, they have provided personal care or informal help (such as help with household chores or paperwork) to anyone living within or outside their household. Since both surveys identify the care recipients, I am able to exclude care or help given to adult children, which would complicate the interpretation of the associations between intergenerational transfers and informal caregiving. However, because of the way informal care to non-household members is coded in SHARE waves 4 and 5, the harmonised caregiving variable does not distinguish between personal care (e.g. with bathing, dressing, etc.) and informal help (e.g. with household chores or paperwork).

Socioeconomic status. Education and household wealth are adequate indicators of socioeconomic status after age 50, since many middle-aged and older adults do not receive earnings from employment. For comparability between the two countries, I define two categories for educational attainment, low (elementary schooling or less) and high (secondary or higher education). I derive a measure of household wealth by summing up all household assets (financial and real) and subtracting all debts and liabilities. I adjust for household size using an equivalence scale that assigns a value of 1 to the first member of the household and a value of 0.5 to each additional adult (Hagenaars, De Vos, & Zaidi, 1994). I then split both samples into five quantile groups of household wealth.

Intergenerational transfers. I consider exchanges of financial and practical support with adult children as indicators of intergenerational support. I code binary variables for whether respondents have exchanged monetary gifts of 250 Euros or more with any child over the year before each interview, or the Purchasing Power Parity (PPP) equivalent in Korean Won for that year. In SHARE and KLoSA, when both members of a couple are interviewed, only one member answers the questionnaire section about financial support transfers. Thus, for individuals whose partner is in the survey, I recode responses so that

both partners have the same value. In SHARE, only one member of the couple (the "family respondent") answers the section on grandchild care. In KLoSA, the question on grandchild care provision is asked to all respondents, but it only refers to care provided to children aged 0–10. To obtain a measure of grandchild care provision that is comparable between the two surveys, I generate a binary indicator for the provision of care to grandchildren aged 0–10 that takes the same value for both members of a couple. For the receipt of practical assistance from children, I code an indicator for whether respondents have received personal care or instrumental help from any of their adult children in the year preceding each interview. Finally, I include a binary indicator for whether respondents live in the same household as any of their children at the time of each interview.

Individual characteristics. I select individual characteristics that may correlate with employment and informal caregiving based on the literature discussed above. I control for age, birth cohort and marital status, categorised into whether respondents are married, widowed, or other (separated, divorced, or never married). I include three indicators of health: i) self-reported "good" or better health, dichotomised from a five-point scale from poor to excellent; ii) number of functional limitations with Activities of Daily Living (ADL); and iii) depressive status, defined as having three or more depressive symptoms on the CES-D scale (Radloff, 1977) in KLoSA, and four or more depressive symptoms on the Euro-D scale (Prince et al., 1999) in SHARE. These scales tend to identify different severities of depression; however, their associations with risk factors are generally in the same direction (Courtin, Knapp, Grundy, & Avendano, 2015). I control for whether respondents live in a rural as opposed to urban area. Finally, in the regressions for informal care only, I include controls for respondents' labour force status, categorised into working, retired, unemployed, and permanently out of the labour force.

Family characteristics. Among the family characteristics that may be linked with participation in paid work and informal caregiving, I consider the number of living children and the age of the eldest and youngest child. For respondents who live with their partner, I control for the labour force status and number of ADL functional limitations of the partner, in order to account for joint decision-making regarding retirement and for the possible influence of spousal care needs on working and caregiving decisions. Finally, I control for the presence of potential care recipients in the family by including binary

indicators of whether the respondent has any grandchildren, and whether the respondent's mother and father are still alive at the time of each interview.

4.3.3. Statistical analysis

I regress the probability of participating in paid work and informal caregiving separately on the full set of parents' individual, family and household characteristics using logistic regression. To account for the correlation among observations that refer to the same individuals in the longitudinal datasets, I use multilevel random intercept models with observations – one per interview – nested within respondents.

Unlike the fixed-effects model, the random intercept model exploits the variation from differences in characteristics between individuals, as well as from changes over time within the same individual. Therefore, it is more appropriate to study the correlates of activity participation, some of which (like education or the number of children) are time-invariant for most respondents over the 10-year period considered.

The random intercept model assumes that individuals differ with respect to their average outcome values, but that the sign and magnitude of the associations between the independent variables and the outcome are the same for the all individuals in the population of interest. This is a reasonable assumption, and it is particularly sensible to make in this study where the ultimate aim is to test for differences in the coefficients between the Italian and the Korean populations of parents over 50. The random intercept model is also more parsimonious than the random slopes specification, an important advantage given the relatively small size of the Italian subsample of SHARE.

Since the random intercept model does not account for time-varying unmeasured characteristics leading to simultaneous changes in the outcome and covariates, the associations are not informative of the direction of causality. In addition, the models treat intergenerational support transfers (including financial, practical and coresidential support) with adult children as predictors of participation in two productive activities. This disregards the fact that intergenerational transfers with children may be endogenous to paid work and informal care participation, as the same unobserved characteristics linked with the propensity to engage in productive roles tend to be linked with the propensity to give and receive support. In the random-effects model, this may cause both

level-1 and level-2 endogeneity. The latter is likely to be more relevant in this case, since unobserved heterogeneity in the propensity to engage in productive roles and intergenerational transfers is usually greater between individuals than within individuals over time. In practice, this means that the intergenerational support indicators may be correlated with the random intercepts, thus violating one of the main assumptions of the model. This would result in biased coefficients for those indicators. Given that some individuals may be more likely than others to engage in both productive activities and intergenerational transfers, the sign of the bias is likely to be positive, resulting in inflated coefficients.

The potential presence of endogeneity implies that the coefficients on all intergenerational support indicators should be interpreted with caution. However, the relationship between intergenerational support and productive participation is of substantive research interest. Recent studies have investigated intergenerational transfers as correlates of productive participation within and outside the household, encountering similar endogeneity problems (Giang et al., 2018; J.H. Kim, 2018), and only one empirical study to date has attempted to disentangle the direct effect of intergenerational transfers on parents' work and retirement in the US (Miller et al., 2018). Assuming that endogeneity operates in similar ways in the Italian and Korean contexts, comparing the coefficients on intergenerational support transfers between the two countries is informative of how participation in productive roles is linked with different individual and family resources among older adults living in two different institutional contexts. Therefore, despite the difficulties in the estimation of the associations between intergenerational support and productive activities, this study adds to the literature by examining these associations in a cross-national comparative perspective.

I adopt two alternative approaches to test for the statistical significance of differences in the regression coefficients between Italian and Korean parents. As a first approach, I fit the random intercept logit models separately for Italian and Korean parents (and separately for mothers and fathers) and obtain the coefficients. I then combine the estimation results from these models through seemingly unrelated estimation using the "suest" package in Stata (Weesie, 1999). This enables me to perform statistical tests for

the equality of coefficients across models estimated on the Italian and Korean samples[2]. As an alternative approach, I merge the Italian and Korean samples and fit the random intercept models on the pooled dataset (separately for mothers and fathers). In these models, I interact all the independent variables with a binary indicator of whether the respondent is from the SHARE as opposed to the KLoSA survey, and check the size, sign and statistical significance of the interaction terms.

Both approaches assume that the residual variances of the models estimated on the Italian and Korean samples are the same in order to test for differences in the coefficients. In the seemingly unrelated estimation framework, the models are estimated separately, and estimates are then combined into a single parameter vector and variance-covariance matrix. By contrast, in the fully-interacted models, estimation is carried out on the merged sample of Italian and Korean parents. The first approach eases interpretation, since coefficients are estimated and reported separately, while the second increases efficiency through larger sample size. To check the sensitivity of differences in coefficients between Italian and Korean parents to different testing methods, I report results from both approaches. These results are substantively the same, reinforcing my trust in the similarities and differences in the correlates of working and caregiving between the two countries.

As mentioned above, both SHARE and KLoSA are affected by baseline non-response and attrition, which may compromise the representativeness of the associations with respect to the two populations of interest. The random-effects model assumes Missing at Random (MAR), meaning that missingness is ignorable after controlling for observed characteristics. To account for baseline and longitudinal non-response, I obtain weighted estimates for all coefficients using the calibrated longitudinal weights provided in SHARE and KLoSA. I use a common set of weights that I rescale to account for the fact that, in the baseline year, Italy's 50+ population was about twice the size of Korea's (UN,

[2] Since "suest" is not compatible with multilevel models, in order to test for differences in the coefficients I fit and combine logistic regressions with standard errors clustered within individuals to replicate the two-level structure.

2017). Using a common set of weights allows me to combine the estimation results and to fit fully interacted models on the pooled data; rescaling does not affect the regression coefficients in practice.

I report the estimated coefficients for the main variables of interest in terms of average marginal effects, which represent the average predicted change in the dependent variable for a unit change in the explanatory variable, holding all the other controls at their observed values across units and integrating out the subject-level random intercept. The average marginal effects obtained from the random intercept models conducted separately by dataset are identical to those obtained from the fully-interacted models by calculating average marginal probabilities over each dataset. For the fully interacted models, I report the comparisons between Italian and Korean respondents in terms of contrasts of average marginal probabilities between the two groups, with corresponding significance tests. For each covariate, the contrast represents the difference between the average marginal effect obtained for Italians and the average marginal effect obtained for Koreans.

Average marginal effects have two substantial advantages relative to the more conventionally used odds ratios. First, they greatly simplify the interpretation of results, as the coefficients can be interpreted in terms of additive changes in probabilities rather than multiplicative changes in odds. Second, and crucially for this application, they allow for a clearer interpretation of the comparisons between groups when using interaction terms. In nonlinear models, interaction effects cannot be evaluated by looking at the sign, magnitude or statistical significance of the (exponentiated) coefficients, because these are conditional on the values of all other independent variables and thus vary across observations (Ai & Norton, 2003).

For all estimates I present robust standard errors, which are more reliable under non-normally distributed data (StataCorp, 2013).

4.4. Results

4.4.1. Descriptive sample characteristics

Table 4.1 reports summary statistics for all the variables used in the study, measured at the baseline wave of each survey and weighted to adjust for non-response. As expected, Koreans are more likely than Italians to work for pay. The differences are much larger for men (55% vs. 32%) than for women (17% vs. 13%), indicating greater gender disparities in workforce participation in Korea.

There are striking differences between Italian and Korean parents in the proportions providing personal care and informal help to others: overall, around 28% of Italian and only around 3% of Korean respondents perform this activity. Given the low provision of formal long-term care services in Korea around the mid-2000s, one may find the low rates of informal care surprising. However, previous studies have documented similar proportions of older adults engaged in informal caregiving around that time (Do, 2008; Do et al., 2015).

A potential explanation for this finding is that, in line with traditional Confucian values, in Korea the primary caregivers for sick or disabled individuals are their daughters-in-law (Kong, 2007). In a study of caregivers carried out in Seoul around the time of the KLoSA baseline interview, Lee, Yoon and Kropf (2007) found that informal caregiving for older disabled adults was most common among women aged 40–49. In the same study, the daughters-in-law of the care recipients made up 42% of all caregivers, while spouses only accounted for 24% of caregivers. Although in recent years changing attitudes towards family values have partly shifted caregiving responsibilities from daughters-in-law to daughters (Do et al., 2015), Korean cultural norms still place most of the caregiving burden on younger women rather than on the care recipient's spouse, as it is common in Europe and the US (Kong, 2007).

Alternatively, the large differences in the proportion of caregivers between the two surveys may be due to differences in respondents' interpretation of the survey questions. For instance, Koreans may be less likely to report caregiving activities than Italians due to cultural differences around whether informal care can be considered an activity worth reporting in a survey. However this is unlikely, since both surveys show their

respondents detailed (and very similar) lists of what is considered personal care (e.g. help with bathing, eating, etc.) and informal help (e.g. help with groceries, cleaning, etc.) (Borsch-Supan & Jurges, 2005; KLI, 2007).

The differences in the proportions employed and providing informal care highlight the importance of testing for potential differences in the factors associated with these activities. Because of the relatively large size of the KLoSA sample, the low proportions of Koreans engaged in informal care do not pose a problem for the estimation of the logistic regressions[3].

The summary statistics in Table 4.1 also show that, while older Italian parents are more likely to help their adult children financially (around 16%) than to receive money from them (less than 2%), the opposite is true of Korean parents (of whom around 10% have given and around 42% have received financial support in the year before the baseline interview). Italians are also more likely than Koreans to provide grandchild care to grandchildren aged 0–10, or to have a partner who provides grandchild care (19% vs. 8%), despite the fact that Koreans are more likely to have grandchildren. These differences are in line with the greater protection of income security among older Italians than Koreans, and with the lower provision of childcare services and subsidies in Italy relative to Korea.

[3] I also check the sensitivity of the results to model specification by carrying out the analyses using probit random-effects models. The results (not reported) are unchanged in terms of the relative size and statistical significance of coefficients.

Table 4.1: Sample characteristics at baseline interview (weighted for non-response)

		KLoSA 2006 Korea		SHARE 2004 Italy	
		Mothers	**Fathers**	**Mothers**	**Fathers**
Dependent variables					
Paid work	%	16.73	55.18	13.47	32.46
Informal care	%	3.74	2.54	31.78	23.95
Individual characteristics					
Birth cohort: 1930s or earlier	%	34.74	26.60	52.25	48.07
1940s	%	37.22	41.87	33.21	37.18
1950s	%	28.04	31.53	14.55	14.75
Age	mean	63.65	61.85	66.30	65.03
Marital status: married	%	66.85	93.76	59.99	86.80
Widowed	%	30.96	4.11	35.95	9.15
Separated, divorced	%	2.19	2.13	4.06	4.05
Education: secondary or higher	%	35.01	67.61	32.72	48.78
Labour force status: working	%	16.75	55.48	12.32	27.50
Retired	%	16.77	27.58	43.38	68.70
Unemployed	%	2.83	5.66	0.97	2.95
Permanently out of labour force	%	63.65	11.28	43.33	0.85
Self-rated health: good or better	%	37.85	54.71	51.90	65.55
Functional limitations: none	%	95.00	95.75	86.10	90.05
1-2 functional limitations	%	2.52	1.46	8.59	6.84
3 or more functional limitations	%	2.48	2.79	4.05	3.10
Depressive status	%	50.28	35.99	44.10	25.80
Household characteristics					
Rural dwelling	%	26.53	24.09	45.15	44.49
Wealth quintile group: 1st	%	20.80	18.83	23.85	20.10
2nd	%	19.29	19.21	19.57	17.50
3rd	%	20.59	20.17	19.83	20.05
4th	%	18.23	19.55	17.71	19.91
5th (highest)	%	21.08	22.23	19.45	22.44
Family characteristics					
Number of children	mean	3.28	2.89	2.42	2.28
Age of eldest child	mean	40.91	34.77	40.76	35.75
Age of youngest child	mean	33.85	29.18	35.08	30.41
Partner's labour force st: working	%	29.96	19.22	7.51	9.50
Retired	%	19.63	11.15	31.38	21.44
Unemployed	%	2.92	2.85	0.94	0.51
Out of the labour force	%	8.57	53.24	0.51	29.05
No partner / not interviewed	%	38.93	13.54	59.66	39.50
Partner has functional limitations	%	3.31	1.92	3.91	5.88
Presence of grandchildren	%	76.96	57.93	68.82	55.12
Respondent's mother still alive	%	21.32	27.93	17.98	22.11
Respondent's father still alive	%	5.44	7.32	7.18	7.29
Parent-child transfers					
Giving money to child(ren)	%	8.19	11.48	14.22	18.53
Receiving money from child(ren)	%	47.72	36.95	1.72	1.70
Grandchild care (or partner does)	%	9.68	7.03	21.00	17.73
Receiving help from child(ren)	%	5.23	2.57	13.30	4.32
Living with child(ren)		52.31	55.37	48.10	53.39
Number of individuals		4,641	3,598	1,215	979

Tables 4.2 and 4.3 present the main results for paid work, while Tables 4.4 and 4.5 present results for informal caregiving, separately for mothers and fathers. In these tables I report the predicted average marginal probabilities of participating in each activity as well as the coefficients on the main variables of interest (education, household wealth and parent-child transfers of financial, practical and coresidential support) for each country, controlling for all the other independent variables shown in Table 4.1. In the third and fourth columns, I present the results from the two alternative approaches used to test for differences in the coefficients (i.e. the p-values from the cross-model tests and the contrasts of marginal probabilities from the interaction models). Tables 4.6 and 4.7 report the estimated coefficients from the same models for which marginal effects are presented in table 4.2 and 4.3, on all other independent variables, as well as the p-values for the cross-model tests of differences in all the coefficients.

Table 4.2: Estimated marginal effects for the probability of working (fully-adjusted, weighted random effects logistic regressions), Korean and Italian mothers. Robust standard errors in parentheses.

Paid work	**Korean mothers 50+**	**Italian mothers 50+**	**Tests for differences in coefficients**	
	Average marginal probabilities	Average marginal probabilities	p-value from test of equality of coefficients (separate models)	Contrast Italy vs. Korea marginal probabilities (fully interacted model)
Average predicted probability	**0.225 (0.004)** ***	**0.091 (0.008)** ***		**- 0.134 (0.008) *** **
Socioeconomic status				
Education: secondary or higher (vs. lower)	- 0.023 (0.010) *	0.071 (0.014) ***	< 0.001	0.094 (0.017) ***
Household wealth quintile group: 1st (ref.)				
2nd	- 0.011 (0.009)	0.007 (0.019)	0.766	0.018 (0.021)
3rd	- 0.014 (0.010)	0.022 (0.020)	0.119	0.035 (0.023)
4th	- 0.055 (0.011) ***	0.009 (0.022)	0.011	0.064 (0.025) **
5th (highest)	- 0.051 (0.012) ***	0.010 (0.021)	0.002	0.061 (0.024) *
Parent-child transfers				
Financial transfers to any child (vs.no)	0.034 (0.009) ***	0.029 (0.011) *	0.375	- 0.006 (0.014)
Financial transfers from any child (vs.no)	- 0.004 (0.006)	- 0.014 (0.026)	0.943	- 0.010 (0.027)
Grandchild care provision (vs. no)	- 0.087 (0.016) ***	- 0.009 (0.012)	0.001	0.079 (0.020) ***
Help or care from any child (vs.no)	- 0.051 (0.017) **	- 0.000 (0.019)	0.030	0.051 (0.026) ~
Coresidence with any child (vs.no)	- 0.014 (0.008) ~	- 0.009 (0.013)	0.614	0.005 (0.015)
Number of subjects	3,421	475		3,896
Number of observations	14,910	2,230		17,140

***** p < 0.001; ** p < 0.01; * p < 0.05; ~ p < 0.10**

Additional controls: Birth cohort; age; marital status; household in rural area; self-rated health; number of functional limitations; depressive status; number of children; age of oldest / youngest child; partner's labour force status; partner's number of functional limitations; presence of grandchildren; respondent's mother still alive; respondent's father still alive.

Table 4.3: Estimated marginal effects for the probability of working (fully-adjusted, weighted random effects logistic regressions), Korean and Italian fathers. Robust standard errors in parentheses.

Paid work	**Korean fathers 50+**	**Italian fathers 50+**	**Tests for differences in coefficients**	
	Average marginal probabilities	Average marginal probabilities	p-value from test of equality of coefficients (separate models)	Contrast Italy vs. Korea marginal probabilities (fully interacted model)
Average predicted probability	**0.631 (0.006) *** **	**0.238 (0.014) *** **		**- 0.393 (0.016) *** **
Socioeconomic status				
Education: secondary or higher (vs. lower)	0.004 (0.017)	0.016 (0.029)	0.504	0.012 (0.034)
Household wealth quintile group: 1st (ref.)				
2nd	0.004 (0.012)	- 0.001 (0.029)	0.811	- 0.004 (0.032)
3rd	0.014 (0.014)	- 0.043 (0.026) ~	0.301	- 0.057 (0.029) ~
4th	0.016 (0.015)	- 0.074 (0.031) *	0.006	- 0.092 (0.034) **
5th (highest)	- 0.025 (0.016)	0.017 (0.033)	0.129	0.041 (0.037)
Parent-child transfers				
Financial transfers to any child (vs.no)	0.053 (0.012) ***	0.030 (0.015) *	0.168	- 0.021 (0.019)
Financial transfers from any child (vs.no)	- 0.001 (0.009)	- 0.016 (0.046)	0.736	- 0.015 (0.047)
Grandchild care provision (vs. no)	- 0.019 (0.022)	- 0.031 (0.019) ~	0.734	- 0.014 (0.029)
Help or care from any child (vs.no)	- 0.054 (0.037)	- 0.030 (0.059)	0.912	0.020 (0.069)
Coresidence with any child (vs.no)	- 0.001 (0.012)	- 0.002 (0.025)	0.977	- 0.002 (0.027)
Number of subjects	2,564	356		2,920
Number of observations	11,574	1,696		13,270

***** p < 0.001; ** p < 0.01; * p < 0.05; ~ p < 0.10**

Additional controls: Birth cohort; age; marital status; household in rural area; self-rated health; number of functional limitations; depressive status; number of children; age of oldest / youngest child; partner's labour force status; partner's number of functional limitations; presence of grandchildren; respondent's mother still alive; respondent's father still alive.

4.4.2. Paid work

The results for paid work participation (Tables 4.2 and 4.3) confirm the expectation that socioeconomic status is associated with economic activity in opposite directions between Italy and Korea, but only for mothers. Having secondary or higher education as opposed to elementary or no education is associated with a 7.1% higher the probability of working for Italian women, whose average predicted probability of working is around 9%. By contrast, Korean women have an average probability of working for pay of around 23%, but those with higher education are 2.3% less likely to work.

In addition, for Korean mothers, there is a negative gradient in the probability of working by household wealth, with women in higher wealth quintile groups less likely to work for pay than women in lower quintile groups. The differences between Italian and Korean mothers in the average marginal effects of being more highly educated and in the top two (as opposed to bottom) wealth quintile groups are statistically significant. Similar associations do not hold among men once the differential rates of attrition of those in different socioeconomic groups are taken into account by weighting the estimates.

Even after controlling for socioeconomic status and other individual and family characteristics, respondents who have helped their children financially over the year before the interview are 3–5% more likely work for pay in that year. This suggests that, in familistic societies such as Korea and Italy, workforce participation in mid- to later life can be better understood with reference to intergenerational transfers of support. Interestingly, there are no significant differences in these coefficients between the two countries.

While receiving financial support from adult children is not associated with paid work, Korean mothers who receive informal practical help from their children are 5.1% less likely to work, and those living with their children are 1.4% less likely to work. This is in line with the expectation that, in addition to low socioeconomic status, lack of support from children is correlated with participation in economic activity in Korea. Similar results do not hold for Korean fathers or Italian parents. As expected, grandchild care has a negative association with paid work participation, however this is only significant for Korean mothers and Italian fathers.

The coefficients on all the other independent variables (Table 4.6) are in sensible directions in line with the literature discussed above. There are notable differences between Italian and Korean respondents in paid work participation in rural areas, with rural Korean dwellers more likely to work for pay, but no association between rural dwelling and paid work participation for Italians. Moreover, while Koreans are significantly more likely to work for pay when their spouse does not work, Italians are less likely work if their spouse is retired or permanently out of the labour force. This may be related to the fact that, among older Korean couples, at least one partner may need to work for pay in order to guarantee basic income security. By contrast, in Italy, spouses may coordinate their exit from the labour force.

The intraclass correlation coefficients (ρ) reported in table 4.6 are approximately between 0.7 and 0.8, indicating that most of the variation in paid work is attributable to differences between individuals, while there is little within-individual variation in paid work participation.

Table 4.4: Estimated marginal effects for the probability of informal caregiving (fully-adjusted, weighted random effects logistic regressions), Korean and Italian mothers. Robust standard errors in parentheses.

Informal caregiving	**Korean mothers 50+**	**Italian mothers 50+**	**Tests for differences in coefficients**	
	Average marginal probabilities	Average marginal probabilities	p-value from test of equality of coefficients (separate models)	Contrast Italy vs. Korea marginal probabilities (fully interacted model)
Average predicted probability	**0.023 (0.002)** ***	**0.275 (0.013)** ***		**0.252 (0.013) *** **
Socioeconomic status				
Education: secondary or higher (vs. lower)	0.002 (0.004)	0.052 (0.030) ~	0.605	0.050 (0.030) ~
Household wealth quintile group: 1st (ref.)				
2nd	- 0.003 (0.004)	- 0.040 (0.034)	0.791	- 0.036 (0.035)
3rd	- 0.004 (0.004)	- 0.031 (0.036)	0.737	- 0.026 (0.036)
4th	0.001 (0.005)	- 0.043 (0.039)	0.290	- 0.044 (0.039)
5th (highest)	- 0.006 (0.005)	0.012 (0.039)	0.131	0.018 (0.040)
Parent-child transfers				
Financial transfers to any child (vs.no)	- 0.005 (0.004)	0.058 (0.024) *	0.034	0.062 (0.024) **
Financial transfers from any child (vs.no)	- 0.003 (0.003)	0.061 (0.052)	0.098	0.064 (0.052)
Grandchild care provision (vs. no)	0.008 (0.009)	0.043 (0.031)	0.978	0.036 (0.032)
Help or care from any child (vs.no)	0.016 (0.011)	0.017 (0.039)	0.281	0.001 (0.041)
Coresidence with any child (vs.no)	0.007 (0.003) *	0.029 (0.029)	0.660	0.022 (0.029)
Number of subjects	3,421	475		3,896
Number of observations	14,910	2,230		17,140

***** p < 0.001; ** p < 0.01; * p < 0.05; ~ p < 0.10**

Additional controls: Birth cohort; age; marital status; labour force status; household in rural area; self-rated health; number of functional limitations; depressive status; number of children; age of oldest / youngest child; partner's labour force status; partner's number of functional limitations; presence of grandchildren; respondent's mother still alive; respondent's father still alive.

Table 4.5: Estimated marginal effects for the probability of informal caregiving (fully-adjusted, weighted random effects logistic regressions), Korean and Italian fathers. Robust standard errors in parentheses.

Informal caregiving	**Korean fathers 50+**	**Italian fathers 50+**	**Tests for differences in coefficients**	
	Average marginal probabilities	Average marginal probabilities	p-value from test of equality of coefficients (separate models)	Contrast Italy vs. Korea marginal probabilities (fully interacted model)
Average predicted probability	**0.019 (0.002)** ***	**0.221 (0.014)** ***		**0.203 (0.014) *** **
Socioeconomic status				
Education: secondary or higher (vs. lower)	0.007 (0.003) *	0.017 (0.029)	0.298	0.010 (0.029)
Household wealth quintile group: 1st (ref.)				
2nd	- 0.001 (0.006)	0.009 (0.036)	0.947	0.008 (0.036)
3rd	- 0.000 (0.005)	0.002 (0.036)	0.912	0.000 (0.036)
4th	- 0.006 (0.005)	- 0.028 (0.036)	0.665	- 0.024 (0.036)
5th (highest)	- 0.004 (0.006)	- 0.012 (0.038)	0.690	- 0.011 (0.039)
Parent-child transfers				
Financial transfers to any child (vs.no)	- 0.003 (0.004)	0.080 (0.028) **	0.039	0.082 (0.028) **
Financial transfers from any child (vs.no)	0.002 (0.004)	0.002 (0.064)	0.972	0.000 (0.063)
Grandchild care provision (vs. no)	- 0.003 (0.007)	0.028 (0.032)	0.448	0.030 (0.032)
Help or care from any child (vs.no)	- 0.010 (0.009)	0.190 (0.084) *	0.078	0.199 (0.084) *
Coresidence with any child (vs.no)	0.001 (0.003)	0.010 (0.029)	0.681	0.009 (0.029)
Number of subjects	2,564	356		2,920
Number of observations	11,574	1,696		13,270

***** p < 0.001; ** p < 0.01; * p < 0.05; ~ p < 0.10**

Additional controls: Birth cohort; age; marital status; labour force status; household in rural area; self-rated health; number of functional limitations; depressive status; number of children; age of oldest / youngest child; partner's labour force status; partner's number of functional limitations; presence of grandchildren; respondent's mother still alive; respondent's father still alive.

4.4.3. Informal care and help

Looking at the factors associated with informal care and help to others (Tables 4.4 and 4.5), I find little evidence of socioeconomic gradients in the same direction as those found for paid work. Contrary to my expectations, Korean fathers, whose average predicted probability of caregiving is 1.9%, are 0.7% more likely to give informal care or help to others if they have secondary or higher schooling. Italian mothers who are more highly educated also appear to be more likely to provide care by 5% (p-value < 0.10), and their average probability of caregiving is 27.5%. None of the coefficients on education and household wealth are significantly different between Italian and Korean parents.

As expected, I find some differences between Italy and Korea in the way financial support to adult children correlates with informal care and help provision. Among Italian parents, giving money to a child is linked with a higher probability of providing informal care and help by 5.8% for mothers, and by 8% for fathers. These coefficients are significantly different from Korean parents, for whom I find no association between financial support to children and caregiving. Korean mothers are marginally more likely to provide care and help to others if they live with a child (by 0.7%, relative to an overall 2.3% probability of caregiving), which is in line with the expectation that filial support could partly subsidise mothers' caregiving role in Korea. Somewhat surprisingly, Italian fathers are also more likely to give informal care and help to others if they receive informal practical support from their children, and the average marginal effect is very large (19% increase relative to an overall probability of caregiving of 22.1%).

As shown in Table 4.7, the results suggest that informal caregiving is most consistently linked with family members' needs. In line with the literature discussed above, all respondents are more likely to provide informal care or help if their partner suffers from functional health limitations and if their mother is still alive. Among Korean women and Italian men, being widowed as opposed to married is linked with lower probabilities of caregiving, reflecting the fact that sick or disabled spouses are often the primary recipients of care. Moreover, for the same groups, the presence of depressive symptoms is associated with a higher chance of providing care and help to others.

Relative to the corresponding estimates for paid work participation (Table 4.6), the estimated intraclass correlation coefficients for informal caregiving (Table 4.7) are lower, indicating greater variation in participation in this activity within older individuals over time. In particular, for older Italians, only around one fourth of the total variation in informal caregiving is attributable to differences across subjects (25% for mothers and 28% for fathers), while for older Koreans just over half of the variation is attributable to subjects (51% for mothers and 54% for fathers). Compared with paid work participation, participation in informal care and help for others is generally less stable over time.

Table 4.6: Coefficients from fully-adjusted, weighted random-effects logistic regressions for the probability of paid work

Paid work	**Mothers 50+**			**Fathers 50+**		
	Korean mothers Coefficient (Robust st. err.)	**Italian mothers** Coefficient (Robust st. err.)	**Diff. in coefficients** p-value from test of equality of coefficients	**Korean fathers** Coefficient (Robust st. err.)	**Italian fathers** Coefficient (Robust st. err.)	**Diff. in coefficients** p-value from test of equality of coefficients
Individual characteristics						
Birth cohort: (ref.: 1930s or earlier)						
1940s	1.346 (0.249) ***	- 0.450 (1.350)	0.863	0.528 (0.231) *	- 0.733 (0.729)	0.564
1950s	3.590 (0.386) ***	- 0.060 (1.509)	0.461	1.657 (0.346) ***	1.086 (0.922)	0.891
Age	- 0.004 (0.024)	- 0.508 (0.108) ***	< 0.001	- 0.205 (0.024) ***	- 0.355 (0.075) ***	0.316
Marital status: (ref.: married)						
Widowed	1.694 (0.373) ***	- 0.765 (1.225)	0.005	0.496 (0.412)	- 1.123 (1.755)	0.605
Other	1.800 (0.550) ***	3.390 (1.038) ***	0.196	0.670 (0.609)	- 1.922 (1.257)	0.127
Education: secondary or higher	- 0.380 (0.165) **	2.575 (0.631) ***	< 0.001	0.044 (0.190)	0.301 (0.566)	0.504
Household wealth group: (ref.: 1st)						
2nd	- 0.174 (0.138)	0.278 (0.771)	0.766	0.042 (0.143)	- 0.014 (0.540)	0.811
3rd	- 0.207 (0.154)	0.824 (0.796)	0.119	0.158 (0.162)	- 0.819 (0.497) ~	0.301
4th	- 0.911 (0.176) ***	0.347 (0.885)	0.011	0.190 (0.168)	- 1.483 (0.629) *	0.006
5th (highest)	- 0.826 (0.192) ***	0.410 (0.842)	0.002	- 0.285 (0.178)	0.315 (0.587)	0.129
Household in rural area (vs. urban)	0.589 (0.159) ***	- 0.571 (0.395)	0.029	0.902 (0.185) ***	0.058 (0.337)	0.001
Health status						
Good or better self-rated health	0.444 (0.105) ***	0.240 (0.416)	0.532	0.453 (0.097) ***	0.286 (0.429)	0.124
Number of limitations with ADLs	- 0.994 (0.493) *	- 0.165 (0.529)	0.077	- 0.645 (0.104) ***	- 0.145 (0.446)	0.302
Depressive status	- 0.171 (0.098) ~	0.184 (0.396)	0.292	- 0.445 (0.096) ***	- 0.449 (0.442)	0.999

***** p < 0.001; ** p < 0.01; * p < 0.05; ~ p < 0.10**

Table 4.6 (continued): Coefficients from fully-adjusted, weighted random-effects logistic regressions for the probability of paid work

Paid work	**Mothers 50+**			**Fathers 50+**		
	Korean mothers Coefficient (Robust st. err.)	**Italian mothers** Coefficient (Robust st. err.)	**Diff. in coefficients** p-value from test of equality of coefficients	**Korean fathers** Coefficient (Robust st. err.)	**Italian fathers** Coefficient (Robust st. err.)	**Diff. in coefficients** p-value from test of equality of coefficients
Children's characteristics						
Number of children: 3 or more	- 0.144 (0.187)	- 0.454 (0.793)	0.440	- 0.718 (0.188) ***	1.125 (0.562) *	0.054
Age of the eldest child	- 0.044 (0.023) ~	0.091 (0.071)	0.032	0.108 (0.026) ***	- 0.059 (0.052)	0.017
Age of the youngest child	- 0.028 (0.021)	0.043 (0.071)	0.822	- 0.095 (0.023) ***	- 0.063 (0.044)	0.949
Parent-child transfers						
Financial transfers to any child	0.543 (0.133) ***	1.025 (0.355) **	0.375	0.603 (0.136) ***	0.570 (0.286) *	0.168
Financial transfers from any child	- 0.062 (0.105)	- 0.549 (1.118)	0.943	- 0.014 (0.109)	- 0.312 (0.916)	0.736
Grandchild care provision	- 1.706 (0.358) ***	- 0.343 (0.462)	0.001	- 0.213 (0.249)	- 0.618 (0.392)	0.734
Help or care from any child	- 0.926 (0.339) **	- 0.007 (0.702)	0.030	- 0.610 (0.412)	- 0.591 (1.209)	0.912
Coresidence with any child	- 0.227 (0.129) ~	- 0.339 (0.512)	0.614	- 0.011 (0.134)	- 0.040 (0.474)	0.978
Partner's characteristics						
Labour force st. (ref.: no partner)						
Working	- 0.211 (0.317)	0.491 (0.832)	0.437	0.414 (0.322)	- 0.427 (0.777)	0.902
Retired	0.622 (0.350) ~	- 0.646 (0.916)	0.066	0.898 (0.313) **	- 1.987 (0.662) **	< 0.001
Unemployed	0.841 (0.434) ~	2.293 (1.024) *	0.772	0.986 (0.426) *	- 1.049 (1.088)	0.028
Permanently out of the LF	1.094 (0.359) **	- 1.378 (2.284)	0.195	1.206 (0.308) ***	- 1.930 (0.544) ***	< 0.001
Number of ADL limitations	- 0.077 (0.072)	- 0.006 (0.281)	0.785	- 0.147 (0.071) *	0.671 (0.303) *	0.041

***** p < 0.001; ** p < 0.01; * p < 0.05; ~ p < 0.10**

Table 4.6 (continued): Coefficients from fully-adjusted, weighted random-effects logistic regressions for the probability of paid work

Paid work	**Mothers 50+**			**Fathers 50+**		
	Korean mothers Coefficient (Robust st. err.)	**Italian mothers** Coefficient (Robust st. err.)	**Diff. in coefficients** p-value from test of equality of coefficients	**Korean fathers** Coefficient (Robust st. err.)	**Italian fathers** Coefficient (Robust st. err.)	**Diff. in coefficients** p-value from test of equality of coefficients
Family composition						
Presence of grandchildren	- 0.140 (0.202)	- 0.203 (0.499)	0.200	- 0.135 (0.183)	0.629 (0.537)	0.058
Respondent's mother still alive	0.148 (0.168)	- 1.131 (0.651) ~	0.565	0.119 (0.161)	0.029 (0.483)	0.167
Respondent's father still alive	0.092 (0.287)	- 1.383 (0.735) ~	0.189	- 0.183 (0.275)	0.466 (0.911)	0.046
Subject-level variance	3.542 (0.002)	3.680 (0.003)		2.749 (0.002)	3.096 (0.002)	
Intraclass correlation (ρ)	0.792	0.805		0.697	0.744	
Number of subjects	3,421	475		2,564	356	
Number of observations	14,910	2,230		11,574	1,696	

***** p < 0.001; ** p < 0.01; * p < 0.05; ~ p < 0.10**

Table 4.7: Coefficients from fully-adjusted, weighted random-effects logistic regressions for the probability of informal care

Informal caregiving	**Mothers 50+**			**Fathers 50+**		
	Korean mothers Coefficient (Robust st. err.)	**Italian mothers** Coefficient (Robust st. err.)	**Diff. in coefficients** p-value from test of equality of coefficients	**Korean fathers** Coefficient (Robust st. err.)	**Italian fathers** Coefficient (Robust st. err.)	**Diff. in coefficients** p-value from test of equality of coefficients
Individual characteristics						
Birth cohort: (ref.: 1930s or earlier)						
1940s	- 0.850 (0.325) **	- 0.458 (0.265) ~	0.256	- 0.197 (0.487)	- 0.530 (0.265) *	0.329
1950s	- 1.168 (0.444) **	- 1.080 (0.394) **	0.579	- 0.834 (0.694)	- 0.793 (0.421) ~	0.908
Age	- 0.040 (0.031)	- 0.074 (0.026) **	0.460	- 0.019 (0.044)	- 0.067 (0.029) *	0.223
Marital status: (ref.: married)						
Widowed	- 1.170 (0.522) *	0.456 (0.337)	0.050	0.296 (1.071)	- 1.618 (0.731) *	0.042
Other	- 0.835 (0.818)	0.233 (0.470)	0.336	0.502 (0.910)	- 0.635 (0.650)	0.166
Education: secondary or higher	0.108 (0.240)	0.346 (0.191) ~	0.605	0.598 (0.303) *	0.125 (0.219)	0.298
Household wealth group: (ref.: 1st)						
2nd	- 0.173 (0.251)	- 0.269 (0.228)	0.791	- 0.075 (0.407)	0.064 (0.261)	0.947
3rd	- 0.254 (0.261)	- 0.207 (0.237)	0.737	- 0.008 (0.353)	0.012 (0.262)	0.912
4th	0.064 (0.269)	- 0.289 (0.262)	0.290	- 0.515 (0.391)	- 0.217 (0.273)	0.665
5th (highest)	- 0.354 (0.293)	0.074 (0.252)	0.131	- 0.267 (0.400)	- 0.093 (0.286)	0.690
Household in rural area (vs. urban)	- 0.158 (0.219)	0.104 (0.150)	0.285	0.021 (0.310)	- 0.204 (0.191)	0.339
Labour force status (ref.: working)						
Retired	- 0.107 (0.256)	0.330 (0.329)	0.184	0.183 (0.272)	0.330 (0.266)	0.339
Unemployed	0.158 (0.575)	0.238 (0.949)	0.640	0.850 (0.476) ~	- 0.568 (0.555)	0.132
Permanently out of the LF	- 0.327 (0.241)	0.063 (0.347)	0.320	0.488 (0.357)	1.328 (0.488) **	0.054

***** p < 0.001; ** p < 0.01; * p < 0.05; ~ p < 0.10**

Table 4.7 (continued): Coefficients from fully-adjusted, weighted random-effects logistic regressions for the probability of informal care

Informal caregiving	**Mothers 50+**			**Fathers 50+**		
	Korean mothers Coefficient (Robust st. err.)	**Italian mothers** Coefficient (Robust st. err.)	**Diff. in coefficients** p-value from test of equality of coefficients	**Korean fathers** Coefficient (Robust st. err.)	**Italian fathers** Coefficient (Robust st. err.)	**Diff. in coefficients** p-value from test of equality of coefficients
Health status						
Good or better self-rated health	- 0.294 (0.176) ~	0.151 (0.166)	0.091	- 0.324 (0.257)	0.554 (0.174) **	0.011
Number of limitations with ADLs	- 0.245 (0.139) ~	0.156 (0.112)	0.036	- 0.006 (0.145)	0.239 (0.131) ~	0.257
Depressive status	0.732 (0.176) ***	0.085 (0.144)	0.003	0.140 (0.207)	0.434 (0.214) *	0.363
Children's characteristics						
Number of children: 3 or more	- 0.101 (0.271)	- 0.034 (0.223)	0.695	0.800 (0.405) *	- 0.216 (0.248)	0.029
Age of the eldest child	- 0.012 (0.031)	0.010 (0.024)	0.552	- 0.013 (0.045)	0.002 (0.029)	0.434
Age of the youngest child	- 0.004 (0.029)	- 0.022 (0.021)	0.690	0.031 (0.051)	- 0.000 (0.022)	0.521
Parent-child transfers						
Financial transfers to any child	- 0.308 (0.260)	0.375 (0.151) *	0.034	- 0.207 (0.287)	0.563 (0.190) **	0.039
Financial transfers from any child	- 0.163 (0.185)	0.393 (0.316)	0.098	0.130 (0.272)	0.016 (0.473)	0.972
Grandchild care provision	0.405 (0.417)	0.282 (0.198)	0.978	- 0.216 (0.556)	0.202 (0.224)	0.448
Help or care from any child	0.759 (0.400) ~	0.112 (0.258)	0.281	- 1.032 (1.334)	1.196 (0.476) *	0.078
Coresidence with any child	0.395 (0.201) *	0.194 (0.193)	0.660	0.110 (0.240)	0.074 (0.215)	0.681

***** p < 0.001; ** p < 0.01; * p < 0.05; ~ p < 0.10**

Table 4.7 (continued): Coefficients from fully-adjusted, weighted random-effects logistic regressions for the probability of informal care

Informal caregiving	**Mothers 50+**			**Fathers 50+**		
	Korean mothers Coefficient (Robust st. err.)	**Italian mothers** Coefficient (Robust st. err.)	**Diff. in coefficients** p-value from test of equality of coefficients	**Korean fathers** Coefficient (Robust st. err.)	**Italian fathers** Coefficient (Robust st. err.)	**Diff. in coefficients** p-value from test of equality of coefficients
Partner's characteristics						
Labour force st. (ref.: no partner)						
Working	- 1.339 (0.506) **	- 0.488 (0.355)	0.259	- 0.304 (0.647)	0.381 (0.446)	0.559
Retired	- 0.398 (0.480)	0.076 (0.243)	0.656	0.250 (0.707)	0.011 (0.301)	0.605
Unemployed	- 0.411 (0.636)	- 0.369 (0.480)	0.904	- 0.536 (1.004)	- 0.004 (0.959)	0.944
Permanently out of the LF	- 0.697 (0.528)	- 0.109 (0.473)	0.751	- 0.015 (0.690)	- 0.013 (0.285)	0.908
Number of ADL limitations	0.707 (0.053) ***	0.720 (0.126) ***	0.286	0.929 (0.096) ***	0.389 (0.126) **	< 0.001
Family composition						
Presence of grandchildren	0.129 (0.323)	- 0.356 (0.240)	0.290	0.262 (0.392)	- 0.171 (0.246)	0.208
Respondent's mother still alive	0.814 (0.269) **	0.771 (0.214) ***	0.885	2.822 (0.326) ***	0.229 (0.271)	< 0.001
Respondent's father still alive	- 0.233 (0.462)	0.288 (0.291)	0.431	0.438 (0.452)	0.203 (0.447)	0.614
Individual-level variance	1.840 (0.003)	1.054 (0.001)		1.977 (0.004)	1.117 (0.001)	
Intraclass correlation (ρ)	0.507	0.253		0.543	0.275	
Number of subjects	3,421	475		2,564	356	
Number of observations	14,910	2,227		11,574	1,696	

***** p < 0.001; ** p < 0.01; * p < 0.05; ~ p < 0.10**

4.5. Discussion

The main findings from this paper can be summarised by the presence of socioeconomic gradients in paid work in opposite directions between Italian and Korean mothers aged 50 and above, and by some similarities and differences in the associations between intergenerational support and participation in work and care between the two contexts.

In line with expectations derived from previous research on single-country studies (Giang et al., 2018; S. Kim, 2018), the results indicate that socioeconomic gradients in paid work participation are positive for Italians and negative for Koreans. However, these differences are only relevant for mothers. This may be related to the fact that, across their life course, women in both countries have had more irregular work histories, characterised by career breaks and prolonged inactivity (Crespi, Zanier, Santoni, Fermani, & D'Ambrosi, 2015; Y. Yang & Chung, 2014). Thus, their participation in the labour market is likely to be more strongly tied to their level of financial security in later life.

The existence of a negative (women) or null (men) association between education and paid work is consistent with previous findings on Korea (J. H. Kim, 2018; O. E. K. Lee & Lee, 2014). On the other hand, the presence of a negative wealth gradient in paid work among Korean mothers is in contrast with the results obtained by J.H. Kim (2018), who finds a positive association between household economic conditions and paid work after age 65 using Korean time use data from 2014. However, it should be noted that the author measures economic conditions using household income, which is more tightly connected to paid work participation than wealth.

The differences in the association between socioeconomic status and work between Italian and Korean mothers corroborate the claim that, in a context where income security in later life is not guaranteed by the state (Korea), those with greater socioeconomic resources are more likely to be able to leave the labour force. In Italy, where in principle everyone can “afford” to retire, working in mid- to later-life may reflect stronger labour market attachment among women with better jobs.

The implications of this result for policies aimed at curbing the costs of an ageing population differ between Italy and Korea. In Italy, disadvantaged individuals should be

supported with their participation in the labour force through measures aimed at improving job quality and skills such as better regulations on working hours and conditions, and job training. In Korea, reforms dealing with population ageing should not halt the development of pensions and old-age benefits. Before the objective of generating greater incentives to longer working lives, economic security at older ages needs to be guaranteed for those with irregular work histories or with no previous engagement in the labour market.

The results from this study also indicate that transfers of financial and practical support with adult children are correlated with participation in work and informal caregiving after 50. They suggest that, in familistic contexts like Italy and Korea, intergenerational support should be taken into account when investigating the predictors and correlates of productive ageing.

Different mechanisms may explain the positive association between giving money to children and working, which holds for both Italian and Korean parents. On the one hand, older adults may be more likely to help a child financially if they receive income from employment; on the other, parents' employment may partly be the result of a child's need for financial support. While disentangling the direction of causality is beyond the scope of this study, it is important to emphasise that these associations hold after controlling for parental education and household wealth. This indicates evidence of either a direct link between intergenerational transfers and work or, more broadly, of a link between the propensity to engage in intergenerational transfers and the propensity to participate in the workforce.

The negative association between receiving practical help from children and paid work participation among Korean mothers is in line with the results by Giang et al. (2018) for Vietnam and by J.H. Kim (2018) for Korea. This result highlights that, in addition to low socioeconomic status, lack of family support may be associated with work participation among Korean women over 50.

In Italy, parents who help their children financially are more likely to provide help and care for others. This is in line with the expectation that cash subsidies to caregivers may facilitate their engagement in other forms of help. Alternatively, it may reflect the fact

that individuals who are more prone to helping their children financially are also more prone to helping others with tasks like personal care or household chores.

I find some evidence that, in Korea, adult children support their mothers' caregiving role by providing multigenerational coresidence. However, contrary to my expectations, financial and practical support from children are not linked with help and care provision in the country. By contrast, practical assistance from adult children is strongly associated with informal care for Italian fathers only, a result that may require further investigation.

This study suffers from limitations that need to be acknowledged. First of all, as noted above, the associations reported here should not be interpreted as causal, since random-effects models cannot identify the temporal order of changes occurring between waves. Moreover, exchanges of financial and practical support with adult children are likely to be endogenous to paid work and informal care participation, and treating them as explanatory variables in the regression models conceptually discounts the fact that they may be consequences rather than predictors of participation. Further research is thus necessary to study interactions and mechanisms in the relationships among socioeconomic status, intergenerational transfers and productive activities.

A second limitation derives from the fact that, in operationalising older adults' provision of informal care, I am unable to distinguish between intensive personal care and non-intensive help, such as with household chores or paperwork. In fact, in SHARE waves 4 and 5, care and help given to individuals living outside the respondent's household cannot be separated since they are asked in the same question. Personal care and help may have different socioeconomic predictors, which may explain why I do not detect education or wealth gradients in informal care provision in either of the two contexts. Moreover, given that in Italy cash-for-care transfers only apply to caregivers of individuals who are completely non self-sufficient, the informal care variable used here also includes individuals who do not receive this allowance.

Thirdly, the focus of this study is on socioeconomic status and intergenerational transfers of support as correlates of paid work and informal caregiving, and, for simplicity, I consider the two activities as separate aspects of productive ageing. However, conducting separate analyses of paid work and informal care overlooks the fact that the two activities are not independent of each other, as the time spent in informal care competes with that

available for employment, and vice-versa (Bauer & Sousa-Poza, 2015). Studies jointly modelling paid work and informal care may be able to better capture the variation in older people's participation in both roles.

All the reported estimates are weighted to adjust for longitudinal drop-out, which could potentially bias the results. However, this implies that the analyses are restricted to individuals who are observed at all waves of each survey, considerably reducing the size of the analytical samples. While this is necessary to restore representativeness of the results with respect to the populations of interest, the use of longitudinal survey weights substantially increases uncertainty in the estimates, especially for the Italian samples of mothers and fathers.

Finally, since the comparison is only restricted to two countries, I cannot test for the potential influence of specific policy arrangements on the factors associated with paid work and informal caregiving after 50, as it may be possible in a study of many countries. However, formally testing for differences in the associations using a harmonised set of variables enables me to generate hypotheses that may subsequently be tested using large cross-country datasets.

To conclude, this study adds to the literature on the correlates of productive ageing by directly comparing them between two contexts, one Southern European and one East Asian, which have familistic welfare orientations but very different levels of societal transfers to older adults. This is also among the first studies to explicitly incorporate intergenerational transfers among the predictors of productive roles (Giang et al., 2018) and, as I have argued, this can be particularly insightful for familistic societies.

The productive ageing framework was originally developed with reference to the US (Bass et al., 1993), and empirical research on the topic has mostly focussed on Western societies (Moody, 2001) that have relatively well developed measures for social protection in later life. In turn, productive participation is often depicted using positive connotations, as an accomplishment that all older adults should be encouraged and enabled to achieve (Moulaert & Biggs, 2013). The most important implication of this study for cross-national research on productive ageing is that positive connotations of the concept are not universally valid. In societies where basic income security and access to services are not guaranteed to all older adults, productive participation is likely to be

associated with having greater needs rather than greater opportunities. Measures aimed at enhancing the productive capacity of older individuals should first aim to address these needs.

5. Intensive grandchild care and grandparents' labour supply in Europe

Abstract

Recent studies have shown that having grandchildren reduces participation in the labour market. However, it is unclear whether there is a direct negative association between intensive grandchild care and grandparents' employment. Moreover, while we know that national childcare policies are related to the prevalence and frequency of grandchild care provision, we do not know how the presence and magnitude of the association between grandchild care and employment vary across countries characterised by different childcare policy regimes. Using data from the Survey of Health, Ageing and Retirement in Europe, this paper investigates the association between daily grandchild care provision and two employment outcomes for grandmothers and grandfathers aged 50–69: the probability of being employed and, among those who are, the average number of weekly working hours. Estimates from single-equation regressions are compared to those obtained from recursive bivariate models in order to assess the extent to which the association between daily grandchild care and employment is attributable to the selection of grandparents with different unobserved traits into work and family care. Results are compared across four country groups characterised by different childcare policy orientations: optional de-familisation, service de-familisation, supported familism and familism by default. The findings suggest that, on average, across European countries the negative association between daily grandchild care and the probability of employment is mostly attributable to selection. However, employed grandparents work on average eight hours less per week if providing daily childcare. Differences across country groups show that grandparents living in countries with familistic approaches to childcare provision are the most likely to experience conflict between intensive grandchild care and employment. Across Europe, flexible working arrangements and childcare services may help retain grandparents in the labour force.

5.1. Introduction

European grandparents are important providers of informal care to their grandchildren. In the 2015 round of the Survey of Health, Ageing and Retirement in Europe (SHARE) (Börsch-Supan et al., 2013), nearly half (45%) of grandparents reported looking after grandchildren, and nearly one fifth (18.5%) of those providing care reported doing so "almost daily". As Glaser and Hank (2018) point out, across Europe cuts to public services to families since the 2009 financial crisis have led to the implicit expectation that grandparents will step in to fill the gap in childcare. At the same time, over the last decade, most European countries have implemented reforms to delay retirement in order to minimise the economic and budgetary costs associated with population ageing (European Commission, 2018).

Intensive grandchild care, defined here as looking after young grandchildren "almost daily", represents a substantial time commitment and it may be in conflict with grandparents' employment. The association between intensive grandchild care and work is important to understand because, if the two roles are hard to combine, cuts to childcare services and subsidies partly contradict the policy objective of extending working lives.

A growing body of research investigates the effect of having grandchildren on individuals' labour supply (Asquith, 2018; Backhaus & Barslund, 2019; Rupert & Zanella, 2018). Evidence from Europe suggests that the presence or birth of a grandchild is linked with lower probabilities of working and fewer working hours (Backhaus & Barslund, 2019; Frimmel, Halla, Schmidpeter, & Winter-Ebmer, 2017). However, we do not know whether grandchild care commitments are in conflict with paid work, or becoming a grandparent reduces employment through other channels, for instance by giving individuals new social and family roles, or by changing their preferences towards work and leisure. At the same time, estimating the association between grandchild care and employment is hindered by the potential presence of selection (Lakomý & Kreidl, 2015), as some grandparents may be more likely to work and less likely to provide care than others because of unobservable preferences and characteristics correlated with participation in both roles.

Cross-national comparative research suggests that, in Europe, rates of intensive grandparental care vary widely across countries (Igel & Szydlik, 2011). In particular

welfare familism, defined as the degree to which social policies assume families to be responsible for the care of their dependent members (Leitner, 2003), is strongly related to the provision of intensive grandchild care at the national level (Bordone, Arpino, & Aassve, 2017; Igel & Szydlik, 2011). Still, it is unclear whether the association between intensive grandchild care and grandparents' employment varies across countries characterised by different types of familism in childcare policies.

In this article I use SHARE data for 20 European countries to study the association between daily grandchild care provision and employment among grandmothers and grandfathers aged 50–69. Unlike most previous research on the topic I consider daily grandchild care, rather than the presence of grandchildren, as the main explanatory variable. I restrict my attention to such high frequency of care in order to isolate grandchild care commitments that are potentially in conflict with employment.

I use a simultaneous equations approach to account for the potential selection of grandparents with different unobserved traits into work and grandchild care provision, and I investigate how daily grandchild care is associated with grandparents' employment at the extensive margin (i.e. the probability of being employed or self-employed as opposed to retired or a homemaker) and at the intensive margin (i.e. the number of weekly working hours). After conducting pooled analyses across countries, I test for heterogeneity in the association between daily grandchild care and employment across country groups characterised by different types of familism in childcare provision, as measured by the combination of two policy indicators: formal childcare services for children aged 0–2, and paid parental leave.

5.2. Background

5.2.1. Grandparenthood, grandchild care and employment

A growing literature investigates the relationship between grandparenthood and employment. Performing survival analysis on data from the United States (US) Health and Retirement Study (HRS), Lumsdaine and Vermeer (2015) find that, among older women, the birth of the first or of an additional grandchild is linked with an increase in

the probability of retirement by 8.5 percent and 1.4 percent, respectively. Rupert and Zanella (2018) analyse data from the US Panel Study of Income Dynamics (PSID) and, using differences in the timing of becoming a grandparent by gender of the first child to instrument grandparent status, find that becoming a grandmother reduces women's working time by 30 percent, but that grandparenthood has no effect on men's employment. Asquith (2018) exploits variation in US state-by-year access to reproductive technologies to instrument grandparent status, and finds that grandfathers are 5.7 percent more likely to be retired for each additional grandchild, while grandmothers work 120 hours less per year and are 8.4 percent less likely to work in response to each additional grandchild.

Among the European studies, Backhaus and Barslund (2019) apply the same identification strategy as Rupert and Zanella (2018) to pooled SHARE data from nine European countries. They find that being a grandmother reduces women's probability of working by 20 percent, with no effect on men. Single-country analyses of Austria (Frimmel et al., 2017) and England (Zanasi, Sieben, & Uunk, 2019) find that the birth of the first grandchild is linked with an increase in the probability of leaving the labour market among women. Using survival analysis on Swedish register data, Kridahl (2017) shows that grandparents retire earlier than non-grandparents. Studies analysing cross-national comparative data also suggest that, across Europe, being a grandparent is associated with stronger preferences towards early retirement (Hochman & Lewin-Epstein, 2013) and with women's early retirement behaviour (Van Bavel & De Winter, 2013).

Collectively, these findings suggest that becoming a grandparent induces individuals to leave the labour force and/or to work fewer hours. However, it remains unclear whether grandparental care is in conflict with (full-time) employment, or other features of grandparenthood – such as the acquisition of a new social role, or changing preferences towards leisure (Mahne & Motel-Klingebiel, 2012) – may lead grandparents to work less than non-grandparents.

A few studies investigate the association between regular grandchild care provision and employment. Using SHARE, Hank and Buber (2009) analyse the correlates of grandchild care and find that, in Europe, employed grandparents are less likely to provide regular

grandchild care than non-employed grandparents. Using the same dataset to examine the predictors of retirement, De Preter et al. (2013) find that older workers who regularly look after their grandchildren are over twice as likely to retire as those who do not.

The negative association between regular grandchild care and employment may be explained by role conflict (Goode, 1960). Intuitively, both working and looking after grandchildren require time and energy (Lakomý & Kreidl, 2015). Grandparents may be unable to combine the two roles and thus not engage in (or give up) either one or the other. However, associational evidence is difficult to interpret, because grandparents tend to select into employment and regular childcare provision based on unobservable characteristics. In particular, the fact that some individuals are more family-oriented while others are more career-oriented can result in grandparents who provide intensive grandchild care having lower employment rates or working hours, even in the absence of any direct relationship between grandchild care and employment (Lakomý and Kreidl, 2015)

Lakomý and Kreidl (2015) analyse SHARE data to study how different employment statuses are linked with the intensity of grandchild care. They find a positive association between being in part-time – as opposed to full-time – work and higher frequencies of grandchild care for paternal grandmothers. However, the association does not hold when grandparent fixed effects are included, which suggests that it is mostly attributable to selection. The authors conclude that the choice between full-time and part-time work may be influenced by the same unmeasured characteristics that also impact the frequency of grandchild care.

5.2.2. Familism and intensive grandchild care

In the comparative welfare states literature, familism (or familialism) is defined as the extent to which social policies assume families, as opposed to the state or the market, to be primarily responsible for their dependent members (Leitner, 2003; Saraceno, 2016). In countries characterised by familistic approaches to welfare, gender divisions of roles tend to be pronounced, with care responsibilities over children and/or dependent adults implicitly or explicitly assigned to women, and men usually considered responsible for supporting their families financially through paid work (Leitner, 2003; Lewis, 1992).

Public or subsidised formal childcare provision relieves families of care responsibilities, and it is an indicator of "de-familisation" in childcare (Saraceno, 2016). Parental leave schemes, on the other hand, represent a form of "supported familism" (Saraceno, 2016), because they encourage and support childcare within the family. The combination of both extensive childcare services and generous parental leave may be classified as "optional de-familisation", as parents can choose whether to use childcare services, or take care of children themselves. By contrast, the absence of both schemes is instead an indicator of "familism by default" as families, and women in particular, are expected to take care of their children but not supported in this role (Saraceno, 2016).

Comparative research on Europe consistently finds rates of intensive grandchild care provision to be related to national childcare policies. Analysing SHARE data, Igel and Szydlik (2011) show that higher public investments in family services, childcare infrastructure and parental leave are associated with lower rates of intensive grandchild care, but higher rates of low-frequency grandchild care. Di Gessa and colleagues (2016) study cross-country differences in intensive grandchild care and find that grandmothers are more likely to look after their grandchildren at least weekly in countries where the coverage of formal childcare for under-threes is scarce and female employment rates are low. Bordone et al. (2017) show that grandparents are less likely to provide daily grandchild care in countries where formal childcare coverage is extensive and paid parental leave is generous. These findings suggest that de-familisation or supported familism in childcare policies incentivise non-intensive grandparental care, as grandparents may perform complementary tasks to formal or parental childcare. By contrast, in countries characterised by familism by default, grandparents are more likely to take on primary roles as intensive childcare providers (Bordone et al., 2017; Igel & Szydlik, 2011).

Across Europe, childcare services and subsidies and parental leave schemes are well known to affect the extent to which parents, and especially mothers, are able to combine employment with childcare (Lewis, Knijn, Martin, & Ostner, 2008). Publicly provided or subsidised childcare services unequivocally facilitate work-family reconciliation (Lewis, 2006). Parental leave schemes may either facilitate reconciliation or, if long in duration and poorly compensated, push mothers out of the labour force (Leitner, 2003; Lewis,

2006). It is unclear, however, whether and how different types of childcare policies relate to grandparents' propensity to combine intensive grandchild care with employment.

Given previous evidence that varying policy frameworks correspond to different rates of intensive grandchild care provision (Bordone et al., 2017; Igel & Szydlik, 2011), it is interesting to explore whether the presence and magnitude of the association between daily grandchild care and grandparents' employment vary across groups of countries characterised by different types of familism in childcare policies.

5.2.3. Rationale, aims and hypotheses

The aim of this study is to shed light on whether, across Europe, intensive grandparental care is (in)compatible with grandparents' employment. I investigate the association between daily grandchild care provision and employment outcomes among European grandmothers and grandfathers aged 50–69 who have at least one grandchild aged 14 or younger. I select these age thresholds to reflect grandchild care performed when grandparents are potentially active in the labour market, and grandchildren are young. Adopting different thresholds (50–65 for the grandparents, and 0–12 or 0–16 for the grandchildren) does not substantively change the results.

I study the association between daily grandchild care and employment at both the extensive and at the intensive margin. I operationalise the extensive margin as being employed or self-employed as opposed to retired or a homemaker. For the intensive margin, I use the self-reported number of weekly working hours among employed grandparents.

I use a simultaneous equations approach known as Heckman's (1978) recursive bivariate model to handle the potential selection of grandparents with different observed and unobserved characteristics into employment and daily grandchild care. While not indicative of the direction of causality, the estimates from the recursive model can be compared to those obtained from single-equation regressions to assess whether the association between grandchild care and employment is likely to be attributable to role conflict, or rather to the presence of selection.

Accounting for the fact that grandchild care and work may be simultaneously determined, a negative association between daily grandchild care and employment at the extensive and/or intensive margin would constitute evidence of role conflict (Goode, 1960). The absence of an association would instead suggest that, while some grandparents may be more likely to work and others more likely to look after grandchildren daily, intensive grandchild care is not directly related to the probability of working or to working hours among grandparents.

In line with previous research on the topic (Backhaus & Barslund, 2019; Lakomý & Kreidl, 2015), I conduct separate analyses for grandmothers and grandfathers, as I expect to observe differences in the presence and magnitude of the association between grandchild care and employment by grandparents' sex.

Throughout Europe, grandmothers are generally less likely to work than grandfathers, and more likely to provide intensive grandchild care (Glaser et al., 2013; Hank & Buber, 2009). Cross-national research on parental childcare has shown that mothers are more likely than fathers to combine it with employment, suggesting that working women restrict their leisure time in order to be involved in the rearing of children (Craig & Mullan, 2011). Data from the 2015 European Working Conditions Survey (EWCS) also show that, across Europe, women tend to have more flexible working arrangements than men throughout their careers. This means that they have greater autonomy in determining their working time, which is generally lower than men's, and are also more likely to be in part-time work (Eurofund, 2017). Therefore, accounting for selection, I expect any negative association between daily grandchild care and the probability of being employed (extensive margin) to be larger for grandfathers, and any negative association between daily grandchild care and working hours (intensive margin) to be larger for grandmothers.

After analysing pooled data across 20 European countries, I explore heterogeneity in the association between daily grandchild care and each employment outcome across country groups characterised by different types of familism in childcare policies. I draw two country-level indicators of childcare policies from the Multilinks (2011) database: the percentage of children aged 0–2 enrolled in formal childcare, and effective parental leave, defined as the duration of paid parental leave (in weeks) multiplied by the income

replacement rate of the parental leave benefit. Childcare utilisation and parental leave have been validated as measures of de-familisation and supported familism, respectively (Saraceno & Keck, 2008). The same indicators have been found to strongly predict rates of intensive grandparental care across Europe (Bordone et al., 2017).

I combine the two indicators to obtain a classification of countries into four groups, each characterised by a different type of childcare policy framework. The resulting categorisation, adapted from Saraceno's (2016) and Leitner's (2003) typologies of familism, is as follows:

1. *Optional de-familisation*: both childcare service utilisation rates and weeks of effective parental leave are above the cross-country average. Families are relieved of their caring role, and parents are supported if they opt to take care of children.
2. *Service de-familisation*: childcare service utilisation is above average, but the length of effective parental leave is below average. De-familisation occurs predominantly through service provision or subsidisation.
3. *Supported familism*: formal childcare utilisation is below average, while effective parental leave is above average. The welfare state encourages the family caring role by supporting parents in taking care of children.
4. *Familism by default*: both childcare service utilisation and effective leave are below average. Families are implicitly expected to take care of children, but not supported in this role.

I expect the four country groups to differ in the extent to which grandmothers and grandfathers combine intensive grandchild care with employment.

I do not expect daily grandchild care to be associated with the probability of employment nor with working hours in the optimal de-familisation group. Grandparents in these countries are unlikely to be needed or normatively expected as providers of intensive childcare (Bordone et al., 2017; Igel & Szydlik, 2011). Thus, they may either self-select into employment and daily childcare based on their preferences or choose to combine the two roles.

Formal childcare services reduce the risk of role conflict by promoting work-family reconciliation (Lewis, 2006). In countries characterised by service de-familisation, I do

not expect to observe a negative association at the extensive margin of employment. However, since parental leave schemes are restrictive, grandparents may be required to perform complementary tasks to formal childcare, such as picking children up from schools or day centres. Thus, among employed grandparents, there may be differences in working hours between those who look after grandchildren daily and those who do not.

In the absence of extensive formal childcare provision, generous parental leave schemes may either facilitate work-family reconciliation among mothers, or induce their exit from the labour market (Lewis, 2006). Given that grandparental care can serve both as a substitute and as a complement to parental care, it is unclear how supported familism in childcare may relate to the association between daily grandchild care and grandparents' employment. Some studies have suggested that, in countries where mothers do not work and family care is expected and/or preferred, mothers who do not conform to the caregiving role may have a very high need for intensive grandchild care (Di Gessa, Glaser, Price, et al., 2016; Glaser et al., 2013). If that is the case, one would expect to observe a negative association between daily grandchild care and employment at the extensive margin, particularly among grandmothers, since familistic assumptions about childcare tend to be gender-specific (Leitner, 2003; Lewis et al., 2008). On the other hand, if generous leave promotes women's work-family reconciliation, grandparents may be required to perform complementary tasks to parental care, and the negative association would mainly be manifested at the intensive margin.

In countries characterised by familism by default, intensive grandparental care represents a considerable commitment as it cannot be easily substituted for by formal or parental childcare (Bordone et al., 2017). Traditional gender roles in these countries may also be persistent (Leitner, 2003), with older women much less likely to work then men, as well as subject to stronger normative obligations to combine work and care if employed. Thus, I expect this group of countries to display the largest negative association between grandchild care and the probability of employment among grandfathers, who may be unlikely to combine the two roles. For grandmothers, accounting for selection, I expect to observe a negative association only at the intensive margin.

5.3. Data and method

5.3.1. Data

SHARE is a multidisciplinary longitudinal survey representative of the population aged 50 and over in various European countries and Israel, excluding individuals living in institutions (Börsch-Supan et al., 2013). I pool data from the first (2004–2005) to the sixth (2015) wave of SHARE, excluding the third wave (2008–2009), which only contains retrospective information. For each respondent, I only use information collected during the first wave at which they were interviewed. Thus, for example, for respondents interviewed at all waves I only consider the wave 1 observation; for respondents present from wave *i* onwards, I only consider the *i*th wave observation. I do this in order to retain as much information as possible while treating the data as cross-sectional, as I am interested in differences in the probability of employment and working hours between grandparents who provide intensive grandchild care and grandparents who do not, rather than in changes over time within grandparents. I analyse data from the 20 European countries present in SHARE waves 1–6, excluding Israel since it is not in Europe. The countries considered are Austria, Belgium, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Poland, Portugal, Slovenia, Spain, Sweden, and Switzerland.

As argued by Igel and Szydlik (2011), it is essential to adopt a multigenerational perspective when studying the determinants and consequences of grandchild care provision. I thus construct grandparent-parent dyads to use as the primary units of analysis. In the resulting dataset, each grandparent has a number of dyads corresponding to the number of adult children (parents) who have children of their own (grandchildren) aged 0–14.

In line with the aims of this study, I carry out all analyses separately by sex. In SHARE, the questionnaire section on grandchild care provision is only asked to one randomly selected household member, the "family respondent". The analyses are therefore restricted to these respondents. Since custodial grandchild care is likely to have distinct characteristics from non-coresidential grandchild care (Ho, 2015), I exclude from the sample those observations for which the grandparent lives in the same household as any grandchild in the grandparent-parent dyad.

For the analyses of the probability of employment (extensive margin), I consider the samples of grandmothers and grandfathers aged 50–69 who report being either economically active (i.e. employed or self-employed) or economically inactive (i.e. retired or homemakers). I exclude grandparents who are unemployed at the time of the interview (5.3% of the sample), since unemployment has been found to have a different association from other statuses with grandparental childcare (Lakomý & Kreidl, 2015). I also exclude grandparents who report their work status as being "permanently sick or disabled" (5.5% of the sample), as they are unlikely to provide intensive grandchild care.

After excluding grandparents who do not meet the inclusion criteria or have missing values on any of the variables of interest, the samples for the analyses of the probability of employment consist of 16,976 grandmother-parent dyads corresponding to 11,164 grandmothers; and 11,092 grandfather-parent dyads corresponding to 7,393 grandfathers. For the analyses of average weekly working hours (intensive margin), I further restrict the samples to grandmothers and grandfathers who report being employed or self-employed at the time of the interview. This results in sample sizes of 5,975 grandmother-parent dyads corresponding to 4,161 grandmothers; and 4,735 grandfather-parent dyads corresponding to 3,298 grandfathers.

5.3.2. Measures

The primary outcome of analysis is grandparents' employment. To study differences in employment at the extensive margin, I code a binary variable indicating whether a grandparent reports being employed or self-employed (as opposed to retired or a homemaker) at the time of the interview. For the intensive margin, I use a continuous variable for the self-reported number of weekly working hours among employed or self-employed grandparents.

The main explanatory variable is a binary indicator of intensive grandchild care provision. I classify grandparents as providing intensive grandchild care for the parent in each dyad if the grandparent reports looking after any young children (0–14) of that parent "almost daily". In line with the research objectives, I apply this definition in order to capture frequencies of grandchild care that are potentially in conflict with employment. Looking after grandchildren "almost weekly", which is the next highest

frequency coded in SHARE, is in fact likely to include grandparental care performed on weekends or days off from work.

To minimise biases due to selection into employment and grandchild care, I control for a set of grandparent characteristics that have been found to correlate with both activities (Arpino & Bordone, 2017; Igel & Szydlik, 2011; Komp, Van Tilburg, & Broese Van Groenou, 2010; Lakomý & Kreidl, 2015), all measured at the time of the interview.

I categorise grandparents' age into 5-year groups to control for non-linear decreases in the probability of being in the labour force by age, and for the fact that older grandparents are less likely to provide grandchild care (Hank & Buber, 2009). To account for joint decision-making among couples about retirement timing (Riedel, Hofer, & Wogerbauer, 2015) and for the fact that non-married grandparents are usually less likely to provide care (Hank & Buber, 2009), I code a variable combining marital status and partner's work status, categorised into whether respondents are not married, married to a partner who works for pay, and married to a partner who does not work. In addition, I control for total household size.

Higher-educated and wealthier individuals tend to work until later in life (Komp et al., 2010) and are less likely to provide grandchild care (Arpino & Bordone, 2017). I use the International Standard Classification of Education (ISCED) 1997 codes to classify grandparents' educational attainment into three levels: low (up to lower-secondary education, ISCED 0–2), intermediate (upper secondary education and vocational training, ISCED 3–4) and high (tertiary education, ISCED 5–6). I control for household net worth, calculated as the sum of all household assets minus all liabilities, adjusted by household size and split into five quantile groups. I control for rural as opposed to urban dwelling, as living in rural areas has been found to be positively associated with grandchild care and negatively with employment (Arpino & Bordone, 2017; Van der Meer, 2006).

Additionally, since healthier individuals are more likely to be engaged in both grandchild care and work (Arpino & Bordone, 2017; De Preter et al., 2013), I control for the health status of the grandparents as indicated by the number of limitations with Activities of Daily Living (ADL) and depressive status, coded as binary using the EURO-D scale, where those reporting four or more depressive symptoms are considered "depressed". Additionally, since a partner's health status may also influence the decision to work (De

Preter et al., 2013), I control for an indicator of whether the grandparent has a partner who suffers from any ADL limitations.

The characteristics of the parents are important determinants of intensive grandchild care provision (Hank & Buber, 2009; Igel & Szydlik, 2011), and they may confound the association between grandchild care and employment. Given that grandparents with more adult children tend to be less likely to provide intensive grandchild care for each of them (Di Gessa, Glaser, Price, et al., 2016), I control for the total number of adult children (parents) with children of their own (grandchildren) aged 0–14. Among the characteristics of the parents in each dyad, I control for their gender, as mothers are more likely to receive grandchild care; and their work status, as working parents have higher needs for grandparental care (Di Gessa, Glaser, Price, et al., 2016; Hank & Buber, 2009). I also control for the age of the parent's youngest child (grandchild), split into four categories (0–2, 3–5, 6–10 or 11–14 years old) to account for varying childcare needs at different ages of the child (Hank & Buber, 2009). Finally, I control for geographical proximity of the parent in the dyad. Proximity is measured in kilometres and split into four categories according to whether the parent lives in the same building as the grandparent (after excluding those living in the same household); within five kilometres; between five and 25 kilometres away; and farther than 25 kilometres away. While proximity is an important correlate of regular grandchild care provision (Hank & Buber, 2009), its association with grandchild care should be interpreted with caution, given that it is likely to be endogenous, as grandparents (or their adult children) may move closer to each other for the purpose of providing grandchild care.

To control for variation across SHARE countries in the average rates of grandchild care provision (Bordone et al., 2017) as well as in older adults' labour market participation (Riedel et al., 2015), I include country fixed effects. I also control for wave fixed effects to account for demographic and socio-economic changes over time (Arpino & Bordone, 2017), including a dummy variable for each SHARE wave (2004–2005; 2006–2007; 2011; 2013; 2015).

5.3.4. Statistical analysis

I use a model-based approach to handle the selection of grandparents with different traits into daily grandchild care and paid work. First, I fit single-equation multivariate

regression models of each employment outcome (y_1^*) on a binary indicator for grandchild care provision (y_2) and a set of covariates (X):

$$y_1^* = \beta_0 \mathrm{X} + \delta_0 y_2 + \varepsilon_0$$

I fit probit regressions for the probability of being employed/self-employed and, for the subsamples of grandmothers and grandfathers in paid work, linear regressions for their self-reported weekly working hours.

As I have argued, the association between grandchild care and employment may be affected by selection even after controlling for the covariates, because of unobserved characteristics associated with both employment and intensive grandchild care provision, which include grandparents' personality, preferences, family characteristics and values. In the presence of unobserved grandparental characteristics that are correlated with participation in both roles, $\hat{\delta}_0$ is biased since it does not isolate the difference in employment or working hours that is attributable to intensive grandchild care provision from that attributable to such unobserved factors.

I address the fact that employment and grandchild care may be jointly determined by comparing the coefficients obtained from single equations to those obtained using a recursive bivariate approach (Heckman, 1978; Maddala, 1983). This is a system of equations in which employment (y_1) and grandchild care (y_2) represent two distinct outcomes regressed on a common set of covariates X. Continuous latent variables y_1^* and y_2^* are assumed as underlying the observed binary variables y_1 and y_2. The error terms of the two equations are correlated with each other to account for the potential presence of unobservable characteristics associated with participation in both activities. Within the system, grandchild care is included as an endogenous binary regressor in the equation for employment.

$$y_1^* = \beta_1 \mathrm{X} + \delta_1 y_2 + \varepsilon_1$$

$$y_2^* = \beta_2 \mathrm{X} + \varepsilon_2$$

where the error terms ε_1 and ε_2 follow a bivariate normal distribution with mean 0 and variance 1, and

$$\rho = cov(\varepsilon_1, \varepsilon_2).$$

For the analytical samples of grandmothers and grandfathers, I fit a recursive bivariate probit model for the probabilities of being (self-)employed and providing daily grandchild care, controlling for the common set of covariates and including grandchild care as a binary regressor in the equation for employment. For the subsamples of grandmothers and grandfathers in paid work, I fit hybrid (linear-probit) models with weekly working hours treated as continuous, again including daily grandchild care as a dummy variable in the employment equation alongside the full set of covariates.

The estimated coefficient on grandchild care $\hat{\delta}_1$ represents the difference in the probability of being employed or in working hours associated with intensive grandchild care provision, controlling for the full set of covariates and allowing for covariance in the latent errors. As such, it more adequately isolates the "structural" (or direct) association between grandchild care and labour supply from that attributable to selection (Heckman, 1978). A comparison between the coefficient on grandchild care from the single equation model ($\hat{\delta}_0$) to the one from the recursive bivariate model ($\hat{\delta}_1$) allows to assess whether accounting for the presence of unobserved confounders correlated with participation in both activities alters the association between the two activities. However, as discussed by Filippini and colleagues (2018), the estimated correlation parameter $\hat{\rho}$ does not necessarily capture the correlation between the two variables y_1 and y_2 once the effect of the endogenous variable is taken into account, and it cannot be interpreted using behavioural arguments – i.e. for instance, as the correlation between the personality traits associated with working and those associated with grandchild care.

I expect the association between daily grandchild care and grandparents' employment to differ across groups of countries characterised by different types of familism in childcare policies. After conducting analyses on the pooled dataset across countries, I test for heterogeneity in the association across the four country groups described above. I do so by including an interaction term between daily grandchild care and the country group indicator in the equations for the probability of employment (bivariate probit recursive model) and weekly working hours (linear-probit recursive model).

In all sets of models, I cluster standard errors to deal with the correlation of observations referring to different dyads within the same grandparent. I use the calibrated cross-sectional weights provided in SHARE (Börsch-Supan & Jurges, 2005) to address differential inclusion probabilities and non-response, dividing the weights by the number of dyads to restore representativeness with respect to individual grandparents. I fit the recursive bivariate models using the "cmp" package in Stata 15 (Roodman, 2011; StataCorp, 2017).

5.4. Results

5.4.1. Descriptive sample characteristics

Table 5.1 presents descriptive characteristics from the analytical samples of grandmothers and grandfathers aged 50–69 at their first interview. On average, 28 percent of grandmothers and 37 percent of grandfathers are employed or self-employed as opposed to retired or homemakers. Among those who work, the average weekly working time is around 35 hours for grandmothers and 41 for grandfathers. χ^2 tests for the probability of working by daily grandparental care provision give an initial suggestion that the association between intensive grandchild care and employment at the extensive margin is negative. Grandparents who look after their grandchildren almost daily are around nine percentage points less likely to be employed than grandparents who do not. However, among employed grandparents, t-tests show that average working hours do not differ significantly by daily grandchild care provision.

Looking at the distribution of the covariates, those who provide intensive grandchild care have, on average, lower educational attainment than those who do not, and they also live in larger households. Grandfathers who look after their grandchildren daily are significantly more likely to be married to a partner who does not work for pay, and in the middle (as opposed to the top or bottom) of the household wealth distribution.

Table 5.1. Weighted sample characteristics (grandparents aged 50-69 with grandchildren aged 0-14), by sex and grandchild care provision.

	Grandmothers				**Grandfathers**			
	Total	**Daily grandchild care**			**Total**	**Daily grandchild care**		
		No	**Yes**	**z-test *p***		**No**	**Yes**	**z-test *p***
Employed	27.99	29.99	21.09	0.004	36.90	38.23	28.90	0.013
Weekly working hours* (mean)	35.04	35.20	34.15	0.564	40.94	41.29	38.03	0.270
Age (mean)	59.98	59.99	59.93	0.886	61.06	60.96	61.65	0.076
Household size (mean)	2.21	2.13	2.46	< 0.001	2.46	2.41	2.81	< 0.001
Marital status: not married	39.87	39.97	39.52		15.71	17.44	5.25	
Married (partner works for pay)	12.28	13.00	9.83		16.53	17.35	11.56	
Married (partner does not work)	47.86	47.03	50.65	0.245	67.76	65.22	83.19	< 0.001
Education: Low (ISCED 0-2)	62.86	59.54	74.22		51.99	50.22	62.89	
Intermediate (ISCED 3-4)	27.77	29.46	21.97		33.36	34.04	29.14	
High (ISCED 5-6)	9.37	11.00	3.81	< 0.001	14.65	15.73	7.97	< 0.001
Wealth group: 1st (lowest)	21.97	22.29	20.86		15.95	16.88	10.28	
2nd	18.60	18.15	20.13		18.89	17.74	25.84	
3rd	18.97	18.74	19.74		20.21	20.54	18.21	
4th	19.94	20.04	19.62		23.92	23.25	28.00	
5th (highest)	20.52	20.78	19.66	0.878	21.03	21.58	17.68	0.005
Rural dwelling	28.91	28.15	31.47	0.257	28.92	29.78	23.77	0.069
ADL limitations (mean)	0.11	0.11	0.09	0.323	0.12	0.12	0.11	0.815
1+ ADL limitations	6.38	6.67	5.38	0.322	6.82	6.77	7.12	0.832
Depressive status	39.17	39.49	40.49	0.320	21.11	20.62	24.12	0.253
Has partner with ADL limitations	2.85	2.76	3.18	0.626	3.73	3.82	3.14	0.537
No. of children with own children aged 0-14 (mean)	1.54	1.54	1.53	0.814	1.46	1.46	1.48	0.619
n	12,601	10,632	1,969		8,280	7,416	864	

*Average weekly working hours are only calculated for the subsample of working grandparents

5.4.2. Pooled results across 20 countries

The associations between daily grandchild care and each employment outcome obtained from single-equation regressions including the full set of controls (Table 5.2) are negative and statistically significant for both grandmothers and grandfathers. They indicate that grandparents who provide daily grandchild care are about seven percentage points less likely to be employed and, if employed, they work on average three or four hours less per week. These results are not surprising given previous evidence (De Preter et al., 2013; Lakomý & Kreidl, 2015) and the fact that I am isolating high frequencies of grandchild care provision.

As argued above, the single-equation estimates may be biased in the presence of selection. I account for this possibility by jointly modelling employment and intensive grandchild care. Tables 5.3 and 5.4 display the coefficients from the recursive bivariate models for grandmothers and grandfathers, respectively.

The results indicate that, addressing the potential selection of grandparents with different unobserved traits into work and grandchild care, there is no evidence of a direct association between daily grandchild care and employment at the extensive margin across the 20 countries considered. For both grandmothers (Table 5.3) and grandfathers (Table 5.4), allowing for correlation in the latent errors of the employment and grandchild care equations slightly increases the coefficients on daily grandchild care, but also considerably increases uncertainty in their estimation, with neither reaching conventional levels of statistical significance (the p-values are 0.257 for grandmothers, and 0.132 for grandfathers). The results for the intensive margin of employment indicate that, across Europe, grandparents who look after grandchildren daily tend to work around eight hours less per week than those who do not. The coefficient on grandchild care is statistically significant for grandfathers (p-value = 0.052) and not statistically significant at conventional levels, but relatively small for grandmothers (p-value = 0.115).

Overall, the coefficients on the control variables are in line with previous studies on the correlates of later-life employment (De Preter et al., 2013; Komp et al., 2010) and grandchild care provision (Hank & Buber, 2009; Igel & Szydlik, 2011).

Older grandparents with more functional limitations are less likely to work, while socioeconomically advantaged grandparents (i.e. more highly educated and living in wealthier households) are more likely to be employed (De Preter et al., 2013). Grandmothers and grandfathers have lower probabilities of working if they have a spouse who is out of the labour force, in line with previous evidence on joint retirement decisions among couples (Riedel et al., 2015).

For both sexes, the coefficients on the correlates of grandchild care confirm the importance of considering both grandparental and parental characteristics as predictors of this activity (Igel & Szydlik, 2011). Controlling for other factors, lower-educated grandmothers with fewer functional limitations and married grandfathers in their early sixties have higher probabilities of providing intensive grandchild care. Grandparents are significantly more likely to provide grandchild care daily for parents who are female, who work for pay and who have children aged 3–5 or 0–2 as opposed to 11–14. As it is reasonable to expect (Hank & Buber, 2009), proximity of the parent in the dyad is strongly associated with daily grandchild care provision, with parents more likely to receive grandparental childcare the closer they live to the grandparent.

Table 5.2. Coefficients from single-equation probit and linear regression models for self-reported employment and average working hours, by sex. Country and wave fixed-effects not shown.

	Grandmothers		Grandfathers	
	Pr(employment) Coef. (SE)	**Weekly hours Coef. (SE)**	**Pr(employment) Coef. (SE)**	**Weekly hours Coef. (SE)**
Grandchild care	- 0.319 (0.103) **	- 3.035 (1.840) ~	- 0.389 (0.133) **	- 4.006 (1.711) *
Average marginal effect	- 0.068 (0.022) **		- 0.069 (0.023) **	
Grandparent				
Age (ref: 50-54)				
55-59	- 0.577 (0.077) ***	- 2.726 (1.112) *	- 0.961 (0.145) ***	- 0.236 (0.964)
60-64	- 1.548 (0.090) ***	- 5.265 (1.504) ***	- 2.350 (0.150) ***	- 3.832 (1.359) **
65-69	- 2.775 (0.132) ***	- 16.44 (2.130) ***	- 3.593 (0.167) ***	- 14.09 (1.862) ***
Household size	- 0.023 (0.040)	0.151 (0.601)	0.152 (0.046) ***	0.975 (0.515) ~
Marital status (ref: not married)				
Married (partner works)	- 0.126 (0.100)	- 0.803 (1.514)	- 0.022 (0.124)	0.850 (1.204)
Married (partner not working)	- 0.253 (0.074) ***	- 1.760 (1.159)	- 0.437 (0.103) ***	- 0.554 (1.133)
Education (ref: low)				
Intermediate	0.250 (0.069) ***	2.151 (1.031) *	0.322 (0.080) ***	0.366 (1.090)
High	0.470 (0.114) ***	4.762 (1.529) **	0.385 (0.100) ***	1.821 (1.223)
Wealth group (ref: lowest)				
2nd	0.147 (0.092)	4.437 (1.482) **	- 0.102 (0.117)	- 0.578 (1.477)
3rd	- 0.049 (0.094)	1.225 (1.564)	- 0.039 (0.117)	0.700 (1.494)
4th	0.102 (0.096)	2.756 (1.637) ~	0.122 (0.118)	2.722 (1.425) ~
5th (highest)	0.227 (0.107) *	0.682 (1.605)	0.379 (0.127) **	5.842 (1.640) ***
Rural dwelling	- 0.049 (0.065)	0.024 (1.031)	- 0.038 (0.074)	1.114 (1.045)
ADL limitations	- 0.284 (0.069) ***	- 1.158 (0.996)	- 0.282 (0.076) ***	0.361 (1.298)
Depressive status	0.005 (0.066)	- 1.101 (0.969)	- 0.222 (0.101) *	- 0.301 (1.244)
ADL-impaired partner	- 0.319 (0.141) *	7.684 (3.910) *	0.018 (0.134)	1.144 (3.141)
Number of children with own children aged 0-14	- 0.048 (0.039)	0.258 (0.800)	0.055 (0.047)	0.814 (0.609)
Adult child				
Female	0.121 (0.054) *	0.072 (0.775)	0.038 (0.060)	0.046 (0.715)
Works for pay	0.220 (0.068) ***	0.377 (1.068)	- 0.238 (0.083) **	- 0.894 (0.885)
Youngest child (ref: 0-2)				
3-5	- 0.048 (0.067)	1.441 (0.801) ~	- 0.014 (0.071)	- 0.404 (0.811)
6-10	- 0.099 (0.062)	1.344 (1.170)	- 0.054 (0.078)	- 0.447 (1.058)
11-14	- 0.160 (0.091) ~	2.428 (1.804)	- 0.188 (0.102) ~	0.167 (1.809)
Proximity (ref: same building)				
Within 5km	- 0.063 (0.131)	0.460 (2.378)	- 0.111 (0.160)	0.390 (2.353)
5-25km	- 0.064 (0.133)	- 0.471 (2.306)	- 0.270 (0.160) ~	1.717 (2.439)
Farther than 25km	- 0.075 (0.139)	0.302 (2.497)	- 0.361 (0.162) *	0.694 (2.337)
n (grandparents)	10,977	4,161	7,278	3,298
n (dyads)	16,697	5,975	10,930	4,735

*** p <0.001; ** p<0.01; * p<0.05; ~ p<0.10

Table 5.3. Grandmothers: Coefficients from recursive bivariate models for a) probability of work and grandchild care (all grandmothers) and b) weekly hours worked and grandchild care (working grandmothers). Country and wave fixed-effects not shown

	a) Employment model (all grandmothers)		b) Hours model (working grandmothers)	
	Pr(employment) Coef. (SE)	**Pr(grandchild care) Coef. (SE)**	**Weekly hours Coef. (SE)**	**Pr(grandchild care) Coef. (SE)**
Grandchild care	- 0.335 (0.296)		- 7.852 (4.987)	
Average marginal effect	- 0.072 (0.063)		- 7.852 (4.987)	
Grandmother				
Age (ref: 50-54)				
55-59	- 0.576 (0.077) ***	0.115 (0.111)	- 2.722 (1.102) *	0.025 (0.140)
60-64	- 1.547 (0.089) ***	0.093 (0.111)	- 5.150 (1.503) ***	0.282 (0.175)
65-69	- 2.775 (0.131) ***	0.080 (0.120)	- 16.35 (2.150) ***	0.195 (0.277)
Household size	- 0.024 (0.041)	- 0.028 (0.043)	0.074 (0.611)	- 0.075 (0.097)
Marital status (ref: not married)				
Married (partner works)	- 0.126 (0.100)	- 0.210 (0.123) ~	- 0.642 (1.453)	0.221 (0.211)
Married (partner not working)	- 0.253 (0.074) ***	- 0.002 (0.071)	- 1.594 (1.157)	0.238 (0.147)
Education (ref: low)				
Intermediate	0.249 (0.069) ***	- 0.272 (0.087) **	1.956 (1.051) ~	- 0.335 (0.132) *
High	0.469 (0.114) ***	- 0.535 (0.117) ***	4.479 (1.527) **	- 0.665 (0.201) ***
Wealth group (ref: lowest)				
2nd	0.147 (0.092)	0.012 (0.109)	4.466 (1.518) **	- 0.046 (0.253)
3rd	- 0.049 (0.094)	0.122 (0.109)	1.228 (1.547)	- 0.008 (0.187)
4th	0.102 (0.096)	- 0.014 (0.101)	2.717 (1.615) ~	- 0.088 (0.205)
5th (highest)	0.227 (0.107) *	0.059 (0.104)	0.700 (1.577)	- 0.006 (0.190)
Rural dwelling	- 0.048 (0.065)	0.087 (0.080)	0.038 (1.053)	- 0.009 (0.164)
ADL limitations	- 0.285 (0.070) ***	- 0.185 (0.060) **	- 1.138 (1.026)	- 0.000 (0.122)
Depressive status	0.005 (0.066)	0.046 (0.072)	- 1.155 (0.963)	- 0.103 (0.134)
ADL-impaired partner	- 0.319 (0.141) *	0.007 (0.170)	7.273 (3.885) ~	- 1.055 (0.415) *
Number of children with own children aged 0-14	- 0.049 (0.040)	- 0.199 (0.050) ***	0.101 (0.803)	- 0.268 (0.107) *
Adult child				
Female	0.122 (0.057) *	0.570 (0.072) ***	0.203 (0.782)	0.312 (0.137) *
Works for pay	0.222 (0.071) **	0.493 (0.086) ***	0.551 (1.050)	0.434 (0.149) **
Youngest child (ref: 0-2)				
3-5	- 0.047 (0.068)	0.172 (0.081) *	1.533 (0.823) ~	0.052 (0.189)
6-10	- 0.099 (0.062)	- 0.123 (0.076)	1.348 (1.149)	- 0.062 (0.155)
11-14	- 0.161 (0.091) ~	- 0.376 (0.107) ***	2.181 (1.816)	- 0.529 (0.278) ~
Proximity (ref: same building)				
Within 5km	- 0.067 (0.145)	- 0.675 (0.100) ***	- 1.176 (2.331)	- 1.176 (0.184) ***
5-25km	- 0.069 (0.163)	- 1.307 (0.112) ***	- 2.438 (2.286)	- 1.756 (0.205) ***
Farther than 25km	- 0.082 (0.171)	- 2.048 (0.122) ***	- 1.801 (2.516)	- 2.333 (0.240) ***
n (grandparents)	11,164		4,161	
n (dyads)	16,976		5,975	
Correlation (ρ)	0.010 (p = 0.946)		0.188 (p = 0.185)	

*** p <0.001; ** p<0.01; * p<0.05; ~ p<0.10

Table 5.4. Grandfathers: Coefficients from recursive bivariate models for a) probability of work and grandchild care (all grandfathers) and b) weekly hours worked and grandchild care (working grandfathers). Country and wave fixed-effects not shown

	a) Employment model (all grandfathers)		b) Hours model (working grandfathers)	
	Pr(employment) Coef. (SE)	**Pr(grandchild care) Coef. (SE)**	**Weekly hours Coef. (SE)**	**Pr(grandchild care) Coef. (SE)**
Grandchild care	- 0.556 (0.369)		- 7.746 (3.979) ~	
Average marginal effect	- 0.100 (0.067)		- 7.746 (3.979) ~	
Grandfather				
Age (ref: 50-54)				
55-59	- 0.954 (0.148) ***	0.365 (0.151) *	- 0.135 (0.952)	0.240 (0.151)
60-64	- 2.339 (0.155) ***	0.406 (0.151) **	- 3.717 (1.350) **	0.175 (0.171)
65-69	- 3.585 (0.171) ***	0.267 (0.149) ~	- 14.05 (1.854) ***	- 0.017 (0.236)
Household size	0.153 (0.046) ***	0.066 (0.049)	1.027 (0.512) *	0.142 (0.067) *
Marital status (ref: not married)				
Married (partner works)	- 0.021 (0.124)	0.175 (0.174)	0.742 (1.208)	- 0.289 (0.201)
Married (partner not working)	- 0.431 (0.105) ***	0.440 (0.144) **	- 0.596 (1.137)	- 0.081 (0.182)
Education (ref: low)				
Intermediate	0.321 (0.080) ***	- 0.048 (0.097)	0.298 (1.099)	- 0.208 (0.157)
High	0.384 (0.100) ***	- 0.100 (0.123)	1.818 (1.230)	- 0.134 (0.205)
Wealth group (ref: lowest)				
2nd	- 0.100 (0.117)	0.072 (0.123)	- 0.519 (1.466)	0.160 (0.205)
3rd	- 0.035 (0.118)	0.168 (0.130)	0.796 (1.490)	0.246 (0.217)
4th	0.130 (0.119)	0.341 (0.139) *	2.871 (1.426) *	0.427 (0.227) ~
5th (highest)	0.383 (0.128) **	0.227 (0.143)	5.895 (1.634) ***	0.214 (0.252)
Rural dwelling	- 0.040 (0.074)	- 0.051 (0.085)	1.090 (1.035)	0.008 (0.135)
ADL limitations	- 0.281 (0.076) ***	0.002 (0.057)	0.481 (1.295)	0.229 (0.166)
Depressive status	- 0.220 (0.101) *	0.093 (0.100)	- 0.319 (1.237)	- 0.093 (0.177)
ADL-impaired partner	0.018 (0.134)	0.005 (0.161)	1.241 (3.087)	0.288 (0.257)
Number of children with own children aged 0-14	0.058 (0.048)	- 0.168 (0.052) ***	0.822 (0.610)	0.044 (0.079)
Adult child				
Female	0.050 (0.062)	0.538 (0.079) ***	0.281 (0.732)	0.692 (0.130) ***
Works for pay	- 0.228 (0.085) **	0.485 (0.096) ***	- 0.723 (0.880)	0.543 (0.149) ***
Youngest child (ref: 0-2)				
3-5	- 0.015 (0.071)	0.044 (0.091)	- 0.453 (0.810)	- 0.054 (0.143)
6-10	- 0.056 (0.078)	- 0.083 (0.096)	- 0.448 (1.047)	- 0.010 (0.157)
11-14	- 0.195 (0.104) ~	- 0.347 (0.128) **	0.0369(1.799)	- 0.234 (0.235)
Proximity (ref: same building)				
Within 5km	- 0.147 (0.182)	- 0.746 (0.123) ***	- 0.143 (2.429)	- 0.666 (0.206) ***
5-25km	- 0.319 (0.193) ~	- 1.246 (0.143) ***	0.932 (2.589)	- 1.322 (0.240) ***
Farther than 25km	- 0.416 (0.202) *	- 2.005 (0.163) ***	- 0.195 (2.518)	- 2.250 (0.270) ***
n (grandparents)	7,393		3,298	
n (dyads)	11,092		4,735	
Correlation (ρ)	0.095 (p = 0.591)		0.150 (p = 0.201)	

*** p <0.001; ** p<0.01; * p<0.05; ~ p<0.10

5.4.3. Results by country group

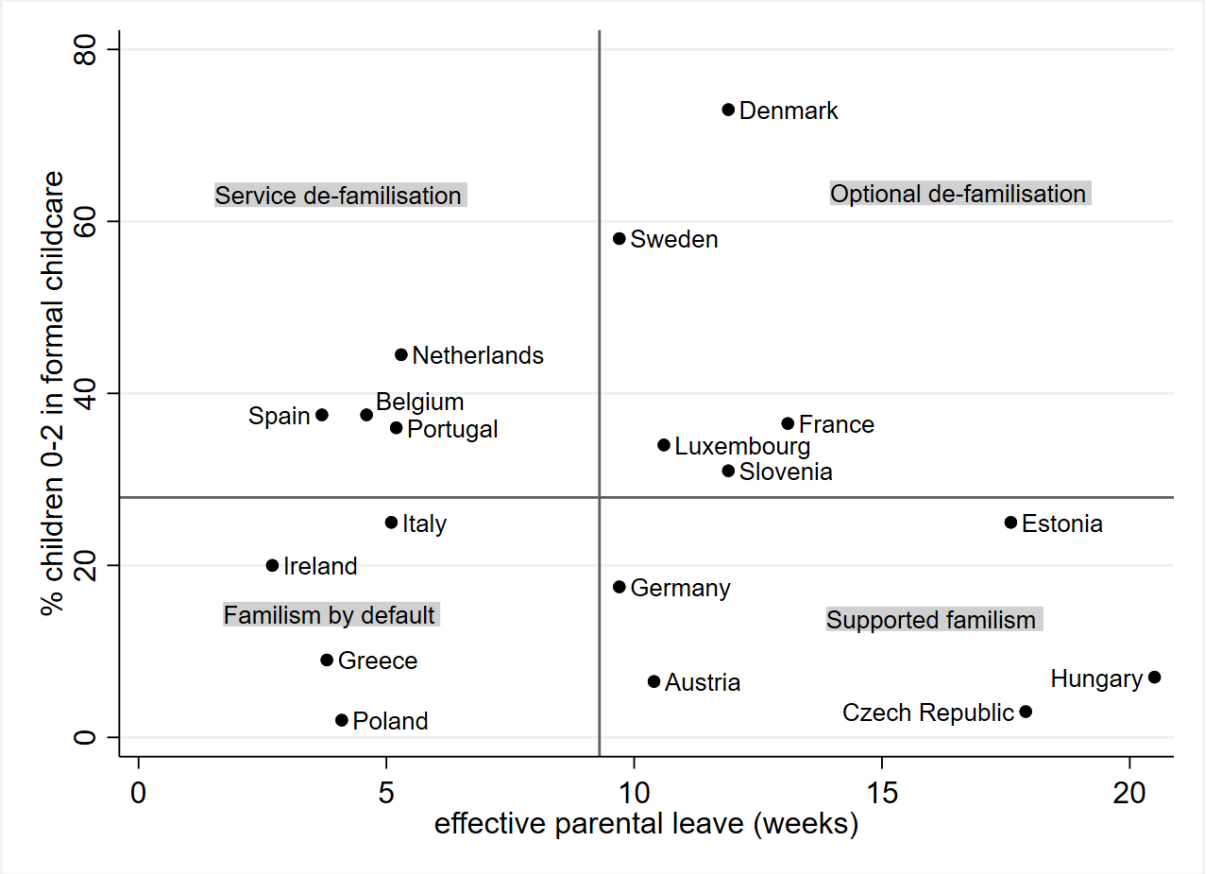
In order to classify SHARE countries into the four typologies described above (optional de-familisation; service de-familisation; supported familism; and familism by default) I obtain Multilinks (2011) indicators for the percentage of children aged 0–2 enrolled in formal childcare and effective parental leave in weeks. Multilinks data are available for 2004 and 2009. For countries first observed in SHARE waves 1 and 2[4], I take the average of each indicator between the two years. For countries observed from SHARE wave 4 onwards[5], I use the 2009 indicators only. I drop Switzerland and Croatia from the analysis since Multilinks data are not available for these countries. In Figure 5.1 I plot the two indicators against one another to show how countries fare with respect to their childcare policies. The horizontal line indicates the average percentage of children in formal childcare across the 18 countries (27.9), while the vertical line marks the cross-country average length of effective parental leave in weeks (9.3).

The resulting quadrant plot delineates four country groups that, despite some internal heterogeneity, share similar average characteristics with respect to grandparents' participation in intensive grandchild care that are in line with previous findings (Bordone et al., 2017). Table 5.5 compares the two childcare policy indicators described above, as well as the SHARE sample percentages of grandparents employed and providing daily grandchild care, across countries and groups.

[4] Austria, Belgium, Czech Republic, Denmark, France, Germany, Greece, Ireland, Italy, Netherlands, Poland, Spain, Sweden.

[5] Estonia, Hungary, Luxembourg, Portugal, Slovenia.

Figure 5.1. Classification of SHARE countries into four groups based on childcare service utilisation and effective parental leave in 2004–2009. Horizontal and vertical lines indicating cross-country average values for childcare utilisation and parental leave, respectively.



Source: Multilinks (2011) data

Table 5.5. Childcare policy indicators and sample percentages of grandparents employed / looking after grandchildren daily, by country group.

Country	% children 0-2 in formal childcare in 2009	Effective parental leave (weeks) in 2009	SHARE sample: % grandparents 50-69 employed or self-employed		SHARE sample: % grandparents 50-69 providing daily grandchild care	
			Grandmothers	Grandfathers	Grandmothers	Grandfathers
Optional defamilisation:						
Denmark	73	11.7	47.0	54.1	2.0	0.8
France	41	13	34.5	31.2	8.6	4.6
Luxembourg	34	10.6	24.2	25.2	18.7	16.0
Slovenia	31	11.9	18.2	22.8	24.4	18.5
Sweden	63	9.6	50.8	50.8	3.1	1.5
Group average	**48.4**	**11.4**	**37.2**	**38.7**	**9.8**	**6.6**
Service defamilisation:						
Belgium	33	4.6	32.0	36.6	14.1	10.8
Netherlands	49	7	28.7	34.3	4.6	2.6
Portugal	36	5.2	22.5	22.1	24.2	18.0
Spain	36	3.7	23.5	33.4	22.9	18.0
Group average	**38.5**	**5.1**	**28.1**	**33.9**	**14.7**	**10.8**
Supported familism:						
Austria	9	9.8	21.7	25.6	12.1	7.8
Czech Republic	3	17.9	24.2	34.8	16.0	9.6
Estonia	25	17.6	54.1	56.2	10.0	4.9
Germany	19	12.6	36.7	38.2	12.2	8.7
Hungary	7	20.5	20.5	24.2	20.1	12.1
Group average	**12.6**	**15.7**	**33.0**	**37.7**	**13.6**	**8.3**
Familism by default:						
Greece	11	4.1	17.8	30.1	32.4	19.5
Ireland	20	2.7	29.9	42.5	18.5	11.0
Italy	25	4.6	14.3	21.7	31.6	24.2
Poland	2	4.1	21.0	26.7	33.5	24.5
Group average	**14.5**	**3.9**	**18.0**	**26.7**	**31.5**	**22.2**

Grandmothers and grandfathers are most likely to be employed (37% and 39% respectively) and least likely to provide daily grandchild care (10% and 7%) in the optional de-familisation group. As expected, the supported familism and familism by default groups show the largest gender differences in employment and intensive grandchild care. However, grandparents in countries characterised by supported familism are much more likely to work than in countries characterised by familism by default (33% of grandmothers and 38% of grandfathers are employed, compared to 18% and 27% respectively). In turn, in countries characterised by familism by default grandparents are more likely to provide intensive childcare (32% of grandmothers and 22% of grandfathers do so, compared with 14% and 8% respectively), which is in line with previous results (Bordone et al., 2017; Igel & Szydlik, 2011). The service defamilisation group performs somewhere in the middle, with average proportions of grandparents working (28% of grandmothers and 34% of grandfathers) and providing daily grandchild care (14% of grandmothers and 10% of grandfathers).

To test for heterogeneity in the association between daily grandchild care and employment across country groups characterised by different typologies of familism, I fit the same recursive bivariate models as in tables 5.3 and 5.4, this time including an interaction term between daily grandchild care and a categorical variable indicating which country group the observation belongs to (and excluding observations from Croatia and Switzerland).

Table 5.6 reports the marginal probabilities of employment and the average weekly working hours predicted by the models for grandparents who provide daily grandchild care and grandparents who do not, estimated over country typologies and separately by grandparents' sex. For each country group, in bold I report the corresponding average marginal effect (AME), which is the difference in the predicted value of the outcome between grandparents who provide daily grandchild care and grandparents who do not. I also indicate whether the AMEs are significantly different from zero.

Table 5.6. Predictive margins for a) the probability of being employed and b) weekly working hours by daily grandchild care provision with corresponding Average Marginal Effects (AME), over country groups and separately by sex.

	Grandmothers		**Grandfathers**	
Country group	**Pr(employment)**	**Weekly hours**	**Pr(employment)**	**Weekly hours**
Optional de-familisation				
Daily GC care: no	0.410 (0.012)	34.25 (0.696)	0.390 (0.010)	40.01 (0.549)
Daily GC care: yes	0.321 (0.081)	26.39 (4.958)	0.374 (0.095)	39.83 (3.807)
AME	**- 0.089 (0.084)**	**- 7.862 (5.079)**	**- 0.016 (0.097)**	**- 0.176 (3.890)**
Service de-familisation				
Daily GC care: no	0.282 (0.016)	31.28 (1.117)	0.348 (0.016)	39.16 (1.291)
Daily GC care: yes	0.213 (0.055)	19.07 (4.521)	0.289 (0.072)	32.05 (3.677)
AME	**- 0.069 (0.063)**	**- 12.21 (4.873)** *	**- 0.059 (0.079)**	**- 7.114 (4.146)** ~
Supported familism				
Daily GC care: no	0.368 (0.014)	33.09 (0.918)	0.433 (0.013)	39.92 (0.728)
Daily GC care: yes	0.229 (0.058)	18.70 (6.021)	0.390 (0.073)	29.61 (5.028)
AME	**- 0.139 (0.064) ***	**- 14.39 (6.271)** *	**- 0.043 (0.077)**	**- 10.30 (5.180)** *
Familism by default				
Daily GC care: no	0.248 (0.023)	37.70 (1.375)	0.305 (0.019)	43.58 (1.345)
Daily GC care: yes	0.191 (0.040)	30.88 (3.074)	0.186 (0.048)	34.88 (3.230)
AME	**- 0.057 (0.054)**	**- 6.823 (3.665)** ~	**- 0.119 (0.059) ***	**- 8.692 (3.721)** *
n (grandparents)	10,733	3,993	7,040	3,116
n (dyads)	16,357	5,739	10,591	4,474

*** p <0.001; ** p<0.01; * p<0.05; ~ p<0.10

As expected, in countries characterised by optional de-familisation, I find no association between daily grandchild care provision and grandparents' employment at the extensive or intensive margin once selection is taken into account. Given the availability of both formal childcare services and generous parental leave, grandparents in these countries are unlikely to be needed as intensive childcare providers and, in turn, to experience role conflict.

Also in line with the hypotheses, I find a negative association between intensive grandchild care and working time among employed grandmothers (by 12 hours) and grandfathers (by seven hours) in the service de-familisation group. In these countries, daily grandchild care is not in conflict with employment once selection is accounted for, but working grandparents may work fewer hours to accommodate daily tasks such as picking up grandchildren from nurseries or childcare centres.

Overall, countries characterised by supported familism in childcare show the greatest evidence of role conflict between daily grandchild care and employment. Grandmothers in these countries are around 14 percentage points less likely to work, and work on average 14 hours less per week if providing daily grandchild care. Employed grandfathers work on average ten hours less if looking after grandchildren almost daily. This is in line with the hypothesis that familistic expectations that mothers will provide childcare generate a high need for intensive grandchild care among mothers who do not conform to this role (Glaser et al., 2013), and such intensive grandchild care is in conflict with grandmothers' employment. In addition, employed grandparents who look after grandchildren daily may be required to perform complementary tasks to parental childcare, which may induce them to work fewer hours.

Finally, as expected, I find evidence that in countries characterised by familism by default grandfathers are unlikely to combine work with intensive grandchild care. Grandfathers who provide daily grandchild care are 12 percentage points less likely to work. I do not find evidence of a negative association at the extensive margin for grandmothers accounting for selection, which is unsurprising given that only 18 percent of grandmothers are employed in this group of countries (Table 5.5). For both sexes I find a negative association at the intensive margin, by seven hours for employed grandmothers and by nine hours for employed grandfathers.

5.5. Discussion

Recent findings from Backhaus and Barslund (2019) suggest that, across European countries, having grandchildren reduces participation in employment. However, it remains unclear whether intensive grandchild care is directly associated with grandparents' employment. This study contributes to the literature by addressing the question of whether, accounting for the potential selection of grandparents with different traits into work and care, there is any evidence of role conflict between daily grandchild care and grandparents' employment.

The results obtained from pooling data from 20 European countries suggest that, once selection is accounted for, there is no evidence of role conflict between daily grandchild

care and participation in employment at the extensive margin, but employed grandparents work on average eight hours less per week if looking after grandchildren daily. Becoming a grandparent is an important life transition marking the acquisition of a new social role, and it is likely to change individuals' preferences towards work and leisure (Hochman & Lewin-Epstein, 2013; Mahne & Motel-Klingebiel, 2012). Together with previous literature (Backhaus & Barslund, 2019), these findings suggest that it may be such changes in roles and preferences, rather than role conflict, that lead grandparents to have lower probabilities of working than non-grandparents. However, results obtained from the pooled SHARE data are difficult to interpret, because the estimates may conceal substantial across-country variation.

This study is among the first to test for heterogeneity in the association between intensive grandchild care and employment across groups of countries characterised by different combinations of childcare policies. The findings reveal that familistic childcare policies are the most likely to result in role conflict between grandparents' employment and intensive grandchild care. Grandmothers in countries characterised by supported familism and grandfathers in countries characterised by familism by default are less likely to work if providing daily grandchild care. Moreover, employed grandmothers and grandfathers in countries where formal childcare services, paid parental leave or both are restricted work fewer hours if looking after grandchildren daily.

From a policy perspective, the implication of these results is that childcare service provision or subsidisation should be prioritised over parental leave if the policy aim is to encourage grandparents' participation in the labour market. If full-time employment or longer working hours are to be promoted among grandparents, then both service provision and leave schemes should be implemented. In addition, reduced working hours may help grandparents combine employment with daily grandchild care. This highlights the importance of flexible working arrangements for retaining middle-aged and older individuals in the labour force (Dingemans, Henkens, & Van Solinge, 2017).

This study has limitations that should be acknowledged. A recursive bivariate model (Heckman, 1978) has been used to handle the potential selection of grandparents with different traits into work and grandchild care. In the absence of valid instruments for grandchild care provision, as it is the case in the SHARE data, the system of equations in

the model is identified so long as the matrix of covariates contains at least one exogenous regressor (Wilde, 2000), such as grandparent's age. However, identification relies on functional form, in the sense that in order to be able to estimate the regression coefficients one needs to assume that the error terms of the two equations follow a bivariate normal distribution (Li, Poskitt, & Zhao, 2016). As noted above, when comparing the results for the extensive margin of employment between the single-equation and the recursive bivariate models for grandmothers and grandfathers, the standard errors of the coefficients on grandchild care increase substantially, leading to the conclusion that there is no association between the two variables. If the large increase in the standard errors is related to the weak identification of the model, then the recursive approach may not constitute an improvement over the single-equation estimation.

In addition, unlike instrumental variable (IV) approaches, the recursive model does not allow to discern the direction of causality, as it only addresses the selection problem. However, similarly to the assumption of bivariate normality, assumptions about exclusion restriction in IV regressions are untestable and, in this case, unlikely to hold for instruments such as the presence of grandchildren, which is often endogenous to grandparents' labour supply (Frimmel et al., 2017). This is because, especially in familistic contexts, grandparents' availability to provide care – and, in turn, their participation in the labour market – is likely to affect children's fertility intentions and realisations (Aassve et al., 2012). Thus, a model that assumes bivariate normality in the error terms is preferable to a model that relies on invalid instruments, which is highly likely to be biased.

In this study countries are classified based on coarse indicators of de-familisation and supported familism in childcare policies. Many other contextual-level characteristics including policies, norms and population composition are likely to shape the association between intensive grandchild care and employment. To understand these, it may be more fruitful to conduct separate analyses by country in order to assess whether the general results obtained here apply across different contexts. Unfortunately, the sample sizes for single countries in SHARE are not large enough to allow for single-country analyses of grandparents' outcomes, which suggests that other nationally representative data sources should be used (Hank, Cavrini, Di Gessa, & Tomassini, 2018).

Finally, this study does not distinguish between part-time and full-time employment and between different types of grandparents' occupations. Importantly, I have no information on the control and autonomy of respondents in their decision to work or provide grandchild care, and to determine their working time. Similarly, I do not have information on how many hours grandparents spend with their grandchildren per day, nor on what activities they perform together. Integrating this information would contribute to giving a clearer picture of the association between daily grandchild care and employment (Hank et al., 2018).

Across Europe, pension reforms are leading to longer working lives (European Commission, 2018), which implies that many grandparents will remain in the labour force until advanced ages. The low provision of childcare services in some European countries suggests that grandparents may increasingly juggle care responsibilities with work. While non-intensive grandchild care provision is usually associated with positive health outcomes (Di Gessa, Glaser, & Tinker, 2016), having to combine work with intensive childcare may result in role strain (Goode, 1960), with potential negative implications for grandparents' health and wellbeing. Across Europe, policy reforms should acknowledge grandparents' role as intensive childcare providers and aim to minimise role conflict by promoting flexible working arrangements and by engaging in de-familisation, with a focus on the provision of affordable childcare services.

6. Conclusion

This thesis has been motivated by the intent to rectify misconceptions of later life as a state of dependency on family members and society. I have described and analysed the economic and welfare contributions that middle-aged and older adults make to their families and societies by participating in intergenerational support exchanges and productive activities. Adopting a cross-national comparative perspective has enabled me to place individual-level phenomena and associations within the socio-political and cultural contexts where they take place (Chapters 2–4), while pooling countries together has allowed me to examine how individual-level associations play out at the aggregate level (Chapter 5). In this final chapter I summarise the findings of the thesis and highlight how the four empirical papers, taken together, form a coherent contribution to knowledge. I consider the implications of my findings for research and policymaking as well as their limitations, and I conclude by suggesting possible avenues for future research on ageing and later-life activity engagement.

6.1. The findings of the thesis

I began this thesis by introducing the reader to the concepts of intergenerational support and productive ageing, and by providing a critical summary of the existing literatures on both topics (Chapter 1). I found that, although the amount of studies and the range of issues they cover are extensive, some gaps exist in our knowledge of intergenerational support, productive ageing and the interrelations between the two.

6.1.1. Contextualising intergenerational support and productive ageing

As I argue in my review of the literature, when studied in cross-country comparisons or as holistic concepts, intergenerational support and productive ageing have predominantly been examined from a European or North-American perspective. With regard to intergenerational support, the cross-national comparative literature on the relationship between public and family transfers is predominantly based on analyses of the Survey of Health, Ageing and Retirement in Europe (SHARE) and highlights a distinction between familistic and de-familising welfare systems in the South and North of Europe (Albertini

et al., 2007; Brandt & Deindl, 2013; Isengard & Szydlik, 2012). Productive ageing, on the other hand, is a United States (US)-centred concept not necessarily transferable to contexts with different cultural values (Moody, 2001; Peng & Fei, 2013), such as the familistic societies in East Asia and Southern Europe.

One of the general contributions of this thesis relates to the contextualisation of older adults' participation in the family and in the public sphere within different socio-political and cultural structures. In the case of intergenerational support, Chapter 2 extends the comparison of intergenerational transfer regimes beyond Europe, to Italy and Korea. I analyse differences in parent-child transfers of financial, practical and coresidential support between the two countries and I argue that, while both societies have familistic features, the differences in intergenerational support between them are likely to be related, at least in part, to the relative allocation of public spending to older adults relative to younger generations.

I find that, in Italy, where societal transfers in the form of pensions and benefits favour older generations and public support to younger adults is limited, older parents are highly likely to help their offspring through monetary transfers and by looking after grandchildren. Adult children appear to partly reciprocate this support by giving practical help to their parents, including in cases where parents are in good functional health. In Korea, public transfers to older adults are limited and so is access to long-term care services, while publicly subsidised childcare has nearly universal coverage. Middle-aged and older parents are more heavily dependent upon their adult children for financial support, while practical help from adult children is predominantly directed towards parents with functional health limitations. Compared to Italy, grandchild care provision in Korea is limited.

In relation to productive ageing, Chapter 3 is, to the best of my knowledge, the first attempt to generate measures of the concept that are specifically tailored to the societies they refer to. Professor Benjamin Lauderdale and I make a methodological contribution to the literature on measurement by proposing a method for the weighting and aggregation of indicators into a composite scale based on conjoint analysis. We use this method to derive productive ageing scales separately for Italy and Korea that reflect the

relative importance that Italian and Korean academics with expertise on the topic assign to each productive domain.

We find that experts do not consider all productive activities as equally valuable towards the construction of the concept, as is usually assumed in empirical research on productive ageing (Hinterlong, 2008; Jung et al., 2010). In both countries, the experts' responses indicate that paid work and informal care or help to adults are the most "productive" activities. This may be because these activities have a direct impact on the pension and long-term care systems, which are known to be under the greatest pressures from population ageing (WHO, 2002). Our results also suggest that there are systematic differences in the importance assigned to grandchild care provision and volunteer work by Italian and Korean experts. In our discussion, we interpret these differences with reference to the relevant policy arrangements and the cultural norms around older adults and the family that prevail in each country.

6.1.2. Interrelations between intergenerational support and productive ageing

In reviewing the empirical research on the individual-level predictors and consequences of intergenerational support (section 1.2.3) and productive ageing (section 1.3.2), a common problem that emerges is the scarcity of studies explicitly linking intergenerational family transfers to older adults' participation in productive roles outside the family, in particular paid work. Taken as a whole, this thesis makes an original contribution to knowledge by bridging the gap between the two literatures. I argue that, especially in familistic societies, the family and the public domain of older adults' involvement cannot be understood separately. Family transfers represent valuable additions to societal welfare, and they are likely to affect older adults' ability and necessity to participate in economic activities outside the household by shaping the amount of money and time they have available.

In Chapters 4 and 5, I shift my attention from the country level to individual-level relationships and set out to investigate some of the links between intergenerational transfers and productive activities. In Chapter 4, I study the associations between financial, practical and coresidential support with adult children and participation in paid work and informal caregiving for Italian and Korean parents aged 50 and above. In

Chapter 5, I analyse the association between daily grandchild care provision and European grandparents' labour supply.

The findings from these two empirical chapters confirm that intergenerational transfers with adult children and participation in paid work in mid- and later life are strongly interconnected. For instance, in Chapter 4, I find that parents aged 50 and over who give money to their adult children are more likely to work in both Italy and Korea. In Italy, financial support to children is also linked with informal caregiving and help to others. In addition, the results from Chapter 4 indicate that there is a negative association between grandchild care provision and paid work participation, at least for Italian men and Korean women. In Chapter 5 I explore this association further using data from all European countries in SHARE, adopting a recursive bivariate model to account for the presence of unobserved factors associated with both grandchild care provision and grandparents' labour supply. The model estimates confirm the existence of a negative association between intensive grandparental care and paid work among European grandparents aged 50–69 who live in countries characterised by familistic childcare policies.

The estimates from both chapters highlight the relevance of socioeconomic and gender differences in older parents' and grandparents' participation in paid work and in its relationship to family care. In Chapter 4 I find different socioeconomic gradients in paid work participation among mothers between Italy and Korea, which appear to reflect the differences in the generosity of pensions and old-age benefits also highlighted in Chapter 2. In Italy, where public transfers to older adults are relatively generous, mothers with secondary or higher schooling are more likely than lower-educated mothers to work after age 50, perhaps due to stronger labour market attachment or better employment opportunities. In Korea, by contrast, middle-aged and older mothers with lower levels of education and in poorer households are more likely to work, probably as a consequence of financial necessity. In both countries, middle-aged and older women are more likely than men to have had irregular labour market histories, characterised by career breaks, informal employment or early withdrawal (Crespi et al., 2015; Y. Yang & Chung, 2014). This means that their labour force participation is likely to be more closely tied to income security in later life, or lack thereof.

In Chapter 5 I examine differences in the association between daily grandchild care and grandparents' labour supply between grandmothers and grandfathers. The European setting is more interesting than a comparison between Italy and Korea to investigate this relationship because of the substantive importance of grandchild care for current European policy and research (Glaser & Hank, 2018). As I show in Chapters 2 and 3, grandchild care is not widespread in Korea, nor it is considered a highly productive accomplishment, possibly due to the rapid development of formal childcare provision in the country over the last decade (Chin et al., 2012). In Europe, the current shrinking of formal childcare expenditures, combined with the policy objective of retaining older workers in the labour market, implies instead that grandparents' work and family care commitments are increasingly likely to be in conflict with each other (Glaser & Hank, 2018).

I find that, in countries characterised by "supported familism" in childcare policies (in the form of generous parental leave but restricted provision of formal childcare services), grandmothers are less likely to work if they provide daily grandchild care, and employed grandparents of both sexes work fewer hours of doing so. By contrast, in countries characterised by "familism by default" (where both parental leave and childcare services are restricted), the negative association between daily grandchild care and employment at the extensive margin is only significant for grandfathers, possibly because grandmothers are unlikely to work in those settings. These differences reflect traditional gender divisions of roles assigning women to informal family care and men to formal paid work.

6.2. Implications of the findings

6.2.1. Implications for research on intergenerational support and productive ageing

The results of this thesis have a number of implications for research on intergenerational support, productive ageing and, more broadly, for the study of middle-aged and older adults.

The specialisation hypothesis in the literature on intergenerational support (reviewed in section 1.2.2) states that transfers of money and time between family members complement public transfers to individuals by specialising in different functions (Brandt & Deindl, 2013; Litwak, 1985). In line with this hypothesis, generous public transfers to a selected group of the population will crowd out essential family support to that group, but also enable it to redistribute resources to family members, thus promoting intergenerational exchange and reciprocation (Attias-Donfut et al., 2005).

When applied to the comparison of intergenerational transfer regimes between Italy and Korea in Chapter 2, the specialisation hypothesis appears to hold in relation to the generosity of public support to different generations within familistic societies. While the generosity of benefits, services and subsidies targeting different age groups is unlikely to be the only reason behind the differences in the average volume of parent-child transfers between the two countries, the comparison provides an explanation for differences in intergenerational transfer regimes that goes beyond the distinction between familistic and de-familised welfare policies in Europe. Its broad implication for the cross-national comparative research on intergenerational support is that it may be profitable to shift the focus beyond the degree of welfare familism in Europe and to explore differences in parent-child transfers across a broader variety of policy contexts and settings that may influence the exchange of money and time within families.

Critics of the productive ageing framework like Harry Moody (2001) have argued that its conceptualisation, originally developed for the US, may not be valid for contexts characterised by different policies and norms concerning later life. The empirical results from this study confirm this claim, with some important implications for research on the topic.

Firstly, as I argue in Chapter 3, measures of productive ageing that implicitly assume that all activities have equal weight (such as those obtained by summing up the number of activities or hours of involvement) are not valid for Italy or Korea and, potentially, for any other context. More efforts should be directed at constructing measures that adequately reflect the fact that some productive pursuits, such as paid work, have greater value than others, such as volunteering. In addition, the differences in the relative weight assigned to some activity domains by a group of Italian and a group of Korean experts

suggest that the relative value of different productive pursuits depends on the policy and cultural context to which the concept applies. This finding does not imply that cross-national comparative research on productive ageing should be regarded as pointless or unfeasible. Rather, it calls for greater attention to be paid to understanding whether the same measures should be used for different countries. In practice, it may be sensible to make different assumptions about the relative value of each activity for each specific context under study, or, when the use of a composite measure is not central to the research question of interest, to consider different productivity domains as separate variables, as I do in Chapter 4.

Productive ageing research in Western countries has often highlighted the presence of positive associations between socioeconomic and health resources and productive participation (Akintayo et al., 2016; Arpino & Solé-Auró, 2019). This has led some authors to depict productive engagement as a positive choice to actively contribute to society made by those who are able to, and which less fortunate individuals would make if they had the resources to do so (Loh & Kendig, 2013). The negative socioeconomic gradients in participation in economic activity highlighted here (Chapter 4) and elsewhere (J. H. Kim, 2013) for Korean women, as well as for older Vietnamese adults (Giang et al., 2018), show that this is not necessarily the case. In fact, positive connotations of productivity in later life may not be relevant for groups of older adults who lack basic income protection, and who may participate in productive roles out of need rather than out of opportunity.

Existing studies on grandchild care provision find large variations in the prevalence and frequency of this activity across different policy regimes in Europe (Bordone et al., 2017; Igel & Szydlik, 2011), but differences in the association between grandchild care and employment have been overlooked. In Chapter 5 I test for heterogeneity in the association between daily grandchild care provision and employment across country groups defined by the combination of two childcare policy indicators: childcare service provision, and paid parental leave (Multilinks, 2011). I find some significant differences across country groups, with grandparents in countries with reduced provision of formal childcare services most likely to experience role conflict between daily grandchild care and employment. The implication is that the growing body of research on the relationship

between grandchild care and labour supply should pay attention to and, if possible, explicitly model the policy context.

Taken together, the empirical chapters of this thesis broadly inform research in social gerontology in two main ways. First, they highlight the importance of contextualising concepts, definitions and theories in research on older adults, and advocate some degree of caution in adapting concepts and measures across countries with different socio-political and cultural characteristics. Research on ageing can benefit greatly from cross-national comparisons that allow us to appreciate diversity in individual outcomes and relationships (Chen et al., 2016; Morrow-Howell & Wang, 2013), as long as such comparisons are supported by theoretical justification and methodological rigour.

Second, ageing research can benefit from an integrated approach to studying the contributions and dependency of older adults on families and societies. The productive ageing framework incorporates informal family care as a productive accomplishment, but it can gain from considering the role of family needs, resources and transfers as predictors of participation. Research on intergenerational support can also be more explicit about the role of transfers of money and time from middle-aged and older adults to their family members as economic contributions to the societies where they take place.

6.2.2. Implications for policy

In Europe and the US, population ageing has given rise to popular discourses depicting the generation of those born between the Second World War and the early 1960s, the so-called baby-boomers, as a group that has received more than its fair share of welfare over its lifetime, and whose ageing is now leading to slower growth, unbalanced public finances and a growing economic burden on younger generations (Macnicol, 2015; Walker, 2018). These arguments are often backed up by references to increases in the old-age dependency ratio, or the proportion of individuals aged 65 and older over the working-age population (Boulhol & Geppert, 2018; Eurostat, 2018b).

In line with this view, international policy responses to population ageing have mainly focussed on reforms that directly address public spending on older adults. Most ageing-related policy directives from intergovernmental bodies such as the European Commission and the Organisation for Economic Cooperation and Development (OECD)

have been on work, retirement and pensions (European Commission, 2003, 2018a; OECD, 2006) or health and long-term care (European Commission, 2018b; OECD, 2017c).

Over the last decade, pension reforms in most OECD (2015b, 2017e) countries have consisted of one or more of the following measures: a shift from defined-benefits to defined-contributions pension schemes to align pension income to contributions made to the system over the working life; an increase in the minimum age required for receiving a state pension; a decrease in the generosity of public pensions and other old-age benefits; restriction of criteria for early retirement eligibility; and financial disincentives to early exit from the labour market.

Expenditure on long-term care has also been reduced, as high-income countries appear to converge towards "supported familism" in long-term care provision (Albertini & Pavolini, 2017; D. Lee, 2018). On the one hand, most European countries have implemented reforms aimed at reducing the provision of formal care services while shifting the focus towards home-based care and increasing the responsibilities of informal caregivers through cash-for-care programmes (European Commission, 2018b). On the other hand, emerging welfare systems like the Korean one have primarily focussed on the development of services for young families (Saraceno, 2016). As I have pointed out in this thesis, the Korean long-term care system remains relatively underdeveloped and difficult to access for low-income families (Chon, 2014), and family care obligations remain embedded in the legal system (H. J. Park, 2015).

I argue that policy responses that primarily curb (or fail to expand) expenditure on older adults are unfeasible as a long-term strategy for adapting to an ageing population.

First of all, old-age dependency ratios are obsolete as a measure of the dependency of older adults on society. Crude dependency ratios carry no information about whether individuals above or below a certain age threshold actually work (Vickerstaff, 2010; Walker, 2018). Effective dependency ratios, defined as the ratio of economically inactive to active individuals, ignore economic productivity that takes place outside the labour market. Thus, while dependency ratios are useful for assessing which public investments and labour market policies can maximise economic growth given the current and future

age structure of the population, policymakers in ageing societies should not consider them as the only source of evidence on which to base reforms (Walker, 2018).

Secondly, policy reforms to adapt to population ageing should not exclusively address older adults, but they should be relevant for individuals at all stages of the life course. In fact, the socioeconomic and health risks associated with old age tend to have their origins much earlier in life (Walker, 2018). Old-age poverty is strongly related to previous socioeconomic conditions, especially as current contributions-based pension systems tightly link pension income to earnings received over the working life (OECD, 2017e, 2017f). This means that policies that promote skill development and labour market participation such as early years' education, support with school-to-work transitions and employment protection can shield many against old-age poverty (OECD, 2017f). Health deterioration is also strongly related to previous health and socioeconomic status, since health risks tend to cumulate over the life course and differ across socioeconomic groups (Walker, 2018). Investing in policies that guarantee affordable access to good-quality healthcare throughout the life course is a more efficient and equitable strategy than increasing expenditure on costly long-term care and end-of-life care programmes (OECD, 2017f).

In addition, as the results from this thesis show, the economic contributions of older adults to society are correlated with their exchanges of support with younger generations. This implies that policies affecting a specific age group will also have indirect effects on older or younger individuals. For instance, childcare or parental leave reforms are likely to affect the need for grandparents to step in as family caregivers (Bordone et al., 2017), as well as their ability to participate in productive activities outside the family such as paid work (Zanella, 2017) and volunteering (Arpino & Bordone, 2017).

Thirdly, restricting public spending on pensions and long-term care is likely to increase poverty among older adults by leaving many without adequate financial or practical assistance to deal with reduced physical or cognitive functioning in later life. This would give rise to growing social problems and potentially preclude groups of older adults from taking part in productive roles. Decreases in public transfers shift financial and care responsibilities for dependent individuals to their family members, potentially

exacerbating inequalities by reinforcing the link between family resources and individual outcomes.

Research on productive ageing and intergenerational support suggests taking a different approach for adapting welfare systems to the current demographic trends in high-income countries.

In this thesis I have shown that population ageing does not necessarily imply that older adults receive a larger share of public spending than younger generations. In Korea, individuals born before the 1960s have aged before the complete development of the pension (Y. Yang, 2011) and long-term care systems (Chon, 2014). This has placed much of the financial and care responsibility for an ageing population on younger family members, as the findings from this and other studies suggest (Do et al., 2015; E. H. Kim & Cook, 2011).

It is important that countries facing situations similar to Korea – such as the emerging economies of South-East Asia – do not halt their development of old-age welfare. One of the most urgent issues to address in these settings is the existence of a large informal sector where a high proportion of older adults work (Hwang & Lee, 2012; Jones & Fukawa, 2016). Since those working in informal jobs are excluded from contributory pensions, guaranteeing an adequate minimum state pension and survivor benefits would prevent older adults, especially women, from being pushed into poverty by the onset of illness or the by the death of a spouse. It would also allow informal sector workers to retire without becoming financially dependent on their children or other family members. Such benefits may initially be financed through redistributive increases in taxation. However, in the long term, a progressive shrinking of the informal sector would help ensure that the public expenditure needed for guaranteeing a basic pension does not become unsustainable. At the same time, older adults' employment in the formal labour market can be promoted through legislation that prevents involuntary early retirement, which is widespread in East Asia (Higo & Klassen, 2014).

As the findings from this thesis suggest, while informal care is considered to be an important productive activity by Korean academics with expertise in productive ageing, relatively few older Koreans participate in it. Guaranteeing basic income security to older individuals may enable them to participate in non-intensive informal care for others, as

well as for grandchildren. However, the state should not rely on informal family care to address intensive care needs, and access to long-term care services should be urgently improved. In Korea, formal long-term care remains unaffordable for families in the bottom 20% of the wealth distribution (OECD, 2017f), which contributes to foster poverty and inequalities in later life.

In contrast to the Korean case, Italy represents a setting where individuals born before the 1960s have enjoyed relative prosperity compared to younger generations. After the recent recession, labour market liberalisation and austerity measures have given rise to considerable employment uncertainty among young adults, and welfare benefits for working-age individuals and families have shrunk (Pavolini, Leon, Guillen, & Ascoli, 2015). The effectiveness of austerity in fostering economic recovery after the crisis has been called into question, especially given the persistently high youth unemployment rates in countries like Italy and Spain (Rosnick & Weisbrot, 2015). In turn, the worsening economic conditions of young adults have increased their reliance on ageing parents for financial, practical and coresidential support (Knijn, 2012).

Policy reforms in Italy and similar settings should aim to maximise the economic contributions of older adults while improving welfare for younger generations. Longer working lives can be promoted through financial incentives to remain in paid work and increases in pensionable age. Such increases could ideally be larger for workers in occupations with higher earnings and lower physical demands. This would ensure that working longer does not exacerbate inequalities in later life by reducing pension wealth among disadvantaged individuals, who tend to have lower life expectancy (OECD, 2017f). Given the important role of middle-aged and older people as providers of informal care for adults and grandchildren, flexible working arrangements and care leave schemes specifically aimed at helping older adults combine work and informal care commitments should also be developed.

In countries like Italy, where temporary and irregular employment is widespread among young adults, a long-term strategy for ageing should consider the potential increase, in the next few decades, in the proportion of older individuals with very little pension savings. It is especially important to act now to impose regulations on the labour market

that restrict the use of temporary contracts and mandate compulsory contributions to the social insurance system for employers of non-regular workers (OECD, 2017f).

Regarding long-term care policies, cash-for-care schemes without restrictions on how the cash should be spent are likely to foster inequalities in care given and received. In Italy, there is evidence that families of higher socioeconomic status use such transfers to purchase informal care from (often irregular) migrant workers. By contrast, disadvantaged families, and in particular women, are more likely to keep the cash and provide care themselves, either by reducing their labour supply or by attempting to combine the two roles (Saraceno, 2010).

Beyond the Korean and Italian cases, this research generally shows that shrinking welfare expenditure alone is not an optimal policy response to ageing. Whatever the country's starting point in terms of how resources are allocated across generations, reducing public transfers will shift financial and care responsibilities to families, exacerbating inequalities among older and younger individuals. Population ageing necessarily requires adaptation, but older adults should be viewed as a potential resource rather than as a financial burden.

6.3. Limitations

I have discussed the limitations of this thesis in each of the four empirical chapters above. In this section I address those limitations that apply more generally and that may warrant caution about the empirical findings from this study.

First of all, the results obtained from empirical studies of productive ageing and intergenerational support are as valid as the measures used to quantify these concepts. In this thesis I have paid particular attention to issues of measurement validity. In Chapter 3, I have adopted a measurement method that, I argue, maximises validity with respect to researchers' judgements about the relative weight of different indicators in a composite scale of productive ageing. In Chapter 4, I have restricted my comparative analyses of the predictors of productive participation to paid work and informal adult care, the two activities that appear to be most closely comparable between Italy and Korea.

However, the indicators I have used to quantify intergenerational support and productive ageing may not adequately capture these concepts in relation to the contexts they refer to. For instance, in this study I might have considered a set of productive activities that is inadequate for the specific Italian or Korean context, where some relevant dimensions of productivity may have been left out. In studying intergenerational support I have restricted my attention to parent-child transfers, as most of the comparative literature on the topic does (Albertini et al., 2007; Brandt & Deindl, 2013; Deindl & Brandt, 2011). However, in Korea, exchanges of care and money with other relatives – especially daughters-in-law – may be equally important for older adults (Do et al., 2015; J. S. Kim, 2001).

Other limitations concerning the comparison between Italy and Korea relate to the practical difficulties in harmonising indicators between SHARE and KLoSA so that they represent the same substantive variables of interest. In order to measure socioeconomic status in Chapter 4 I have made use of a binary indicator for low (up to elementary) and high (secondary and higher) educational attainment and of a categorical indicator for household wealth, adjusted for household size and divided into five equal quantile groups. The categories of these variables are likely to identify different groups in each country. For instance, since Korea has a much higher level of old-age poverty than Italy, and greater inequalities in income in later life, older adults living in households in the bottom 20% of the wealth distribution in Korea may face considerably more hardship than those in the bottom 20% in Italy. The same issue applies to the use of educational attainment and wealth quantile categories across 20 European countries in Chapter 5.

A second set of limitations relates to the small sizes of single-country samples in SHARE. Because of the small size of the Italian sample, in Chapters 2 and 4 I am unable to get a more nuanced view of intergenerational support and productive activities, for instance by distinguishing between different frequencies of informal care provision or paid work, or by studying the interactions between socioeconomic status and intergenerational transfers. In Chapter 5, I pool data from 20 European countries together, which increases sample size but prevents me from conducting a more detailed description of cross-country differences in the relationship between daily grandchild care and grandparents' labour supply.

With regard to the issue of generalizability, in this thesis I use Italy and Korea as cases representative of familistic societies with different allocation of public transfers and services to older generations. While I do not set the aim of generalising the results beyond these countries, my objective is to understand and make hypotheses about how certain policy features may result in different participation regimes (Ebbinghaus, 2005). However, the relevance of the findings for policymaking may be hindered by their contingency to a specific period of time, between the mid-2000s and the mid-2010s. Across countries, intergenerational transfer regimes, productive ageing participation and inequalities in later life are changing in line with the changing composition of the population. For instance, older adults with up to elementary schooling are becoming a more selected group of the population since educational attainment has expanded rapidly in most high-income countries over the last 50 years.

In addition, despite the emphasis I place on the contextualisation of the findings, the empirical analyses pool together individuals who live in the same country but experience very different contexts in terms of the specific policy setting and resources available to older adults. While in some of the analyses I control for differences between rural and urban areas, I am unable to account for regional diversity in policies, culture and the general conditions of older adults.

Finally, there are limitations with the design of this study that should be acknowledged. In this thesis I mostly rely on descriptive and associational inferential statistics to draw conclusions. This methodological approach is aligned with the general aim of comparing intergenerational support, productive ageing and the associations between the two across countries. Despite the caution taken in clarifying that none of the relationships I assess can be interpreted causally, I still make hypotheses about their possible direction.

At the aggregate level, I hypothesise about the potential influence of policies on average individual outcomes. At the individual level, I make hypotheses about how behaviours such as giving money to adult children and participating in paid work may influence one another. I should therefore reiterate that, due to the nature of the data and of the research questions asked in this thesis, I never formally test for such hypotheses. In the case of aggregate-level relationships, my ability to make causal statements is hindered by the presence of unaccounted variation in factors related to both the policy framework and the

outcomes. At the individual level, the greatest threat to causality is that it may run in either or both directions.

6.4. Directions for future research

This thesis has raised some questions about the concepts of productive ageing and intergenerational support, and left other empirical questions unanswered. Building upon the findings of the thesis, in this final section I point out possible directions for future research and data collection on older adults' participation in the family and society.

I have advanced some hypotheses about how country-level factors like social policies and the structure of the labour market influence individuals' participation in intergenerational transfers and productive activities. However, studying the effect of policy characteristics on individual behaviours is difficult. Comparative data are usually only available for a limited number of countries, so that countries cannot be treated as the primary units of analysis. While some of the cross-national comparative research on intergenerational support uses multilevel models to infer associations between country-level characteristics and individual-level outcomes (Brandt & Deindl, 2013; Deindl & Brandt, 2011; Igel et al., 2009), these should only be used when the number of countries being compared is relatively large (Bryan & Jenkins, 2016). Moreover, even in the presence of harmonised data on many countries, multilevel random-effects models would not usually enable researchers to infer the causal links between specific policies and outcomes, as they cannot rule out the potential confounding effect of other unobserved country characteristics.

Academic and policy research would benefit from evaluating the effect of specific policy characteristics or reforms on intergenerational support transfers and productive participation in later life. In order to do this, it would be sensible to focus on single countries, exploiting variation over time (e.g. derived from changes in pension or long-term care eligibility) or across space (e.g. differences in public childcare or formal care coverage across regions).

A large number of empirical studies on intergenerational transfers and productive ageing make use of the Health and Retirement Study (HRS)-based longitudinal surveys on ageing such as SHARE and The Korean Longitudinal Study of Ageing (KLoSA) and, for many countries, these surveys are the only sources of data available to investigate such topics. Despite being invaluable sources of knowledge on a wide range of characteristics and behaviours of older adults, most of these datasets do not enable researchers to exploit regional variation in policies, either because they do not distinguish between different regions or because their sample sizes are too small to do so. In the case of SHARE, sample sizes for single European countries are often too small to even justify a single-country analysis, depending on the research question of interest (e.g. Arpino & Solé-Auró, 2019).

Further research on the influence of policies on intergenerational support and productive ageing would therefore benefit from expanding the sample size of existing surveys and from incorporating different data sources. In Europe, SHARE is an invaluable source of comparative data on older adults and their families and, with the release of its seventh wave containing retrospective information in April 2019, its coverage has expanded to include 28 countries. While the increase in the number of SHARE countries will facilitate large-N cross-national comparative research on intergenerational support and activity participation, in the future there may be scope for further investments directed at expanding the sample size for single countries to enable researchers to exploit regional within-country variation.

While survey data is necessary to understand the multifaceted aspects of intergenerational transfers and productive ageing, efforts may also be made to integrate information about the interactions among family members of different generations into national administrative data sources. In Sweden, the Multi-generation Register contains information abuout nine million individuals born from 1932 onwards and their parents (Ekbom, 2011). This unique data source has been used, for example, to study the interrelations between adult children's socioeconomic position and their parents' mortality (Torssander, 2014). While register data does not commonly contain information about important forms of intergenerational transfers and productive roles such as grandchild care, informal help or volunteering, an expansion in the availability of multi-generational registers would enable researchers to understand intergenerational

processes and their relationship with work, socioeconomic status and health from a broader perspective.

Throughout this thesis, I have used associational evidence to make hypotheses about the potential influence of intergenerational transfers with adult children on older parents' participation in productive roles such as paid work and informal care. I have also argued that research should more explicitly link intergenerational support to productive ageing, and study them as part of the same framework.

As in the case of country-level policy arrangements, identifying the causal relationship between intergenerational transfers and activity participation is difficult because, even when using longitudinal data, it is often impossible to disentangle the direction of causality. To date, only Miller and colleagues (2018) have attempted to estimate the causal effect of helping children financially on fathers' retirement behaviour. They find that, in the US, a child moving out of the parental home reduces financial transfers to children and, possibly through this channel, leads to earlier retirement age expectations and realisations among older fathers.

Further research efforts should be oriented in this direction, in order to understand whether the relationship between intergenerational transfers with adult children and later-life work holds across different countries, as well as for different socioeconomic groups. To infer causality, researchers may look for sources of exogenous variation in productive participation (e.g. using pension eligibility rules or pension reforms) or intergenerational support transfers (e.g. exploiting changes in the likelihood of transfers to children subsequent to certain events in children's lives or to changes in inheritance laws). Alternatively, in the absence of exogenous variation or in cross-national comparative studies, scholars may adopt research designs that allow them to infer the direction of causality under the assumption of selection on observables, such as matching methods (Imbens, 2014).

In Chapter 3, Professor Benjamin Lauderdale and I find differences in the operationalisation of productive ageing between a group of Italian and a group of Korean academics using an innovative measurement method. Future research on productive ageing would benefit from extending this work to other countries in order to study how they compare with respect to the importance of different productive pursuits. Expanding

the scope of data collection to obtain a higher number of observations from the conjoint comparison task would allow one to refine our measurement tool. For instance, one could investigate interactions between different productive activity domains to understand whether particular combinations of them are considered more "productive" than others. It would also be interesting to examine how conceptualisations of productive ageing differ between academics with research expertise on the topic and older adults themselves, which could inform ways to bridge the gap between academia and practice.

The measurement method we propose can be applied to a variety of multidimensional concepts, and it is especially suitable for quantifying concepts that, like productive ageing, lack an underlying latent construct and are pragmatically defined by the choices made by researchers about which indicators to include, and how to combine them. Future research on ageing may benefit from adopting this approach, or similar methods based on researchers' judgements, to measure concepts like active and successful ageing, which are derived from theory rather than from latent constructs like wellbeing or health.

Lastly, thanks to the growing availability of retrospective life course data from the harmonised ageing surveys (including SHARE, the HRS and the English Longitudinal Study of Ageing, ELSA), in recent years a promising avenue for research on ageing has been the adoption of a life course perspective. This implies considering the role of events occurring in childhood and (young) adulthood for shaping later-life outcomes such as health, work and socioeconomic status (Halpern-Manners, Warren, Raymo, & Nicholson, 2015; Keenan, Ploubidis, Silverwood, & Grundy, 2017). In particular, when used to study relative advantage and disadvantage, the life course perspective emphasises the role of the timing and sequencing of life events in shaping inequalities in later life (Crystal & Shea, 1990; Dannefer, 2003).

So far, research on intergenerational support has highlighted the importance of current socioeconomic and family resources in determining the presence, type (i.e. financial, practical or coresidential) and magnitude of exchanges between middle-aged and older parents and their adult children (Albertini, 2016). However, there is a lack of research on how parents' previous work and family life events relate to their engagement in intergenerational support transfers in mid- and later life. Moreover, while later-life participation in productive activities has been examined from a life course perspective

(Ko & Yeung, 2018; Stafford et al., 2019), it is unclear how the relationships among intergenerational transfers and productive roles may differ across groups of parents characterised by different work and family life histories.

Future research adopting a life course perspective to study intergenerational transfers, productive roles and the relationship between them is important to assess whether support responsibilities and dependency, as well as the potential conflicts between family care and productive roles, are likely to fall predominantly upon older adults with employment and/or family histories associated with disadvantage, such as individuals with histories of prolonged unemployment or marital breakdown. The recent developments in data sources and methods that enable to consider the entire life course as a unit of analysis (Aisenbrey & Fasang, 2010; Barban & Billari, 2012) are thus bound to benefit our future understanding of older adults' participation in their families and societies.

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