Living Alone in the United States and Europe: The Impact of Public Support on the Independence of Older Adults

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Abstract

Demographic and economic trends, alongside a growing preference for independence, make older adults living alone a fast-growing segment of the population. While we know that living alone is often associated with greater risk of financial hardship and related need for resources, we have limited knowledge on the possible link between availability of public support and living independently. We use data from the 2014 Health and Retirement Study and the 2011-2015 Survey of Health, Ageing and Retirement in Europe, to compare income and wealth profiles of the 60 and over population living alone in the United States and 19 European countries. We fit logistic regression models to assess cross-national differences in the likelihood of living alone by income and wealth groups, and multilevel models to estimate the impact of public support on living alone. The likelihood of living alone is higher in generous welfare states and social support and spending have positive impact on it. The relationship between personal resources and living alone has a smaller positive gradient in countries with robust welfare systems. The lack of adequate public support in less generous welfare states may constrain the ability of many low-income older adults without a partner to continue living independently. As the proportion of older adults with limited living-arrangement alternatives to living alone continues to increase, the need for public support will likely grow.

Keywords: living alone, income and wealth, public policy, HRS, SHARE

Introduction

In his book *Going Solo: The Extraordinary Rise and Surprising Appeal of Living Alone*, Eric Klinenberg claims that social changes that have taken place in recent decades, including women's entry into the labor force and their economic independence, the communication revolution, urbanization, and increased longevity, make living alone a lasting and important characteristic of developed societies (Klinenberg, 2012). A large body of literature over the past several decades has provided support for this notion by identifying changing preferences and increasing resources as the primary factors responsible for the increase in the proportion of older adults living alone (e.g., Burch & Matthews, 1987; Michael, Fuchs, & Scott, 1980; Pezzin & Schone, 1999; Ruggles, 2007). Available empirical evidence suggests that these insights about individual behavior hold across different societies (Palloni, 2000; Tomassini, Glaser, Wolf, van Groenou, & Grundy, 2004).

Public policies, then, need to recognize and adapt to this new reality in ways that will foster individual freedom of choice and benefit society as a whole (Angel & Angel, 2017). Policies that foster active aging and independence are particularly pertinent for older adults who live alone since their pathways into this living arrangement reflect multiple sources of potential vulnerability. For older people, solitary living arrangements are most often related with the loss of a partner. Living alone is also accompanied by increasingly poor health as one ages. Diminished health and loss of autonomy are realities that distinguish many older people who live alone from younger individuals in similar living situations.

Population aging, coupled with the growing shift toward living independently, resulted in a sharp growth of older adults living alone over the past century (Stepler, 2016). There are over 12 million Americans aged 65 and older who live alone, about a trifold increase compared to

mid-twentieth century (Klinenberg, Torres, & Portacolone, 2013; Stepler, 2016). This growth has been associated with higher rates of divorce and the increasing likelihood of remaining single following a divorce (Brown & Lin, 2012), as well as with the long-term decline in intergenerational households, a phenomenon caused by changing economic structures and increased opportunities for adult children outside of parental households (Ruggles, 2007). As the result of higher marital instability and historically low fertility rates, older adults are increasingly aging not only alone, but also without family (Margolis & Verdery, 2017).

The United States is far from unique in experiencing these trends. Many other developed countries have substantially higher rates of older adults living alone (Iacovou & Skew, 2011) or having no children (Dykstra, 2009). Across the 28 member states of the European Union (EU), close to 27 million adults aged 65 and older lived alone as of 2013, about 20 million of whom were women (Lodovici Samek, Patrizio, Pesce, & Roletto, 2015). Although projections of future living arrangements in Europe (Gaymu, Ekamper, & Beets, 2008) as well as recent trends in the United States (Stepler, 2016) suggest that further gains in the share of older adults living alone are less likely—partly because of improved health of men and an associated decline in widowhood for older women—their number will remain high.

In this study we focus on contemporary trends in living arrangements of older people in the United States and Europe. While these high-income countries are rapidly aging, they differ dramatically in the financing of their old-age welfare state. With industrialization and the emergence of the modern welfare state, the family has been increasingly replaced by the state as the major source of financial support and medical care for elderly citizens. Yet, the state faces serious limitations in its ability to provide all the support that elderly individuals need to "age in place" and maintain the residence of their preference.

We are particularly interested in the way in which these western countries differ in the propensity to live alone. Living alone among older adults is a policy issue of high relevance given the increased risk of institutionalization (Thomeer, Mudrazija, & Angel, 2016), readmission following discharge from a formal care institution (Mudrazija, Thomeer, & Angel, 2015), and higher need for and use of health-related public support among community-dwelling population (Grundy, 2006). As financial pressures escalate, the U.S. government will likely continue to expand policies enabling older adults to age in place and retain more autonomy and independence. In Europe, while the propensity to live alone varies across nations, it presents an equally growing challenge for fiscal sustainability.

However, our knowledge regarding the links between public support and living arrangements in the context of available personal financial resources remains limited. While we know that economic resources are positively correlated with living alone, we lack empirical evidence regarding the role that public support and different policy contexts play in this relationship. Although prior research suggests that individual and family behavior are affected by public policies, these insights have been largely limited to the issue of intergenerational transfers. More specifically, welfare regimes (Albertini & Kohli, 2013; Leopold & Raab, 2011; Mudrazija, 2014) and public assistance (Brandt & Deindl, 2013; Mudrazija, 2016) were found to impact the likelihood and magnitude of family support provision across generations. In this study, we build on these empirical and theoretical insights by extending them to the context of living arrangements and economic resources. We explore cross-national differences in the prevalence of living alone across income and wealth groups, and estimate the impact of public policies on the likelihood of living alone.

Determinants of Living Arrangements

Prior research has established that living alone may increase loneliness and social isolation among older adults (Yeh & Lo, 2004), and feelings of loneliness have been linked with physical and mental illness (Ong, Uchino, & Wethington, 2016) and all-cause mortality (Steptoe, Shankar, Demakakos, & Wardle, 2013). Living alone is correlated with some adverse health outcomes such as depression (Chou, Ho, & Chi, 2006), although the relationship varies by gender and race and ethnicity (Russell & Taylor, 2009). The main source of vulnerability for older adults who live alone seems to be the lack of a person, primarily spouse, who can provide various health-related supports (e.g., surveillance, care during illness, provision of meals), which leads to faster health deterioration in absence of other sources of support (Grundy, 2006). For example, individuals who live alone have an elevated risk of undiagnosed dementia (Lehmann, Black, Shore, Kasper, & Rabins, 2010).

Besides health conditions, especially as it relates to mobility impairment and other disabling conditions that constrain older adults' autonomy and reduce their likelihood of living alone, several important demographic factors are related to late-life living arrangements including marital status, sex, age, and nativity (e.g., Gaymu et al., 2006; Wilmoth, 2001; Yeh & Lo, 2004). Because women on average live longer than men, they are overall much more likely to be unpartnered and live alone in old age (Gaymu et al., 2006). On the other hand, among unpartnered older adults, men may have higher odds of living alone than women (Yeh & Lo, 2004). Gaymu and colleagues (2006) further establish that living alone has an age gradient, increasing through age 80 and declining afterwards as disability levels increase among advanced old age adults. Wilmoth (2001) focuses on nativity of older adults in the United States and finds

that even after accounting for resources, needs, and various demographic characteristics, older immigrants are generally more likely to live with family than native-born non-Hispanic whites.

Based on theoretical and empirical insights about preference for independent living (Burch & Matthews, 1987; Klinenberg, 2012; Pezzin & Schone, 1999), researchers documented the link between economic resources and living arrangements and found that material resources, income in particular, are positively related with living alone (Gaymu et al., 2006; Iacovou, 2000; Michael et al., 1980; Mutchler & Burr, 1991). However, this relationship exhibits some variation across countries (Iacovou, 2000), suggesting that different policy contexts may play a role. This explanation is consistent with findings in the United States that the choice of living arrangements was influenced by public home care programs (Pezzin, Kemper, & Reschovsky, 1996) and Social Security benefits in the second half of the twentieth century (McGarry & Schoeni, 2000).

Conceptual Model and Research Hypotheses

Building on the empirical evidence and theoretical insights from prior literature, Figure 1 presents a conceptual model of the association of living alone and personal economic resources[1] by welfare state generosity level.[2] Part A summarizes the relationships between the key variables of interest. We start by assuming a positive relationship of personal economic resources and living alone in old age, which was established in previous empirical studies. We then assume that welfare states impact the likelihood of living alone in two ways. Through their social spending and supports, welfare states increase the ability of older adults to live independently if they

[1] In this paper, we focus on income and wealth distribution across countries, defined as terciles of per person equalized household income and wealth.

[2] More generous welfare states correspond to those belonging to the social-democratic and conservative welfare regimes of Northern and Western Europe, whereas less generous welfare states include countries of Southern Europe, former socialist countries of Central and Southeast Europe, and the United States. Data on social services employment and social expenditures, two key public policy measures of interest in our analysis, are consistent with such division.

prefer to do so, which is represented with a direct positive link with living alone. However, by alleviating resource constraints that less well-off adults face and partially decommodifying the choice of living arrangements, welfare states also attenuate the positive relationship between personal economic resources and living alone. Although not in the focus of our analysis, we recognize that other personal characteristics also impact the choice of living arrangements.

[Figure 1 about here]

In part B, we depict how these basic assumptions about the impact of welfare state generosity on the relationship between personal economic resources and living alone translate into the research hypothesis that we will explore in this analysis. Because of higher social spending and supports, the overall prevalence of living alone is, all equal, higher in more generous welfare states (*Hypothesis 1*). This is reflected in the share of older adults living alone in more generous welfare states being higher at any given level of personal economic resources. Furthermore, consistent with the basic economic insights regarding decreasing marginal utility of income and wealth, we expect that the impact that redistributive policies have on residential choices of poorer individuals is larger than the impact on wealthier individuals. Therefore, we expect that more generous welfare states have a smaller gradient of association between economic resources and living alone (*Hypothesis 2*), as reflected in different slopes of this relationship by welfare state generosity.

An important caveat in our conceptual framework is that we are not making any assumptions about the origins of different welfare regimes and public policies, but assume them to be essentially exogenous from an older adult's perspective. From a societal perspective this reasoning is flawed given that public policies are—at least in mature democracies—both a product of voters' collective preferences and a factor that shapes them. That is, they are

inherently endogenous. Yet, because any individual is essentially an infinitesimally small part of a country's population and electorate, we assume that an older adult's decisions on living arrangements considers public policies to be given. This, in turn, allows us to compare the impact of a broad variation in institutions and policies on individuals, which is especially advantageous in cross-national study designs.

In addition to the overall relationship of economic resources and living arrangements, depicted in Figure 1, we are also interested in possible gender and age differences. As previously described, widowhood disproportionately affects women. Also, research shows that the implications of divorce and increase in non-traditional family forms on family ties is less negative for women than men. For example, increase in divorce and non-marital childbearing decreases the likelihood of living together and having contact with children for fathers more than mothers (Kennedy & Bumpass, 2008). While early-childhood parental separation is particularly detrimental for men's ties with children, even late-life marital disruption and widowhood have more negative implications for men (Kalmijn, 2007). Therefore, we expect a comparatively larger share of lower income women than men of similar means to coreside with children, resulting in a steeper gradient of the relationship between economic resources and living arrangements for women (*Hypothesis 3*). Consistent with the previously described expected impact of welfare-state generosity, the difference in the gender gradient of living alone by economic resources is larger across less generous welfare states (*Hypothesis 4*).

As far as the impact of age, we expect the link between living alone and economic resources to exhibit a positive age gradient (*Hypothesis 5*). One of the key reasons for this would be that health and long-term services and supports costs increase substantially with age and that

may lead older adults to seek alternatives to independent living, even if they would otherwise prefer to continue living on their own.

Data and Methods

Data

To analyze the links between personal economic resources and living alone among older Americans and Europeans, we use individual-level data from the *Health and Retirement Study* (HRS) and the *Survey of Health, Ageing and Retirement in Europe* (SHARE). The HRS is a nationally representative biennial survey of Americans over the age of 50 conducted since 1992, while the SHARE is a nationally representative survey of people aged 50 and older from 19 European countries[3] and Israel that began in 2004. In this study, we use the HRS data from 2014, and the comparable SHARE data for European countries from 2015, save for the Netherlands and Hungary, which did not participate in the 2015 data collection wave. We use the latest available data in its place (2013 and 2011, respectively). We primarily rely on the HRS-harmonized version of the SHARE data provided by the Gateway to Global Aging Data, which makes multiple adjustments to the SHARE data to make it comparable with the RAND HRS data file. One such adjustment is that the harmonized SHARE file has income and assets information at the couple level, consistent with the HRS questionnaire, in addition to the household-level information from the original SHARE.[4] Our data has records on 60,160 non-institutionalized

[3] Austria, Belgium, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Italy, Luxembourg, the Netherlands, Poland, Portugal, Slovenia, Spain, Sweden, and Switzerland.

[4] Even after the harmonization, there are some remaining methodological differences between the two datasets. For this research, the most important one is that the HRS collects information on the pre-tax income and the SHARE on the after-tax income. While the RAND HRS Tax Calculations file provides calculated information on the after-tax income, the calculations are repeated for each respondent across all the U.S. states and require access to the restricted geographic information for the identification of the appropriate calculation. Since obtaining access to the restricted data was not feasible for this study, we approximate the after-tax income by using publicly available

adults aged 60 and older who provided information on their living arrangements, and household income and wealth. However, because the extent to which older adults live with their partners is strongly linked with differences in life expectancy across countries, and because partnered older adults overwhelmingly do not live alone, we focus the analysis on the subsample of 19,745 unpartnered older adults.

We supplement the individual-level data with the country-specific information on the share of social employment and social expenditures. Data on employment come from the International Labour Organization estimates of employment by sector (International Labour Organization, 2017). Data on the total social expenditures come from the OECD Social Expenditures Database (Organisation for Economic Co-operation and Development, 2017).[5]

Variables

The outcome of interest is whether the older adult lives alone. We exclude institutionalized individuals, such as those living in nursing homes. The main predictors are older adults' economic resources, defined as terciles of wealth and income in each country, and their interaction with the country indicators. To construct wealth and income terciles, we use the available household (i.e., couple) information on the nominal net total wealth and income, convert them to real 2015 U.S. dollars, correct for purchasing power parity across the countries, and calculate per-person amounts using equivalence elasticity of 0.5, consistent with the OECD methodology (Organisation for Economic Co-operation and Development, 2015). We split the resulting per-person wealth and income in each country into three categories, representing low, medium, and high wealth and income, respectively.

information on respondents' census division of residence and randomly assign after-tax income calculation for a state within a division, weighting the results with each state's share of census division population aged 60 and older.

[5] These data are missing for Croatia.

In the models estimating the impact of public policies on living alone, the predictor of primary interest is the measure of social services employment and, alternatively, social expenditures. Because the decision regarding living arrangements can involve persons other than the older adults themselves (e.g., adult children, siblings, or friends), and reflect a complex optimization process that considers the needs and preferences of persons at various stages of the life cycle, we use the most inclusive measures of public support. Following the literature that examined the impact of public policies across countries on intergenerational transfers between older parents and adult children (Brandt & Deindl, 2013; Brandt, Haberkern, & Szydlik, 2009), we operationalize social services employment as the total employment in human health and social work activities. This is equivalent to sector Q in the fourth revision of the International Standard Industrial Classification (United Nations, 2008). This measure approximates each country's level of commitment to public provision of intergenerational practical supports, which are essential for successful independent living.[6] The measure of social expenditures is operationalized as the total per capita spending (in thousands of dollars) at purchasing power parity on social policy, which includes old age and survivors, disability and other incapacity-related benefits, health, family, unemployment, active labor-market programs, and housing. Public spending on social services approximates financial support provided to older adults and other individuals in need of support.

The models also control for various individual sociodemographic characteristics that are statistically significant in at least some of the estimated model specifications. These characteristics include age (in years), relationship status (married/partnered, divorced/separated, widowed, and never married), education (in years), and indicator variables for gender, any living

[6] Because of a large private healthcare sector, this indicator may be less appropriate for the United States than the other countries in the sample where health and social work employment is primarily related to public funding.

children, any living siblings, taking care of grandchildren, and any limitations in instrumental activities of daily living (IADL).

Analytic Approach

The analysis begins with an overview of the prevalence of living alone among older adults in the United States and Europe, overall and conditional on being unpartnered. We then examine cross-national differences in wealth and income distribution of unpartnered adults aged 60 and older by living arrangements. This is followed by an overview of sample means, including a test of difference in means by living arrangements.

We next fit a logistic regression model of living alone on wealth and income groups. The model includes a welfare state-type dummy variable and its interaction with wealth and income, allowing us to examine differences in the relationship of personal economic resources and living arrangements by welfare state generosity. Given insights from prior research, we include in the model an interaction of gender and relationship status. We also accommodate for possible non-linear relationship between living alone and age by specifying a piecewise linear spline with knots at ages 70 and 80. Following the model estimation, we examine and graph predictive margins of income and wealth by welfare state type. We repeat the analyses stratified by gender and age.

Finally, we estimate a multilevel model of living alone that adds the predictors for social services employment and social expenditures, respectively. The model includes two levels—individual and country—with random intercepts by welfare state type, reflecting the hypothesized higher prevalence of living alone in more generous welfare states.

Results

The share of adults aged 60 and older who live alone varies substantially across the countries, from under one fifth of the population in Portugal to more than twice that share in Estonia (Figure 2). The United States, alongside Southern European and former socialist countries of Central and Southeastern Europe, appears to have lower overall prevalence of living alone than Northern and Western European countries, though there is a substantial degree of overlap that may at least partly reflect factors unrelated to choice such as differential life expectancy. Examining the living arrangements of unpartnered adults reveals a clear division between traditionally more generous welfare states of Northern and Western Europe, where the share of unpartnered older adults who live alone is uniformly above 80 percent, and former socialist countries, Mediterranean countries, and the United States, where it is substantially lower. For example, in welfare states in Northern and Western Europe over 80 percent of unpartnered older adults live alone (in Denmark and Sweden this proportion exceeds 90 percent), less than two-thirds do so in Portugal, Spain, Hungary, and Croatia, and less than half in Poland.

[Figure 2 about here]

Unpartnered older adults are very likely to be at the lower end of both the wealth and income distribution across all countries (Table 1). This result is primarily due to unpartnered older adults who live with others given that anywhere between two thirds and 90 percent of them are in the lowest third of income distribution for their age group and country, and between one half and two thirds are in the lowest third of the wealth distribution. Income and wealth profiles of unpartnered older adults who live alone appear to be somewhat more similar to those of partnered older adults, although they are also underrepresented among older adults with more financial resources.

[Table 1 about here]

What remains unclear from these results, however, is whether there is any noticeable difference between more and less generous welfare states with respect to the link between financial resources and living arrangements for unpartnered older adults. Figure 3 shows the difference in the share of adults aged 60 and older living alone and with others by wealth and income levels and by country as well as the average difference by welfare state generosity, depicted with dashed lines. It reveals that there is a fair degree of variation across countries, but the differences are on average substantially smaller in more generous welfare countries regardless of the level of income and wealth. The magnitude of the difference is larger at the lower end of income and wealth distributions, which is consistent with higher resource constraints facing less well-off older adults who may therefore be more likely to adjust their arrangements in the absence of robust public support.

[Figure 3 about here]

Table 2 presents sample characteristics. Three times as many unpartnered older adults live alone than those who live with others, and they are on average almost a year older. Women in the sample are more likely to live with others than men, as are widowed older adults. Conversely, divorced and never married are more likely to live alone. Those who live with others are more likely to have living children and siblings, possibly indicating larger family network size, and they are also significantly more likely to provide grandchild care. Foreign-born older adults are substantially less likely to live alone. Unpartnered older adults who live alone have fewer IADL limitations, are better educated, and have more financial resources, suggesting that on average they may be better fit for independent living then their counterparts who live with others.

[Table 2 about here]

Model results presented in Table 3 allow us to examine the validity of our first two research hypotheses. We find that welfare state generosity is strongly positively associated with living alone, and wealth and income gradients in countries that have generous welfare systems are less steep than in less-generous welfare states. These results provide support for our research hypotheses 1 and 2, respectively. Figure 4, which shows predictive margins of probability to live alone by wealth and income groups across welfare state types, visually depicts this finding.

[Table 3 about here]

[Figure 3 about here]

The model results also confirm prior findings that economic resources are positively related with the odds of living alone. The magnitude of this relationship is substantially more pronounced for income than wealth. For example, being in the top tercile of the income distribution is associated with over six times higher odds of living alone than being in the bottom tercile, whereas the odds are less than twice as high for high-wealth compared to low-wealth individuals. Among other predictors of interest, we find that age is not linearly associated with the odds of living alone; the positive link is stronger before age 70 than after it, and it disappears or even reverses beyond age 80. Stratifying the analysis by age groups reveals that both welfare state generosity and income and wealth gradients are more strongly positively associated with living alone for adults aged 70 and older than those younger than 70, but there is no clear age pattern with respect to the gradient of financial resources by welfare state generosity. Being a woman is significantly linked with lower odds of living alone only among those younger than 70.

Conversely, being widowed or never married, having living children, taking care of grandchildren, and having functional limitations are all strongly predictive of living with others as the age of unpartnered older adults increases. Among adults aged 80 and older, we also

observe a negative association between living alone and nativity, suggesting that foreign-born oldest old adults have significantly lower odds of living alone than their native-born peers. Larger family network and stronger family ties, as well as having functional limitations, are all negatively associated with the odds of living alone. The level of education exhibits a more complex link with living alone, as those 9-15 years of education are more likely to live alone than the least educated, but highly educated unpartnered older adults (16 or more years of education) are less likely to live alone all else equal.

Stratifying the analysis by gender allows us to test our research hypotheses 3 and 4. We find that older women have a consistently larger income and wealth gradient of living alone than men, and that welfare state generosity is more strongly positively associated with living alone for women, which lends support to our third research hypothesis. Conversely, the fourth research hypothesis finds no support in the results, as we find no clear gender pattern with respect to the income and wealth gradients by generosity of the welfare state. There are several other findings of interest in the models stratified by gender. Women are about 30 percent less likely to live alone. Being widowed or never married is associated with lower odds of living alone compared to those who are divorced or separated, but the difference significantly attenuated widowed women. The age pattern of living alone is distinct by gender. For men, the odds of living alone increase through age 70, and remain constant thereafter, whereas for women they increase through age 80, albeit at a diminishing rate, and decline moderately afterwards. Having living children and siblings or any IADL limitations are more predictive of lower odds of living alone for women. Conversely, grandchild care is a more important predictor of living alone for men. Previously described educational gradient is observed for women only.

To test the final research hypothesis, we stratify the analysis by age. The results show that the magnitude of the link between economic resources and living alone is larger for adults aged 70 and older than their younger peers. However, beyond age 70 there is no discernable continued upward trend in the importance of economic resources for living arrangements. Therefore, we find only partial support for the last hypothesis. Similarly, the magnitude of negative association between living alone and having any living children or being in worse health is larger for adults aged 70 and older than those aged 60-69, with no difference between those aged 70-79 and their older peers.

The final set of models extends the analysis to the multilevel framework and introduces direct measures of social policies to test more directly the hypothesized positive association between public support and living alone (Table 4). The results suggest that the odds of living alone are higher by about one fifth for each additional percentage point of social services employment share in total employment. Models stratified by gender and age, respectively, reveal that this effects is somewhat smaller for men compared to women, and individuals younger than 70 compared to those aged 70 and older. Social expenditure are also positively associated with the odds of living alone. On average, each additional $1,000 of per-capita social spending is associated with 18 percent higher odds of living alone. The effects is somewhat larger for individuals aged 70 and older than those who are younger than 70. Compared with regression results presented in Table 3, these models suggest an even stronger positive gradient of income level and living alone, but no significant relationship of wealth and living arrangements. Both higher social services employment and higher social spending are associated with moderating the impact of income on living alone. Otherwise, model estimates are consistent with those from the logistic regressions with country indicators (results not shown). The results of multilevel models,

therefore, confirm the findings from the logistic regression models with respect to the hypothesized relationships of interest.

[Table 4 about here]

Discussion

This study set out to examine cross-national differences in the association of living alone and personal financial resources for older adults, as well as the impact of public policies on the likelihood of living alone, overall and by gender. We find strong support for our first three hypotheses. The results show that living alone is more common among older adults in generous welfare states and that social supports and spending are positively associated with living alone. Furthermore, the analysis finds the positive link between financial resources and living alone has a steeper gradient in less generous welfare states of Southern Europe and former socialist countries, whereas the gradient is less steep in Northern and Western Europe. Consistent with the third research hypothesis, both wealth and income gradients are steeper for women. The fourth research hypothesis, however, does not find support in the model results. While living in a more generous welfare state is more strongly associated with living alone for women than for men, the income and wealth gradients do not exhibit consistently different gender patterns by welfare state generosity. Finally, the analysis stratified by age suggests that economic resources are more important determinant of living arrangements at 70 and beyond than earlier, but there is no evidence of continuous increase in the magnitude of this link with age, which is only partly consistent with our last research hypothesis.

These results extend prior research by providing evidence of the systematic variation in the association of personal financial resources and living arrangements across countries with

different levels of welfare system generosity. They also show a direct link between public policies—namely, social supports and spending—and living alone, which is consistent with the conjecture that public policies affect individual and family behavior. The results extend prior work on the role of social supports in regards to intrafamilial transfers and supports to living arrangements.

Improving our understanding of the link between public policies and individual and family decisions has important policy implications. Historically, one of the key characteristics distinguishing welfare regimes has been their emphasis on the role of state and family as providers of support to individuals (e.g., Ogg, 2005). As a consequence, only countries that emphasize the state's primacy in the support of individuals have policy structures in place that can facilitate independent living for all citizens. For example, since the 1930s Sweden has had policies and projects that allowed single women and mothers to live independently, such as collective housing (Klinenberg, 2012). Lack of such social supports in familistic societies has traditionally had a limited adverse impact on the population, as individuals could rely on robust family networks. However, in the era of shrinking families and socioeconomic developments conducive to independent living, a fast-growing segment of the population may lack adequate support, especially in old age. Older adults with limited financial resources and their family members, if they have any, face much more substantial challenges regarding provision of caregiving and other supports than their peers in generous welfare states. They are often forced to make arrangements that may adversely impact the quality of their lives or constrain labor market participation for working-age family members. The results of this study are consistent with the notion that policies can alleviate such undesirable outcomes.

This important finding provides support for a long-standing aim for harmonization of welfare policies across Europe alongside convergence toward higher levels of social protection (European council, 1992; Ogg, 2005). In recent years, policy reforms across European countries focused on active aging, especially as it relates to employment opportunities for older adults, ending age- and gender-based workplace discrimination, and improving social inclusion for marginalized groups, and to a much lesser extent on other age-friendly policies in the areas such as transportation, urban development, and digital technologies (Lodovici Samek et al., 2015). Although Northern European countries like Sweden still have the most comprehensive approach toward active aging policies and social protections for older adults, new policy initiatives in other countries (e.g. adoption of active aging strategies in countries such as Romania and Slovenia) and the development of Active Aging Index tool (Karpinska & Dykstra, 2015) to monitor and compare active aging policies across the EU countries suggest a general increase in the awareness of the importance of this issue. While not targeting exclusively older adults who live alone, these policies may benefit these individuals in particular. However, pension reforms undertaken across European countries since the financial crisis with the goal of improving pension system sustainability have a more mixed impact, given that some aspects such as strengthening the link between benefits and lifetime contributions have disproportionately large negative impact on women who make up the majority of older adults who live alone (Lodovici Samek et al., 2015).

In the United States, focus has been primarily on policies to support aging in place and transitions from formal care into community. While not specifically targeting older adults who live alone, programs such as Cash & Counseling or Money Follows the Person enable longer stay in the community for the population particularly susceptible to health deterioration and

institutionalization. Furthermore, kinship bias embedded in long-term services and supports policies is being increasingly supplanted by a more inclusive notion of "caregiver" (Ivanova & Dykstra, 2015), which should benefit older adults who live alone more than those who co-reside. Although the U.S. welfare system remains less generous than those of the Northern and Western Europe, these types of reforms increase options for the most vulnerable segments of older adults living alone.

The contributions of this study should be considered within the context of its limitations. The implicit assumption of this study is that, while they vary across countries, preferences for living alone are similarly distributed by income and wealth groups in different countries. However, if this assumption is violated, the observed results might partly reflect different cross-national distributions of living-arrangement preferences between poorer and richer older adults. While we are not aware of empirical studies that would indicate that such difference exists, we cannot fully discount such a possibility.

Furthermore, due to data limitations, we are precluded from exploring various factors and relationships that would provide a more nuanced picture of the relationship between public support and living arrangements. For example, we do not know how many older adults could live with somebody else, but choose not to do so, as opposed to not having such option. We also could not examine fully certain subgroups of older adults, such as those who are kinless and likely have more limited living-arrangement options and higher vulnerability.

Notwithstanding these limitations, the present study provides new evidence that living arrangements of older adults are related with financial resources constraints, and that public support may alter these constraints. In other words, the observed differences in living arrangements across countries do not reflect exclusively the degree of familialism or

individualism in different societies, but are also likely related to resource constraints. This finding provides scope for government intervention, especially to support poor older adults who live alone with no or limited family support available. Recent research by Djundeva, Dykstra, and Fokkema (2018) suggests that about a third of older adults living alone could be considered vulnerable. Furthermore, the analytic approach of this study is among the first to exploit fully the harmonized versions of the HRS and SHARE to model jointly the outcomes in the United States and European countries. Future research could build on these insights to examine cross-national differences in the adequacy of support for older adults living alone.

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Tables

Table 1. Wealth and income distribution of unpartnered adults aged 60 and older, by living arrangements and by country

	Wealth				Income			
	Bottom third		Top third		Bottom third		Top third	
	Living with others	Living alone	Living with others	Living alone	Living with others	Living alone	Living with others	Living alone
Austria	57.6	50.5	21.3	24.4	82.6	41.4	3.5	24.0
Belgium	52.4	34.7	16.5	35.4	75.4	45.3	15.8	21.6
Croatia	45.9	47.9	20.0	25.2	63.7	34.5	9.2	23.8
Czech Republic	50.1	41.4	18.8	27.8	90.0	45.4	2.9	10.9
Denmark	48.9	53.6	17.8	25.8	66.3	56.3	14.4	14.4
Estonia	48.1	50.6	25.2	21.1	88.2	37.3	4.7	14.4
France	65.2	43.8	11.8	31.5	78.2	46.7	2.6	21.7
Germany	63.0	45.6	13.2	26.8	75.4	47.5	4.1	22.0
Greece	55.3	33.7	16.7	31.9	67.0	35.8	10.9	25.4
Hungary	56.9	30.1	20.8	32.7	88.2	30.1	3.2	24.8
Italy	46.1	41.7	19.1	26.9	67.7	35.7	6.3	26.5
Luxembourg	48.9	43.6	19.6	32.2	77.4	34.3	11.6	26.8
Netherlands	54.2	46.6	18.3	24.5	74.5	48.1	12.0	22.6
Poland	56.0	50.9	7.6	26.6	75.5	23.3	5.1	24.6
Portugal	49.8	37.4	17.8	31.8	64.9	23.4	11.1	32.0
Slovenia	48.1	25.1	21.8	37.6	75.9	36.1	7.8	19.1
Spain	60.3	51.8	9.9	19.8	69.7	19.4	7.2	33.0
Sweden	45.3	39.1	23.7	30.7	60.5	54.8	11.4	16.5
Switzerland	64.0	30.9	17.6	37.0	65.1	44.5	6.8	24.0
United States	63.8	40.8	9.6	27.5	75.7	46.5	5.3	20.9

Note. Data from SHARE, 2011-2015, and HRS, 2014; authors' calculations.

Table 2. Sample means

	Not alone	Alone	
Age (in years)	73.9	74.8	***
Woman	0.78	0.71	***
Relationship status			
Married/partnered			
Divorced/separated	0.23	0.26	***
Widowed	0.66	0.58	***
Never married	0.11	0.15	***
Any living siblings	0.80	0.75	***
Any living children	0.91	0.80	***
Taking care of grandchildren	0.21	0.16	***
Foreign born	0.10	0.07	***
Any IADL difficulties	0.30	0.20	***
Education (in years)			
8 or less	0.38	0.31	***
9-11	0.17	0.18	+
12	0.18	0.18	
13-15	0.16	0.19	***
16 or more	0.11	0.14	***
Wealth tercile			
Bottom	0.58	0.43	***
Medium	0.28	0.28	
Top	0.14	0.29	***
Income tercile			
Bottom	0.75	0.43	***
Medium	0.20	0.35	***
Top	0.06	0.23	***
N	4,696	15,049	

Note. Data from SHARE, 2011-2015, and HRS, 2014; authors' calculations. IADL = instrumental activities of daily living.

+ $p<0.10$, * $p<0.05$, and *** $p<0.001$.

Table 3. Logistic regression of living alone for unpartnered adults aged 60 and older

	All	Sex		Age		
		Man	Woman	60-69	70-79	80 and over
	(1)	(2)	(3)	(4)	(5)	(6)
Age spline						
60 – 70	1.07***	1.06***	1.07***			
70 – 80	1.03***	1.00	1.04***			
80 and older	0.98**	1.00	0.98**			
Woman	0.71***			0.64***	0.75	1.14
Relationship status (ref. Divorced/separated)						
Widowed	0.42***	0.48***	0.69***	0.46***	0.42***	0.44**
Never married	0.52***	0.63**	0.56***	0.69*	0.33***	0.33**
Woman X Relationship status						
Woman X Widowed	1.70***			1.77***	1.62*	1.17
Woman X Never married	1.13			1.10	1.65	0.84
Any living siblings	0.83***	0.85+	0.82***	0.81*	0.74***	0.91
Any living children	0.38***	0.53***	0.34***	0.45***	0.33***	0.31***
Taking care of grandchildren	0.85**	0.69**	0.89*	0.98	0.77**	0.64**
Foreign born	0.93	0.93	0.94	0.92	1.11	0.79*
Any IADL difficulties	0.68***	0.74**	0.66***	1.02	0.65***	0.55***
Education (ref. 8 years or less)						
9 – 11	1.22***	1.14	1.24***	1.25*	1.27**	1.09
12	1.19**	1.20	1.20**	1.22*	1.15	1.11
13 – 15	1.13*	1.04	1.16*	1.05	1.09	1.20
16 or more	0.85*	1.06	0.78**	0.87	0.82	0.82
Wealth tercile (ref. Bottom)						
Medium	1.24***	1.19+	1.27***	1.16+	1.37***	1.30**
Top	1.77***	1.54***	1.85***	1.67***	1.90***	1.92***
Income tercile (ref. Bottom)						
Medium	4.12***	3.08***	4.46***	2.92***	5.12***	5.07***
Top	6.34***	5.75***	6.52***	4.88***	8.21***	7.47***
More generous welfare state	5.48***	4.66***	5.68***	3.91***	6.82***	6.74***
More generous welfare state X Wealth tercile						
More generous welfare state X Medium	0.81+	0.86	0.77*	0.94	0.78	0.67*
More generous welfare state X Top	0.75*	0.65+	0.88	0.78	0.87	0.70
More generous welfare state X Income tercile						
More generous welfare state X Medium	0.75*	0.83	0.76+	0.87	0.80	0.80
More generous welfare state X Top	0.62**	0.45**	0.93	0.88	0.45*	0.52+
N	19,745	4,912	14,833	6,614	6,869	6,262

Note. Data from SHARE, 2011-2015, and HRS, 2014; authors' calculations. IADL = instrumental activities of daily living.

+ p<0.10, * p<0.05, and *** p<0.001.

Table 4. Multilevel model of living alone for unpartnered adults aged 60 and older

	Social sector employment					
	All	Sex		Age		
		Man	Woman	60-69	70-79	80 and over
	(1)	(2)	(3)	(4)	(5)	(6)
Social services employment	1.21***	1.18***	1.22***	1.14***	1.26***	1.24***
Wealth tercile (ref. Bottom)						
Medium	1.08	1.14	1.07	1.05	0.93	1.41
Top	1.38	1.42	1.29	1.21	1.54	1.71+
Income tercile (ref. Bottom)						
Medium	11.4***	6.60***	13.0***	4.36***	23.8***	17.7***
Top	13.8***	22.6***	10.2***	7.20***	22.8***	23.6***
Social services employment X Wealth terciles						
Social services employment X Medium	1.01	1.00	1.02	1.00	1.04+	0.99
Social services employment X Top	1.03	1.00	1.04*	1.02	1.02	1.02
Social services employment X Income terciles						
Social services employment X Medium	0.91**	0.94**	0.90**	0.96	0.87***	0.89*
Social services employment X Top	0.93*	0.88***	0.97	0.97	0.91+	0.90**
var (cons)	1.51***	1.36**	1.60***	1.38***	1.68**	1.83***
N	19,745	4,912	14,833	6,614	6,869	6,262

	Social expenditures					
	All	Sex		Age		
		Man	Woman	60-69	70-79	80 and over
	(7)	(8)	(9)	(10)	(11)	(12)
Social expenditures	1.18*	1.19**	1.18+	1.12	1.26**	1.25**
Wealth tercile (ref. Bottom)						
Medium	1.11	1.05	1.10	1.07	0.87	1.60
Top	1.59+	1.87+	1.38	1.46	1.28	2.54**
Income tercile (ref. Bottom)						
Medium	12.8***	6.72***	15.3***	4.27**	33.2***	24.6***
Top	15.7***	28.6***	11.4***	6.50***	29.0***	49.0***
Social expenditures X Wealth terciles						
Social expenditures X Medium	1.01	1.01	1.02	1.00	1.05	0.98
Social expenditures X Top	1.01	0.97	1.04	1.01	1.06	0.98
Social expenditures X Income terciles						
Social expenditures X Medium	0.88*	0.92	0.87*	0.96	0.81**	0.84*
Social expenditures X Top	0.91*	0.84**	0.95	0.97	0.87	0.82***
var(cons)	1.95***	1.48**	2.22***	1.64***	2.15***	2.27**
N	19,385	4,830	14,555	6,495	6,717	6,173

Note. Data from SHARE, 2011-2015, and HRS, 2014; authors' calculations. IADL = instrumental activities of daily living. All model specifications in this table include the same set of covariates as corresponding model specifications in Table 3. Results are available on request.

+ p<0.10, * p<0.05, and *** p<0.001.

Figures

Figure 1. Conceptual model of the association of living alone and personal economic resources by welfare state generosity level

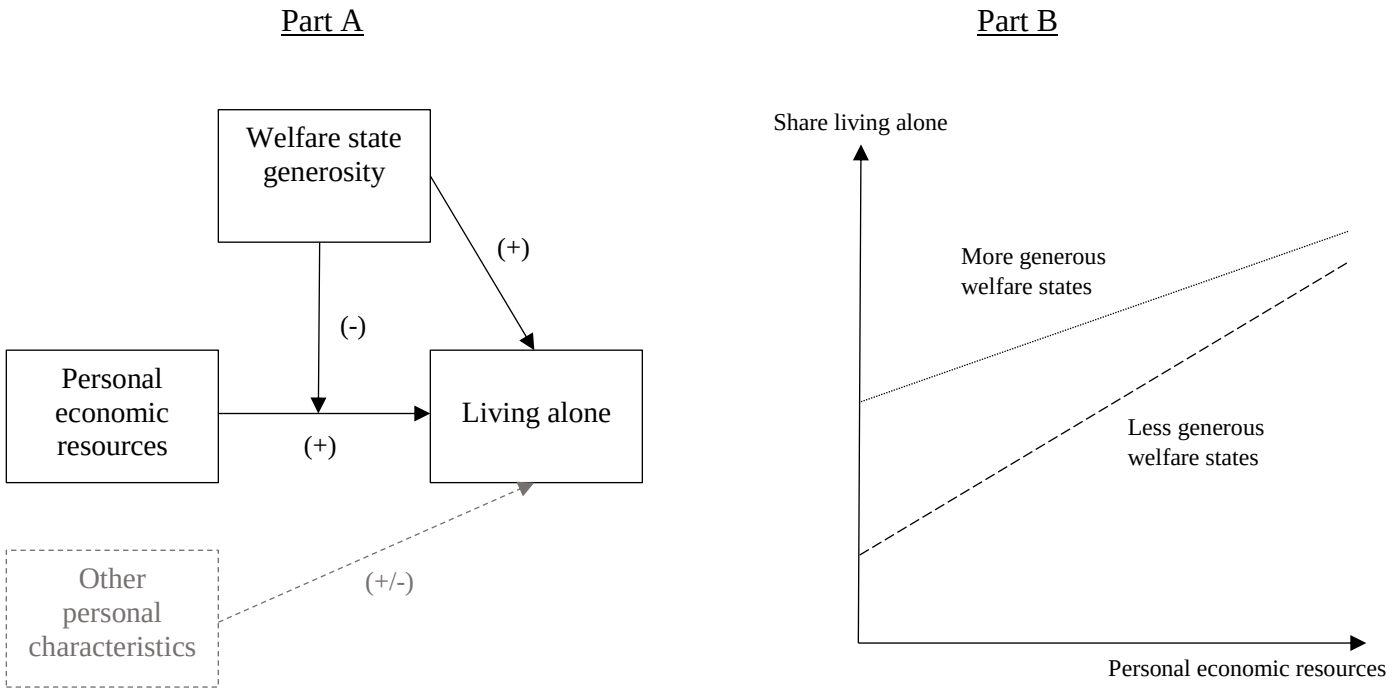
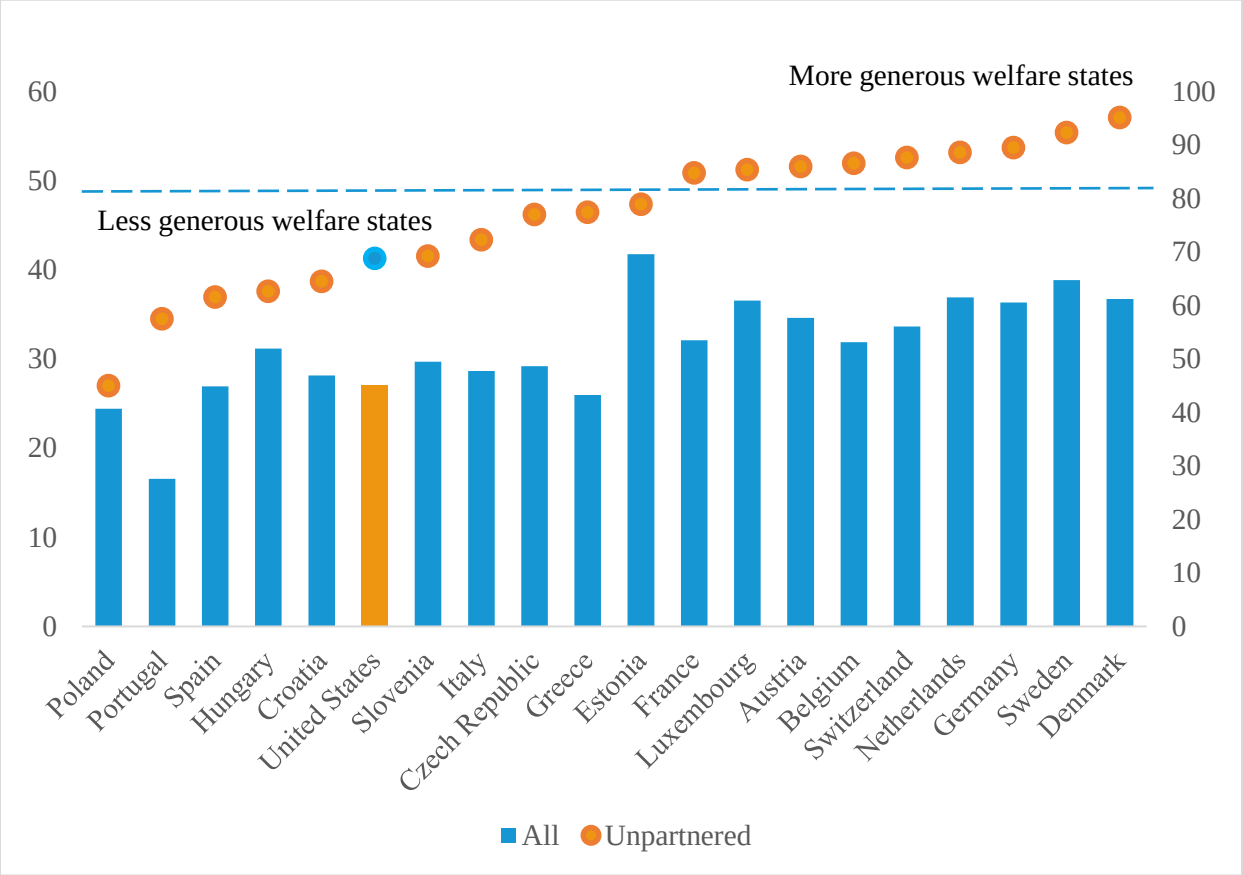
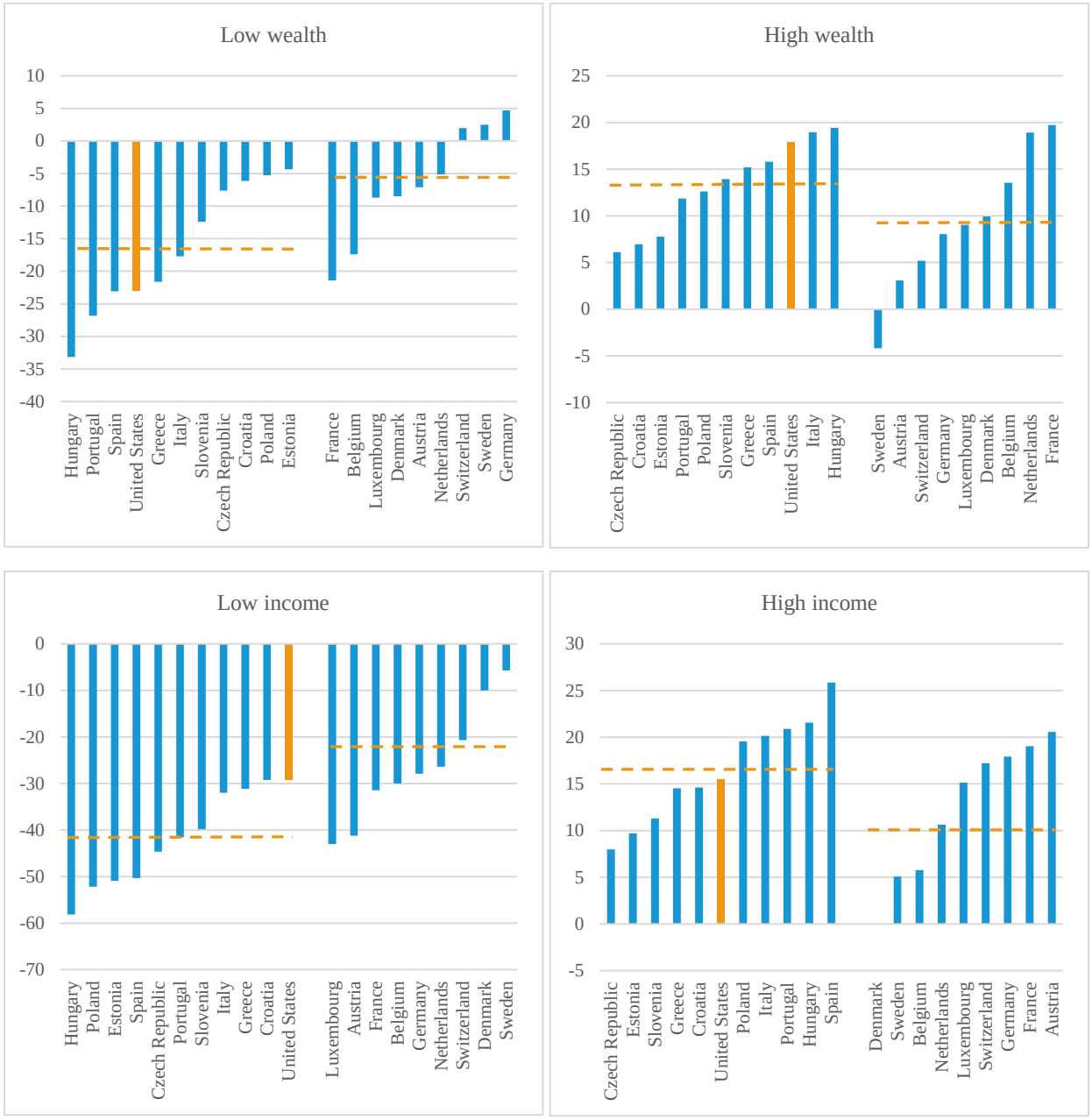


Figure 2. Percentage of all (left axis) and unpartnered (right axis) adults aged 60 and older living alone, by country



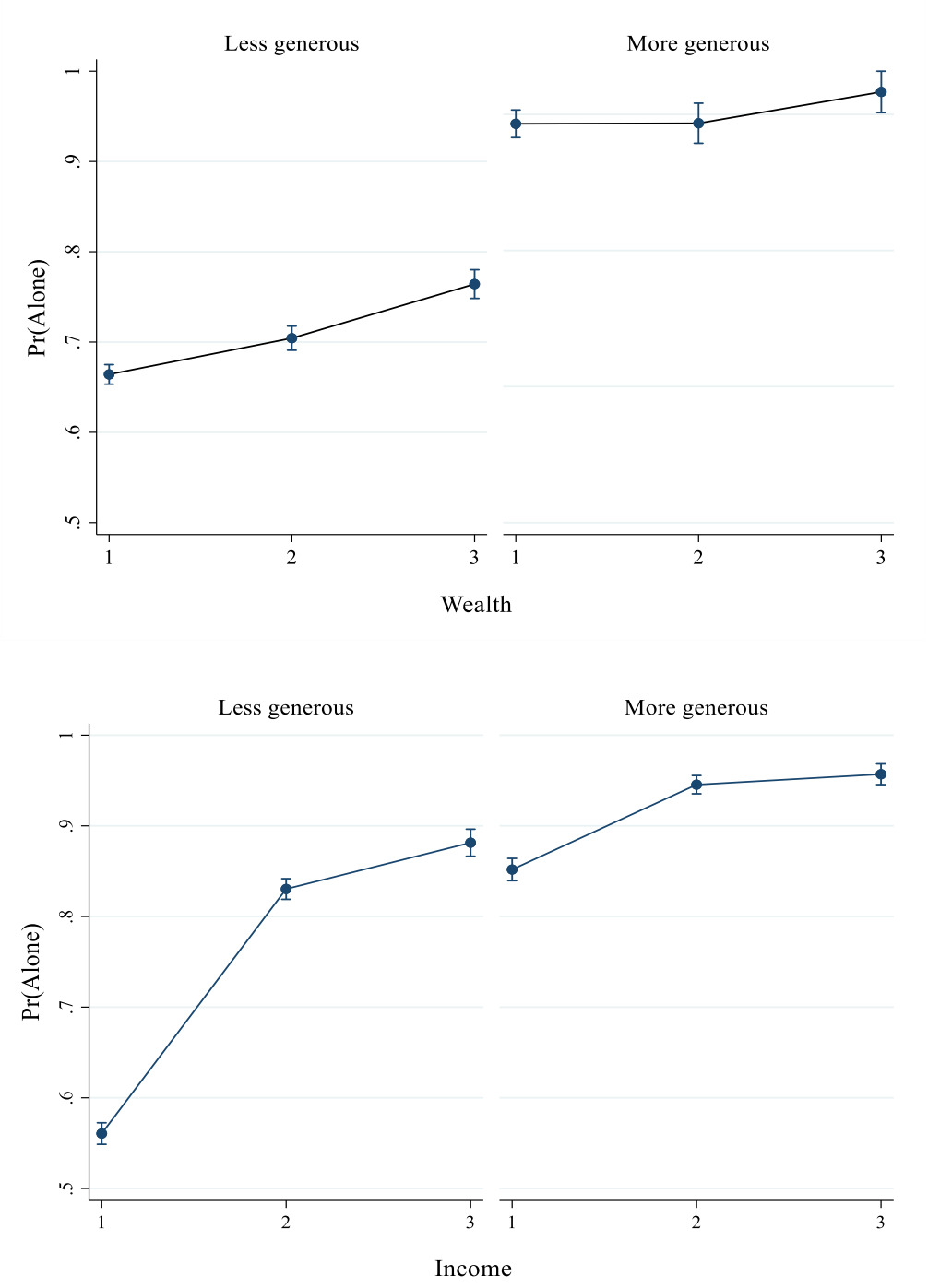
Note. Data from SHARE, 2011-2015, and HRS, 2014; authors' calculations.

Figure 3. Difference in the share of adults aged 60 and older living alone and with others, by wealth and income levels and by country.



Note. Data from SHARE, 2011-2015, and HRS, 2014; authors' calculations. Dashed lines represent average difference by welfare state generosity.

Figure 4. Predictive margins of probability to live alone for unpartnered adults aged 60 and older by wealth and income and by welfare state generosity (95% confidence intervals)



Note. Data from SHARE, 2011-2015, and HRS, 2014; authors' calculations.