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Reference Details

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The life-cycle framework of Modigliani and Brumberg (1954, 1980) postulates that households will smooth consumption by accumulating wealth during their prime earning years and spending it once they retire. The simplest version of the model, with no bequest motives or uncertainty about length of life, further predicts that households will begin decumulating their wealth as soon as they retire and will die with no wealth. This prediction stands in sharp contrast with the data, which show that retired households, especially those with high lifetime income, decumulate their assets very slowly. Indeed, many die leaving large estates. In the past two decades, a growing literature has sought to explain this "retirement savings puzzle."

In this article we review and evaluate the three leading explanations for why older households seem reluctant to draw down their wealth. Although Modigliani and Brumberg (1954) did not formalize these explanations, they described all three. First, the precautionary motive arises because retired households face the risk of living long and incurring catastrophic medical and long-term care expenses, and so they may hold onto their wealth to cover such expenses. Second, the bequest motive can arise either because individuals enjoy leaving bequests, or because they use bequests to reward their caregivers and elicit care. Third, households may need "to have an equity in certain kinds of assets before [they] can receive services from them." In particular, retirees may be reluctant to decumulate their housing wealth, as many enjoy living in their homes, find it costly to move, and face an underdeveloped market for "reverse mortgages" that would allow them to decumulate housing wealth without leaving their homes. Indeed, older households decumulate housing more slowly than other forms of wealth.

These three explanations are neither original to the life-cycle model nor mutually exclusive. For example, well before the introduction of the life-cycle model, Keynes (1936) discussed at length the desires to "build up a reserve against unforeseen contingencies" (the precautionary motive) and "bequeath a fortune" (the bequest motive). What is new in the

last couple of decades is the availability of better data, which allow researchers to measure risks and outcomes more accurately, and greater computing power, which facilitates estimation of models containing multiple motivations for saving. Simultaneously accounting for all motivations is important because, as Modigliani and Brumberg (1954) pointed out, assets can serve multiple purposes: "For example, the ownership of a house is a source of current services; it may be used to satisfy part of the consumption planned for after retirement; it may be bequeathed; and, finally, it is a source of funds in emergencies."

In this article, we discuss what researchers in this area have learned about the retirement savings puzzle, in effect updating and extending the more technical survey in De Nardi et al. (2016b). We first describe how post-retirement wealth changes with age and income. We then introduce the competing explanations for these savings patterns, along with supporting evidence. The fungibility of wealth makes it difficult to disentangle the explanations, and thus we explain the leading approaches for doing so. In our opinion, there is considerable evidence that the precautionary motive and the bequest motive are both important. Although the evidence on its role is less developed than for the other two motives, housing deserves further study as well, if only for its prominence in most household portfolios.

The relative importance of the precautionary, bequest, and housing motives in explaining the slow decumulation of wealth is not only of academic interest. It is of great policy relevance in an aging society. We therefore conclude by discussing longer-term savings trends and the importance of understanding retirement saving motives when contemplating the welfare implications of reforms to Social Security, Medicare, or Medicaid. We also discuss the limited use of financial products such as long-term care insurance and annuities, which in principle should insure retirees against their risks more effectively than wealth. Once again, understanding the different saving motivations is key. If the precautionary motive is strong, the low take-up of these products may reflect market failures, and government intervention in these markets may be warranted. If on the other hand the precautionary motive is weak and retirees save mostly for bequests or

homeownership, then the value of these financial products may be modest and government intervention may provide little if any benefit.

Wealth Profiles after Retirement

An important factor determining the welfare of retirees is their consumption, which is funded primarily by net worth, Social Security benefits, and defined benefit private pensions. With the notable exception of households in the bottom lifetime income decile, who rely almost completely on Social Security, net worth is a major source of funds. For households with above median lifetime income, it is the most important source of funds (Scholz et al. 2006).

As is standard in this literature, our measure of wealth is net worth excluding annuitized wealth, the (discounted) value of the Social Security and other defined benefit pension income that households expect to receive over the remainders of their lives. Although annuitized wealth is an important source of retirement funding, it behaves very differently from other forms of wealth: it cannot be bequeathed, and its value is largely a mechanical function of how long individuals expect to live. In particular, annuitized wealth declines mechanically as individuals age and expected lifespans shorten, and falls to zero at death. This means that, in contrast to net worth, annuitized wealth falls rapidly after retirement (Love et al. 2009).

In this section we establish three facts about net worth 1) the wealth of older households declines slowly with age; 2) the decline is slower among the rich; and 3) those with low income have little wealth.

To document the wealth of the elderly, we use data on older US households from the Assets and Health Dynamics of the Oldest Old (AHEAD) cohort of the Health and Retirement Survey (HRS). The HRS has several features that make it well-suited for studying the wealth dynamics of older households. It is a nationally representative

longitudinal dataset that follows households to the ends of their lives and beyond, using "exit" interviews with survivors to measure end-of-life expenses and bequests. It combines detailed financial information with a battery of health measures, allowing researchers to quantify the longevity and medical spending risks that older households face and to observe how households as they respond to major life events like the death of a spouse. Moreover, it is linked to several administrative data sources. These include the National Death Index, which provides an accurate measure of mortality.

We measure wealth in terms of net worth, which is the sum of the value of housing and real estate, automobiles, liquid assets (money market accounts, savings accounts, T-bills, and so on), IRA and Keogh accounts (and other defined contribution plans), stocks, the value of any farms or businesses, mutual funds, bonds, "other" assets, and investment trusts—minus mortgages and other debts. We use data starting in 1996 and every two years thereafter through 2014. Our sample selection restrictions follow De Nardi et al. (2023) and are discussed there in more detail.

Older households differ along a variety of dimensions that potentially affect their saving decisions. Many of these differences (like education level) are correlated with the households' lifetime earnings or permanent income. Households with different permanent income ranks receive different flows of retirement income and face different processes for health, mortality and medical expenses. Because permanent income is determined prior to retirement, it provides a useful basis for stratifying retired households. Our proxy for permanent income is based on post-retirement annuitized income, which is the sum of Social Security benefits, defined benefit pension benefits, veteran's benefits and annuities. Because households with higher lifetime earnings tend to have higher annuity incomes—for example, Social Security payments are higher for people with a history of higher earnings—this measure is a good indicator of the income people received when they worked. We use annuitized income to construct a permanent income measure comparable

across households of different ages and sizes.[1]

Figure 1 presents median wealth conditional on age and permanent income tercile for the cohort aged 71-76 (which we index as 75) in 1996, an age by which the great majority of households have completely retired. These profiles come from De Nardi et al. (2023), who show that the facts we highlight here hold for other cohorts as well. Figure 1 presents wealth profiles for the unbalanced panel; each point represents the median for all the members of an age-income tercile cell who are alive at a particular date.[2]

The left panel shows wealth profiles for households who are single (most of whom are widowed or divorced) throughout the entire sample period. The median 75-year-old in the top income tercile enters our sample with about $200,000 in wealth (in 2014 dollars), while the one at the bottom holds essentially no wealth at all. Over time, those in the top income tercile tend to hold substantial wealth well into their 90s, those in the middle tercile display some asset decumulation as they age, and those at the bottom hold little wealth at any age. Thus, even at older ages, richer people save more, a finding first documented by Dynan et al. (2004) for the whole life cycle.

Figure 1: Evolution of Median Wealth for Retirees

Source: Data from De Nardi et al. (2023, Figure 1), based on the Assets and Health Dynamics of the Oldest Old (AHEAD) cohort of the Health and Retirement Survey (HRS).

Note: Each line shows medians over the period 1996-2014 for a subset of the AHEAD households aged 71-76 in 1996.

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[1] More specifically, to construct our income measure, we regress annuity income on a household fixed effect and controls for household composition and age. The rank order of each household's estimated fixed effect provides our measure of its income. This is a time-invariant measure that follows the household even after one of its members dies.
[2] We also include the value of bequests left after the final household member dies.

The right panel of Figure 1 reports median wealth for households who are couples in 1996. In later years, many of these households lose a member and become singles, in which case we report the wealth of the surviving spouses. Couples are richer than singles. Couples in the highest income tercile hold around $300,000, and even the couples in the lowest income tercile hold over $70,000 in the early stages of their retirement. As with the singles, couples in the highest income tercile hold large amounts of wealth well into their 90s, while those in the lowest tercile hold little wealth. Many couples experience a significant decline in wealth when one spouse dies (French et al. 2006; Poterba et al. 2011; De Nardi et al. 2023). Some of this decline is attributable to end-of-life medical and other expenses, but most is due to bequests to non-spousal heirs. As married households become single, this drop imparts a downward slope on their asset profiles. While both spouses are still alive, couples run down their assets at least as slowly as singles.

It is well-documented that health and wealth are positively correlated (for instance, Smith 1999). As a result, poor people die more quickly, and as a cohort ages, its surviving members are increasingly likely to be rich. Failing to account for this mortality bias will lead a researcher to understate asset decumulation late in life (Shorrocks 1975). De Nardi et al. (2010) show that mortality bias is quantitatively important, although conditioning on income, as we do in the above graphs, reduces its effects. But regardless of how mortality bias is addressed, the puzzle remains: the asset decumulation of older households is significantly slower than that implied by a simple life-cycle model where individuals face no uncertainly and receive no utility from leaving bequests. In the next section we discuss extensions to the life-cycle model that encourage older households to save more and die with positive wealth.

Drivers of Savings

Precautionary saving motives

One explanation for why retirees appear reluctant to spend down their wealth is that, by saving, they insure themselves against the risk of living long and having high medical spending.

In an important early study, Davies (1981) showed that when lifespans are uncertain and there is no annuity income, individuals with reasonable levels of risk aversion will never fully deplete their wealth. The risk of living long may be especially strong for rich people, women, and people in good health, who tend to live longer than their poor, male, and sick counterparts. Using mortality rates estimated from the AHEAD data, De Nardi et al. (2009) find that an unhealthy 70-year-old male at the bottom quintile of the income distribution expects to live only six more years, while a healthy woman at the top quintile of the permanent income distribution expects to live 16 more years. Similar gradients of longevity with respect to income are found in administrative data and in other countries.[3] The greater longevity of those with high income can partially explain their higher rates of saving, as they have a longer lifespans to finance.

Older households also face the risk of high medical spending. Although almost all Americans aged 65 and older receive public health insurance through the Medicare program, Medicare does not cover all health care costs. For example, Medicare only pays for the first 20 days of a nursing home stay (and part of the cost for the next 80 days). Some households have these and other expenses covered by Medicaid, another public health insurance program, but Medicaid is available only to those with limited financial resources. This leaves many retirees having to make significant payments out of pocket.

Figure 2

Mean medical spending of retired singles

Source: Data from De Nardi et al. (2023, Figure 5).

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[3] See, for example, Waldron (2007), Chetty et al. (2016) and Banks et al. (2021).

To give a sense of the medical spending risk for the elderly, Figure 2 shows average medical expenses conditional on age and income for singles, taken from De Nardi et al. (2023). We focus here on the medical spending of singles, but the spending of couples exhibits similar patterns: specifically, for any level of age and income, the medical spending of married households is roughly double that of singles. Because all households receive support from Medicare, we do not include Medicare expenditures in the figure. The left panel of the figure includes Medicaid payments, however, because Medicaid is means-tested. This means that medical expenses that are covered by Medicaid among poorer households are paid out of pocket by richer ones.

The left panel of Figure 2 shows the sum of out-of-pocket expenses and the payments made by Medicaid. Out-of-pocket expenses are the sum of what an individual spends on drugs, hospital stays, nursing home care, home health care, doctor visits, dental visits and outpatient care, along with premia for private and Medicare insurance. The public component of the HRS lacks Medicaid spending data, but we can impute it by combining the HRS with the administrative data contained in the Medicare Current Beneficiary Survey (for a description, see De Nardi et al. 2023).

The left panel of Figure 2 shows that medical expenses rise rapidly with age. For individuals in the middle income tercile, mean spending rises from roughly $6,000 at age 76 to $26,000 at age 100. Medical expenses rise with age because older individuals are more likely to die and incur costly end-of-life expenses (French et al. 2006; Marshall et al. 2011) and because older individuals incur higher out-of-pocket expenses, such as nursing home care, while alive.

The right panel of Figure 2 shows out-of-pocket medical expenses in isolation; comparing this panel to the one on the left reveals the extent to which Medicaid reduces out-of-pocket expenditures. Because people with low wealth on average receive more assistance from Medicaid, the income gradient for out-of-pocket spending is far steeper than the gradient for total spending. Given that out-of-pocket medical expenditures rise with

permanent income, the saving motives they generate should be stronger for those with higher income, causing them to decumulate wealth more slowly.

Medical spending among retirees is not only high, but its distribution is very concentrated (De Nardi et al. 2016c), with the top 5 percent of spenders accounting for 49.1 percent of out-of-pocket expenditures in any year. The risk does not average out over time. Calculating the present value of remaining lifetime medical spending, Arapakis et al. (2021) find that the 90th percentile of discounted medical spending at age 65 is twice the size of the mean.

Medical expense uncertainty reinforces the risks associated with lifespan uncertainty (De Nardi et al. 2009) and increases the impact of medical expenses on saving. The total effect of medical spending is potentially large: modelling the entire life cycle, Kopecky and Koreshkova (2014) calculate that 13.5 percent of aggregate US wealth is attributable to saving for old-age medical expenditures.

Because poor health raises medical spending and shortens lifespans, it impacts a household's lifetime financial resources and spending horizon. This in turn affects the household's non-medical consumption and its marginal utility. Poor health may also affect the marginal utility of non-medical consumption more directly. For example, functional limitations likely reduce the marginal utility of recreational goods like ski equipment, while raising the marginal utility of home services like housecleaning and lawn care. If the marginal utility of non-medical consumption generally rises at older ages because of declining health, retirees would have another reason to hold onto wealth. Laitner et al. (2018) show that the risk of an increase in the marginal utility of consumption is in many respects equivalent to the risk of higher medical expenses. The literature has yet to reach a consensus, however, about whether bad health raises or lowers the marginal utility of consumption.[4]

In addition to changes in health, events such as the need to acquire a new car or

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[4] To give two recent examples, Blundell et al. (2020) find that declines in health reduce the marginal utility of consumption, while Ameriks et al. (2020) find that requiring long-term care raises it.

support a grandchild's education can impact the marginal utility of consumption. Inferring fluctuations in marginal utility directly from observed consumption, Christensen et al. (2022) find these fluctuations to be an important driver of retiree savings.

It is not obvious whether marriage increases or reduces household risk. Couples may be able to pool their risks and wealth, and they may be able to partially self-insure by having the healthier partner care for the sicker one. Conversely, two-person households face the risk of having one person die. While single households likely have lower needs, the death of the husband often leads to a large reduction in the wife's income: widows are much more likely to be impoverished than wives (Braun et al. 2017). Saving is an important mechanism for insuring against this risk.

Programs that provide social insurance to poorer households should weaken precautionary saving motives. In the United States, the two most important programs in which the elderly receive income- and asset-tested transfers from the government are Medicaid (for medical expenses) and Supplemental Security Income (cash payments). Such means-tested programs discourage saving. They reduce both the average level of medical spending (see Figure 2) and the risk of catastrophic expenses. Moreover, they impose a steep implicit tax: When a low-income household receives means-tested insurance, increases in its wealth lead to lower benefits, with little if any change in the resources available for consumption. Means-tested insurance thus has the potential to crowd out private saving, especially among the poor (Hubbard et al. 1995). As a result, social insurance programs could explain why low-income retirees hold such modest amounts of wealth.

The quasi-experimental evidence on the impact of Medicaid and other transfer programs on savings is mixed, with some studies finding evidence that asset-tested transfer programs reduce private savings (Greenhalgh-Stanley 2012), and others finding they do not (Hurst and Ziliak 2006; Gardner and Gilleskie 2012). One potential reason why these results are mixed is that policy reforms affect the rate of saving, which in turn alters the level of wealth only slowly. A reform that has a relatively large effect on wealth in the long

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run may have very modest short-run effects. Consequently, a popular approach for evaluating the impact of policy reforms is to calibrate or estimate structural models with realistic risks and means-tested insurance. These models are usually required to match additional features of the data, such as wealth levels for different households at different ages. Once estimated, the models can be used to evaluate policy reforms, including their long-term effects. Models of this sort will feature prominently in our discussion below.

Bequest Motives

Efforts to quantify the role of bequests for understanding the aggregate wealth date back at least to the debate between Kotlikoff and Summers (1981) and Modigliani (1988). Many studies find bequests to be important; for example, in this journal Gale and Scholz (1994) estimate that bequests account for around 30 percent of US wealth holdings. At the same time, most bequests are very modest. As Figure 3 shows, 41 percent of households leave no bequests, and many other bequests are small. Nonetheless, some estates are large – the 95th percentile is over $1,000,000 – and the mean non-zero bequest is $335,000. Most estates, but not all, go to children.

Figure 3: Bequests and their Recipients

Source: Authors' calculations from the AHEAD cohort of the HRS.
Panel a: Distribution of non-zero bequests at the death of final household member and mean value (red dashed line) Distribution censored at the 99th percentile of the conditional distribution.
Panel (b): Average share disbursed to recipient group.

The presence of bequests need not imply that households possess bequest motives, because households that die prematurely or incur unusually low medical expenses may find

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themselves leaving *accidental bequests* as a byproduct of their precautionary saving. In such a case, the skewed distribution of bequests observed in the data may reflect the skewed distribution of the precautionary motives behind the accidental bequests—for example, the tendency of low-income households to rely more heavily on means-tested insurance.

Alternatively, households may enjoy conferring wealth on their heirs and would, even in the absence of risk, choose to make *intentional bequests*. In this case, the concentrated distribution of bequests may indicate that bequests are luxury goods, giving bequests the potential to explain why high-income households decumulate their wealth more slowly. One reason why bequests may be luxuries is that high-income parents are relatively likely to have higher incomes than their children, which gives altruistic high-income parents an incentive to transfer resources to their children that low-income parents lack. Using calibrated overlapping generations models, Castañeda et al. (2003) and De Nardi (2004) show that these intergenerational incentives can explain both why high income parents hold so much wealth and why the distribution of bequests is skewed.

Finally, households may save primarily for precautionary reasons or to maintain their home, but also receive utility from any *incidental bequests* that they might leave. In this case, bequest motives lower the opportunity cost of saving for other reasons (Dynan et al. 2002; Lockwood 2018).

Accidental and incidental bequests are best understood in the context of "terminal" bequests, which are the bequests left when the final member of the household dies. (Figure 3 shows terminal bequests.) In addition to terminal bequests, many couples who lose a spouse leave significant bequests to non-spousal heirs. De Nardi et al. (2023) show that 31 percent of couples transfer wealth to non-spousal heirs when the first spouse dies, with an average value (when non-zero) of $248,000. Bequests left to non-spousal heirs after the death of the first spouse are almost surely intentional, because the wealth could have been directed to the surviving spouse instead.

Housing

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The most important asset for most households in most countries is their primary home. According to data from the HRS, US retirees on average hold 46 percent of their wealth in housing; the fraction rises to 69 percent among homeowners. Housing differs from other assets by providing consumption services as well as financial returns. Many older individuals seem to prefer living in owner-occupied housing to living in rental properties, perhaps for sentimental reasons or because they can more easily modify their own property to fit their needs (Nakajima and Telyukova 2020). In most countries, the elderly run down their non-housing wealth more quickly than their housing wealth (Nakajima and Telyukova 2020; Blundell et al. 2016).

There are other reasons why older individuals might liquidate their financial wealth before they liquidate their housing wealth. Most of these explanations center the costs associated with selling a home or with tax-related issues (for example, Engen et al. 1999). Liquidating a house entails substantial transaction costs. Most buyers and sellers use real estate agents, who typically charge 5-6 percent of the selling price of the house. These charges are in addition to the taxes and other fees associated with selling a house and the time and effort spent moving. Several papers suggest that households are sensitive to these transaction costs (Yang 2009; McGee 2022).

Moreover, housing is typically tax-advantaged relative to other assets. In the US housing can often be bequeathed to one's heirs tax-free, whereas selling a house will often force the seller to pay capital gains taxes. Furthermore, housing assets are often exempt from the asset tests associated with the Medicaid and Supplemental Security Insurance programs (De Nardi et al. 2012; Chang and Ko 2022). As a result, households that sell their home and convert the proceeds to financial assets become ineligible for these government transfers until the financial assets are depleted. Finally, income from financial assets is usually taxable, but the implicit "rent" homeowners pay themselves as the owner is untaxed.

Regardless of its cause, the desire to remain in one's own home will slow down the decumulation of total wealth only if there are impediments to extracting home equity while

remaining in the house. With a "reverse mortgage," a homeowner can receive a stream of payments for as long as they live in the home, to be repaid from the later sale of the home. But as of 2011, only 2.1 percent of age-65+ homeowners had reverse mortgages (Nakajima and Telyukova 2017). The low take-up of reverse mortgages may reflect market frictions, such as difficulties by consumers in understanding these products. Alternatively, retirees may wish to hold on to their wealth for precautionary reasons or to leave bequests, reducing their willingness to borrow, in effect, against their homes.

To the extent that homeownership explains the slow rundown of wealth, its effects will be strongest among high-income households, who are more likely to own their home (Achou 2023). The homeownership motive is therefore consistent with the observation that those with high income are less likely to decumulate their assets.

Disentangling the Different Motivations

The three sets of saving motivations, precautionary, bequest, and housing, have similar implications for saving at older ages, making it difficult to disentangle their relative importance. All three motivations encourage saving, and all three motivations are strongest for the rich. Although we can estimate many of the risks facing households from the data, studies that attempt to quantify the competing hypotheses depend on preferences that are not observed. In particular, we need measures of risk aversion, patience, the strength of the bequest motive, the extent to which bequests are a luxury good, and the desire to remain in one's own home.

Numerical simulations of life-cycle models show that different values of these parameters can fit the observed asset data more or less equally well. For example, De Nardi et al. (2010) show that a model without bequests and with reasonable preference parameters and risks can match observed median wealth holdings by age, income quintile, and cohort, while still generating a realistic distribution of unintended bequests. But when the model is

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augmented to allow for intentional bequests, they estimate strong bequest motives, especially for the richest, with only modest changes in other parameters. The ability of such models to fit wealth data almost equally well with or without bequest motives embodies the fundamental identification problem in this literature.

Disaggregating the data more finely, or considering savings over the entire life cycle, yields some evidence that bequest motives are at times important (Kaji et al. 2020; Pashchenko and Porapakkarm 2023). Nonetheless, the broad message of the literature is that precautionary and bequest motives explain retiree wealth data equally well.

A number of papers attempt to resolve this problem by going beyond savings and considering additional features of the data. Here, we describe these approaches.

Insurance choices

The life-cycle model with longevity and health risk, but without bequest motives, implies a high demand for insurance products such as annuities (insurance against long life) and long-term care insurance (insurance against poor health at the end of life). These products, if fairly priced, can insure against lifespan or medical expense risk much more efficiently than standard assets. For example, using a simple version of the life- cycle model with only lifespan uncertainty, Yaari (1965) shows that people should immediately annuitize all their wealth. Nonetheless, US households hold only small amounts of annuities and long-term care insurance (Fang 2016).[5] This suggests that precautionary motives cannot be the only explanation for high savings at old ages.

Purchases of annuities and long-term care insurance reduce wealth left to heirs but insure against medical and longevity risks. The fact that most households do not purchase these products is sometimes taken as evidence that people have a bequest motive (Lockwood 2018).

However, there may be other reasons why risk-averse households rarely purchase

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[5] In an earlier symposium in this journal, Benartzi et al. (2011) and Brown and Finkelstein (2011) discuss in detail the low take-up of annuities and long-term care insurance, respectively.

annuities or long-term care insurance. Many studies of the under-annuitization puzzle focus on adverse selection: long-lived people are more likely to purchase annuities, driving annuity prices up and pricing out those who do not expect to live so long. (Mitchell et al. 1999 is a well-known paper in this vein.) But at observed levels of adverse selection, when the only risk facing households is lifespan uncertainty, most reasonably calibrated life-cycle models will imply that people should completely annuitize (e.g., Lockwood 2012). On the other hand, many individuals seem to underestimate their expected lifespans and thus undervalue the returns to annuitization, substantially reducing annuity demand (O'Dea and Sturrock 2021).

Annuity demand may also be low because of medical expense risk. Annuities offer high returns to surviving individuals but are very illiquid. This makes annuities more desirable to households who expect to live long and incur high medical expenses at very old ages, but less desirable to households who need liquid assets to cover medical expenses in the near future (Davidoff et al. 2005; Reichling and Smetters 2015; Peijnenburg et al. 2017). Some studies that model health and medical spending risk carefully, however, still find that bequest motives are necessary to explain low annuity demand (Lockwood 2012; Pashchenko 2013).

Unlike annuities, which pay out benefits as long as the individual remains alive, long-term care insurance pays out only when the individual needs expensive long-term care services. In principle, the demand for long-term care insurance should be large, because long-term care needs often occur very late in life when other financial resources have been exhausted. In practice, access to comprehensive long-term insurance is often limited. The typical long-term care insurance contract caps both the maximum number of days covered over the life of the policy and the maximum daily payment for a nursing home stay, with the maximum often fixed in nominal terms (Fang 2016). In addition, many individuals have health conditions that preclude them from buying coverage: Hendren (2013) estimates that 23 percent of 65-year-olds fall into this category.

 Suppliers of long-term care insurance face the risk that the insurance will lead

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households to switch from informal long-term care provided by family members to formal long-term care paid for by the insurer. This moral hazard problem not only drives up the cost of long-term care insurance, but it makes coverage unappealing to individuals who prefer to be cared for by their relatives (Pauly 1990; Mommaerts 2023). Ko (2022) finds that purchasers of long-term care insurance would be, even in the absence of insurance, more likely to utilize long-term formal care.

Middle- and low- income households may view themselves as reasonably insured against long-term care expenses by Medicaid. Because Medicaid is the "payer of last resort," and it covers only expenses not reimbursed by other insurers, among Medicaid recipients private long-term care insurance mostly displaces Medicaid payments—and thus Medicaid should crowd out private insurance. Brown and Finkelstein (2008) calculate that Medicaid imposes an implicit tax on private insurance of about 65 percent for the median wealth individual. Braun et al. (2019) likewise find that Medicaid crowd-out explains low holdings of long-term care insurance among poorer households, although adverse selection and administrative costs are more important in explaining low take-up among the rich.

The extent to which retirees run down their wealth to qualify for Medicaid and other means-tested benefits should tell us something about the value retirees place on these benefits. If people view Medicaid-funded care as being of low quality (they have "public care aversion" in the language of Ameriks et al. 2011; 2018), they will maintain high asset levels to avoid it, even though Medicaid care would be close to free. Thus, public care aversion strengthens precautionary saving motives. However, most low-income individuals receive Medicaid, suggesting that they are not overly averse to this insurance (De Nardi et al. 2016a). To match observed wealth holdings and Medicaid recipiency jointly, their model must attribute a significant part of savings to bequest motives.

Home equity may also substitute for long-term care insurance (and for annuities as well). Indeed, it has been shown that health shocks and loss of a spouse are associated with housing wealth decumulation (Poterba et al. 2011; Chang and Ko 2022). The extent to which home equity performs this function is unresolved: see Davidoff (2010) and Achou

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(2021) for conflicting results. But the broader recurrent theme worth emphasizing is that post-retirement assets can simultaneously serve many purposes and can be used for many contingencies.

In contrast to annuities and long-term care insurance, life insurance is widely held. Because (term) life insurance pays out only when its holder dies, its popularity has been taken as evidence for the existence of bequest motives (Inkmann and Michaelides 2012; Hong and Ríos-Rull 2012).

Finally, the limited use of reverse mortgages may suggest the presence of other saving motives. Estimating a structural model of saving and housing decisions, Nakajima and Telyukova (2017) find that bequest motives, nursing-home risk, house price risk, and loan costs all contribute to the low take-up of reverse mortgages. An alternative explanation is market frictions. Reverse mortgages often contain a requirement that homes be maintained, which may discourage their use by preventing home equity decumulation via foregone repairs (Cocco and Lopes 2020). Many reverse mortgages also impose a debt-to-income requirements, which older homeowners often fail (Caplin 2002). Information frictions and low levels of financial literacy may play a role as well (Davidoff et al. 2017; Boyer et al. 2020).

It is worth stressing that the low use of these financial products does not imply a complete absence of precautionary motives, but only that there are other considerations leading households to self-insure through savings rather than insurance products. For example, households with modest bequest motives may prefer to insure against medical or longevity risks by holding assets that, when not spent, can be left to their heirs as incidental bequests.

Strategic Surveys

One way to find out why households are saving is to ask them. Ameriks et al. (2011, 2020) consider the responses to "strategic survey questions" that present the respondents with hypothetical, explicit trade-offs between consuming long-term care and leaving

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bequests. For example, Ameriks et al. (2011) ask survey respondents how they would divide a $100,000 (or $250,000) prize between a "bequest locked box" that would be given to the respondents' heirs when they died and an "long-term care locked box" that could be accessed only to pay for long-term care. Requiring the life-cycle model to match the respondents' choices provides additional identifying variation than can pin down the relative importance of the competing motivations. Their results suggest that for many older individuals, precautionary motives are at least as important as bequest motives.

Variation Across Countries and Time

Although most countries have universal public health insurance programs for the elderly, considerable cross-country variation exists in the coverage of medical and long-term care. If self-insuring against these expenses is a pressing concern, households should save more in countries with less public funding, all else equal.

Cross-country evidence supports the view that the precautionary saving motive is important. Institutional differences in health insurance generosity can explain one-third of the difference in retiree wealth decumulation between Sweden and the United States (Nakajima and Telyukova 2023) as well as differences in retiree spending patterns between England and the United States (Banks et al. 2019).

A related approach is to study the effects of policy changes over time. For example, Lee and Tan (2023) examine the effects of a calculation error in the Social Security benefit formula (made in the 1970s) that left retirees born between 1911-1916 with higher benefits than those born immediately before or after. They find that the benefit increase led to significantly higher bequests, which they interpret as evidence in favor of bequest motives.

Bequests and Children

If bequest motives are mostly due to parents' desire to leave resources to their offspring—as opposed to other relatives, friends or charity—then households without children should have weaker bequest motives. The evidence on this question remains

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unsettled. The discrepancies stem from differences in approach.

One approach for identifying bequest motives is to compare wealth accumulation with and without children. Empirically, there is little evidence that retirees with living children decumulate their wealth at a slower rate than those without (Hurd 1987, 1989; De Nardi et al. 2023; but see Kopczuk and Lupton 2007 for an alternative perspective). A second approach is to ask individuals about their bequest motives, using either stated preference information (Laitner and Juster 1996) or responses to strategic survey questions (Ameriks et al. 2011). These studies find that those with children tend to answer questions in a way consistent with stronger bequest motives.

In addition to the debate about whether those with children have stronger bequest motives, there is a debate about whether these bequest motives represent altruism or strategic considerations. Long-term care is often provided informally by children, especially in countries with limited public long-term care insurance (Barczyk and Kredler 2019). Retirees may accumulate funds for bequests (or inter-vivos transfers) that will encourage their children to provide care. Bequests driven by the need to reward informal caregivers are known as *strategic bequests* (Bernheim et al. 1985). Strategic bequests share many similarities with precautionary saving. In both cases, households hold wealth late in life to insure against the risk of living long and having high medical needs.

Empirical evidence on the magnitude of the strategic bequest motive is mixed. Although many retirees receive care from their children, few formally pay for that care (Brown 2006). While written wills reward caregivers with bequests (Groneck 2017), the additional transfers are modest and financial transfers from living parents do not favor caregivers (McGarry and Schoeni 1997). Studies estimating models that include altruistic and strategic motives find that strategic motives alone cannot explain transfer behavior (Barczyk and Kredler 2018; Ko 2022; Barczyk et al. 2022; Mommaerts 2023). In summary, the evidence for an operative strategic bequest motive is modest. To the extent they are intentional, rather than accidental outcomes of the precautionary motive, bequests appear to be largely altruistic.

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Taking Stock

A number of recent studies, exploiting different features of the data, suggest that both precautionary and bequest motives are present. However, the relative importance of these motives remains an open question. Research based on demand for annuities and long-term care insurance tend to find stronger bequest motives. Papers utilizing strategic survey questions tend to find a larger role for precautionary motives. The slower decumulation rates of homeowners imply that the desire to remain in one's own home is also important, but the limited use of reverse mortgages suggests that it cannot be the only motive present. Different motives likely dominate at different points of the income distribution, reflecting differences in the extent to which each motive behaves as a luxury good. For example, De Nardi et al. (2023) find that precautionary motives are dominant in the middle tercile of the income distribution, while bequest motives play a larger role at the top.

In addition to disentangling saving motives, these studies raise pointed questions about the effectiveness of several financial products and the scope for government intervention. If households have strong precautionary motives but are deterred by market imperfections such as adverse selection, there may be a role for policy to improve these products. On the other hand, if strong bequest motives are limiting the demand for these products, their low utilization may be efficient.

Savings Trends and Policy Implications

Nearly 40% of total non-pension wealth in the United States is held by households whose heads are 65 or older (Bhutta et al. 2020). As the population continues to age, the importance of retiree savings will only increase. Concerns about low and declining savings rates earlier in life have led some to believe that younger cohorts may be unprepared for retirement (Skinner 2007). Although it is difficult to know how future generations will

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accumulate wealth during their working years or how they will draw down this wealth once they retire, comparing savings patterns across cohorts may provide some clues. Using the same HRS data and wealth measure as Figure 1, Figure 4 plots the median wealth of four cohorts, each born in a different decade, against the average age of the cohorts' members, for the years 1998-2018.

To fix ideas, note that in 1998, the War Babies cohort has an average age of 55 and median wealth holdings of roughly $150,000, while the "Late-Greatest Generation" cohort has an average age of 75 and holds a similar amount of wealth. In 2000, the War Babies and Late-Greatest cohorts are 57 and 77 years old, respectively, and both hold more wealth. Except for the oldest old ("the Greatest Generation"), the profiles have similar shapes across the cohorts. Wealth rises between 1998-2006 before falling, reflecting the rise and fall of asset prices around the Great Recession. For those in their 50s and 60s, there is some evidence of wealth accumulation, while there is evidence of decumulation after age 70. These dynamics aside, Figure 4 shows that cohorts born more recently hold more wealth.

Figure 4: Median Wealth of Successive Cohorts.

Source: Authors' calculations from the Health and Retirement Survey.

On the other hand, among cohorts younger than those shown in Figure 4, wealth accumulation has stalled (Gale et al. 2021). Sturrock (2023) reports a similar stalling in UK data, attributing much of the slowdown to lower earnings growth. Such findings raise the possibility that younger generations could enter retirement with less wealth than older ones.

The well-being of retired households depends not only on their income and wealth, but also on their exposure to the risks of outliving their wealth or incurring expensive medical conditions. Even as wealth accumulation has halted, longevity and medical expenses have continued to grow, raising questions about how future generations will fund

their retirements. Between 1950 and 2019, the United States saw a steady increase in life expectancy at age 65, rising from 13.9 to 19.6 years.[6] Since 2020, COVID-19 has reduced life expectancy by over a year, although perhaps only temporarily. It remains unclear how the pandemic and other health trends, such the rapid growth of obesity or the rise in "deaths of despair" (Case and Deaton 2021), will impact retirees' lifespans or the ages at which they stop working. Changes along either dimension will affect the number of years that retirees need to fund.

Although exact growth rates are hard to predict, lifespans and medical expenditures will most likely continue to rise (for example, see forecasts by the Social Security Administration 2022 or the Centers for Medicare and Medicaid Services 2022a) as new medical technologies are adopted (Chandra et al. 2013). Given that households care most about what they pay out-of-pocket, changes in the generosity of health insurance will also be important. In recent decades, expansions in coverage have held down out-of-pocket spending despite substantial increases in total spending.[7]

If current trends continue, however, the cost of government programs such as Social Security, Medicare, and Medicaid will not be sustainable. Reforms are needed, but their impact will depend on the relative strengths of the precautionary, bequest and homeownership motives. To give a prominent example, it has been long understood that if households do not face risk and do not possess altruistic bequest motives, an unfunded Social Security system crowds out private savings, reduces the aggregate capital stock, and likely reduces welfare (Diamond 1965). On the other hand, altruistic bequest motives can

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[6] Compiled from National Center for Health Statistics (2011, Table 22; 2017, Table 15), Arias and Xu (2022a, 2022b, Table A) Arias et al. (2022). 2021 estimates are provisional.

[7] Between 1990 and 2020, even as per capita medical spending rose by 113 percent, out-of-pocket spending rose by only 13 percent. Among those 65 and older, between 2002 and 2014 (when data are available), per capita out-of-pocket spending fell by 5 percent, even as total spending increased by 7 percent. Figures calculated from the National Health Expenditure Accounts. Data for all ages come from the main tables (Centers for Medicare and Medicaid Services 2022c, Tables 1 and 6), and data for older individuals come from the Age and Gender tables (Centers for Medicare and Medicaid Services 2022b, Table 7). All values deflated by the Consumer Price Index.

undo many of these distortions (Barro 1974), and precautionary motives may allow Social Security to have insurance value and perhaps even improve welfare (Harenberg and Ludwig 2019).

Understanding saving motivations is also important when considering how to insure retirees against risks such as long-term care. Given the low take-up of private insurance, many retirees face the possibility of catastrophic long-term care expenses. Whether and how to reform the long-term care insurance market (through promoting private insurance or expanding Medicaid) has been a topic of recent policy debate (Commission on Long-Term Care, 2013). When considering such reforms, policymakers need to know the extent to which the limited use of private insurance reflects market frictions, rather than bequest and/or homeownership motives that lower the insurance's value (Arapakis et al. 2022).

In short, we expect the retirement savings puzzle to only increase in salience. We hope that future cohorts of economists will continue to make it a research priority.

References

Achou, Bertrand, "Housing Liquidity and Long-term Care Insurance Demand: A Quantitative Evaluation," *Journal of Public Economics*, 2021, *194*, 104353.

_ "Housing in Medicaid: Should it Really Change?," American Economic Journal: Economic Policy, 2023, 15(1), 1–36.

Ameriks, John, Andrew Caplin, Steven Laufer, and Stijn Van Nieuwerburgh, "The Joy of Giving or Assisted Living? Using Strategic Surveys to Separate Bequest and Precautionary Motives," *Journal of Finance*, 2011, *66* (2), 519–561.

_ **, Joseph Briggs, Andrew Caplin, Matthew D. Shapiro, and Chris Tonetti**, "Long-Term Care Utility and Late-in-Life Saving," *Journal of Political Economy*, 2020, *128* (6), 2375–2451.

_ **, _ , _ , Matthew D Shapiro, and Christopher Tonetti**, "The Long-term Care Insurance Puzzle: Modeling and Measurement," 2018.

Arapakis, Karolos, Eric French, John Bailey Jones, and Jeremy McCauley, "On the Distribution and Dynamics of Medical Expenditure Among the Elderly," 2021.

_ **, _ , _ , and**, "How Should We Fund End-of-life Care in the US?," *The Lancet Regional Health - Americas*, 2022, *15: 100359*, https://doi.org/10.1016/j.lana.2022.100359

Arias, Elizabeth and Jiaquan Xu, "United States Life Tables, 2019," *National Vital Statistics Report*, 2022, 70(19).

_ **and** _ , "United States Life Tables, 2020," *National Vital Statistics Report*, 2022, 71(2).

_ **, Betzaida Tejada-Vera, Farida Ahmad, and Kenneth D. Kochanek**, "Provisional Life Expectancy Estimates for 2021," Vital Statistics Rapid Release 23, National Center for Health Statistics 2022.

Banks, James, Janet Currie, Sonya Krutikova, Kjell G. Salvanes, and Hannes Schwandt, "The Evolution of Mortality Inequality in 11 OECD countries: Introduction," *Fiscal Studies*, 2021, 42 (1), 9-23.

_ **, Richard Blundell, Peter Levell, and James P. Smith**, "Life-Cycle Consumption Patterns at Older Ages in the United States and the United Kingdom: Can Medical Expenditures Explain the Difference?," *American Economic Journal: Economic Policy*,

2019, *11* (3), 27–54.

Barczyk, Daniel and Matthias Kredler, "Evaluating Long-term-care Policy Options, Taking the Family Seriously," *The Review of Economic Studies*, 2018, *85* (2), 766–809.

_ **and** _ , "Long-Term Care Across Europe and the United States: The Role of Informal and Formal Care," *Fiscal Studies*, 2019, *40* (3), 329–373.

_ **, Sean Fahle, and Matthias Kredler**, "Save, Spend or Give? A Model of Housing, Family Insurance, and Savings in Old Age," *forthcoming, Review of Economic Studies*, 2022.

Barro, Robert J., "Are Government Bonds Net Wealth?," *Journal of Political Economy*, 1974, *82*, 1095–1117.

Benartzi, Shlomo, Alessandro Previtero, and Richard H. Thaler, "Annuitization puzzles." *Journal of Economic Perspectives*, 2011, 25 (4): 143-164.

Bernheim, B. Douglas, Andrei Shleifer, and Lawrence H. Summers, "The Strategic Bequest Motive," *Journal of Political Economy*, 1985, *93* (5), 1045–1076.

Bhutta, Neil, Jesse Bricker, Andrew C. Chang, Lisa J. Dettling, Sarena Goodman, Joanne W. Hsu, Kevin B. Moore, Sarah Reber, Alice Henriques Volz, and Richard Windle, "Changes in US Family Finances from 2016 to 2019: Evidence from the Survey of Consumer Finances," *Federal Reserve Bulletin*, 2020, *106* (5).

Blundell, Richard, Margherita Borella, Jeanne Commault, and Mariacristina De Nardi, "Why Does Consumption Fluctuate in Old Age and How Should the Government Insure It?," 2020. National Bureau of Economic Research Working Paper No. w27348.

_ **, Rowena Crawford, Eric French, and Gemma Tetlow**, "Comparing Retirement Wealth Trajectories on Both Sides of the Pond," *Fiscal Studies*, 2016, *37* (1), 105–130.

Boyer, M. Martin, Philippe De Donder, Claude Fluet, Marie-Louise Leroux, and Pierre-Carl Michaud, "Long-Term Care Insurance: Information Frictions and Selection," *American Economic Journal: Economic Policy*, 2020, *12* (3), 134–169.

Braun, R. Anton, Karen A. Kopecky, and Tatyana Koreshkova, "Old, Sick, Alone and Poor: A Welfare Analysis of Old-age Social Insurance Programs," *The Review of Economic Studies*, 2017, *84* (2), 580–612.

_ , _ , and _ , "Old, Frail, and Uninsured: Accounting for Features of the US Long-term Care Insurance Market," *Econometrica*, 2019, *87* (3), 981–1019.

Brown, Jeffrey R., and Amy Finkelstein, "The Interaction of Public and Private Insurance: Medicaid and the Long-Term Care Insurance Market," *American Economic Review*, 2008, *98* (5), 837–880.

Brown, Jeffrey R., and Amy Finkelstein. "Insuring Long-term Care in the United States." *Journal of Economic Perspectives*, 2011, 25 (4), 119-142.

Brown, Meta, "Informal Care and the Division of End-of-Life Transfers," *Journal of Human Resources*, 2006, *41* (1), 191–219.

Caplin, Andrew, "Turning Assets into Cash: Problems and Prospects in the Reverse Mortgage Market," *Innovations in Retirement Financing*, 2002, p. 234.

Case, Anne and Angus Deaton, *Deaths of Despair and the Future of Capitalism*, Princeton University Press, 2021.

Castañeda, Ana, Javier Díaz-Giménez, and José-Víctor Ríos-Rull, "Accounting for U.S. Earnings and Wealth Inequality," *Journal of Political Economy*, 2003, *111* (4), 818–857.

Centers for Medicare and Medicaid Services, "The 2022 Annual Report of the Board of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds," Technical Report 2022.

— , "National Health Expenditure Data: Age and Gender," Technical Report 2022.

— , "National Health Expenditure Data: Historical," Technical Report 2022.

Chandra, Amitabh, Jonathan Holmes, and Jonathan Skinner, "Is This Time Different? The Slowdown in Health Care Spending," *Brookings Papers on Economic Activity*, 2013, *2013*, 261.

Chang, Minsu and Ami Ko, "Marital Transitions, Housing, and Long-Term Care in Old Age," August 2022.

Chetty, Raj, Michael Stepner, Sarah Abraham, Shelby Lin, Benjamin Scuderi, Nicholas Turner, Augustin Bergeron, and David Cutler, "The Association between Income and Life Expectancy in the United States, 2001-2014," *JAMA*, 2016, *315* (16), 1750–1766.

Christensen, Bent Jesper, Malene Kallestrup-Lamb, and John Kennan, "Consumption and Saving after Retirement," 2022. Working Paper 29826, National Bureau of Economic Research.

Cocco, João F. and Paula Lopes, "Aging in Place, Housing Maintenance, and Reverse

Mortgages," *The Review of Economic Studies*, 2020, *87* (4), 1799–1836.

Commission on Long-Term Care, ed., *Commission on Long-Term Care Report to the Congress*, Government Printing Office, 2013.

Davidoff, Thomas, "Home Equity Commitment and Long-term Care Insurance Demand," *Journal of Public Economics*, 2010, *94* (1), 44–49.

_ , **Jeffrey R. Brown, and Peter A. Diamond**, "Annuities and Individual Welfare," *The American Economic Review*, 2005, *95* (5), 1573–1590.

_ , **Patrick Gerhard, and Thomas Post**, "Reverse Mortgages: What Homeowners (Don't) Know and How It Matters," *Journal of Economic Behavior & Organization*, 2017, *133*, 151–171.

Davies, James B., "Uncertain Lifetime, Consumption, and Dissaving in Retirement," *Journal of Political Economy*, 1981, *86* (4), 561–577.

Diamond, Peter A., "National Debt in a Neoclassical Growth Model," *The American Economic Review*, 1965, *55* (5), 1126–1150.

De Nardi, Mariacristina, "Wealth Inequality and Intergenerational Links," *Review of Economic Studies*, 2004, *71* (3), 743–768.

_ , **Eric French, and John Bailey Jones**, "Life Expectancy and Old Age Savings," *American Economic Review: Papers and Proceedings*, 2009, *99* (2), 110–115.

_ , _ , **and** _ , "Why Do the Elderly Save? The Role of Medical Expenses," *Journal of Political Economy*, 2010, *118* (1), 39–75.

_ , _ , **and** _ , "Medicaid Insurance in Old Age," *American Economic Review*, 2016,*106* (11), 3480–3520.

_ , _ , **and** _ , "Savings After Retirement: A Survey," *Annual Review of Economics*, 2016, *8* (1), 177–204.

_ , _ , _ , **and Angshuman Gooptu**, "Medicaid and the Elderly," *Economic Perspectives*, 2012, *36* (1), 17–35.

_ , _ , _ , **and Jeremy McCauley**, "Medical Spending of the U.S. Elderly," *Fiscal Studies*, 2016, *37* (3-4), 717–747.

_ , _ , _ , **and Rory McGee**, "Why Do Couples and Singles Save during Retirement? Household Differences and their Aggregate Implications," 2023, NBER Working Paper 28828 (revised July 2023).

Dynan, Karen E., Jonathan Skinner, and Stephen P. Zeldes, "The Importance of Bequests and Life-Cycle Saving in Capital Accumulation: A New Answer," *American Economic Review*, 2002, *92* (2), 274–278.

_ , _ , **and** _ , "Do the Rich Save More?," *Journal of Political Economy*, 2004, *112* (2), 397–444.

Engen, Eric M., William G. Gale, and Cori E. Uccello, "The Adequacy of Household Saving," *Brookings Papers on Economic Activity*, 1999, *0* (2), 65–165.

Fang, Hanming, "Insurance Markets for the Elderly," in John Piggott and Alan Woodland, eds., *Handbook of the Economics of Population Ageing*, Elsevier, 2016, 237-309.

French, Eric, Mariacristina De Nardi, John Bailey Jones, Olyesa Baker, and Phil Doctor, "Right before the End: Asset Decumulation at the End of Life," *Economic Perspectives*, 2006, *30* (3), 2–13.

Gale, William G. and John Karl Scholz, "Intergenerational Transfers and the Accumulation of Wealth," *Journal of Economic Perspectives*, 1994, *8* (4), 145–160.

_ , **Hilary Gelfond, Jason J. Fichtner, and Benjamin H. Harris**, "The Wealth of Generations, with Special Attention to the Millennials," in Raj Chetty, John N. Friedman, Janet C. Gornick, Barry Johnson, and Arthur Kennickell, eds., *Measuring Distribution and Mobility of Income and Wealth*, University of Chicago Press, February 2021.

Gardner, Lara and Donna B. Gilleskie, "The Effects of State Medicaid Policies on the Dynamic Savings Patterns and Medicaid Enrollment of the Elderly," *Journal of Human Resources*, 2012, *47* (4), 1082–1127.

Greenhalgh-Stanley, Nadia, "Medicaid and the Housing and Asset Decisions of the Elderly: Evidence from Estate Recovery Programs," *Journal of Urban Economics*, 2012, *72* (2-3), 210–224.

Groneck, Max, "Bequests and Informal Long-term Care Evidence from HRS Exit Interviews," *Journal of Human Resources*, 2017, *52* (2), 531–572.

Harenberg, Daniel and Alexander Ludwig, "Idiosyncratic Risk, Aggregate Risk, and the Welfare Effects of Social Security," *International Economic Review*, 2019, *60* (2), 661–692.

Hendren, Nathaniel, "Private Information and Insurance Rejections," *Econometrica*, 2013, *81* (5), 1713–1762.

Hong, Jay H. and José‑Víctor Ríos‑Rull, "Life Insurance and Household Consumption," *The American Economic Review*, 2012, *102* (7), 3701–3730.

Hubbard, R. Glenn, Jonathan Skinner, and Stephen P. Zeldes, "Precautionary Saving and Social Insurance," *Journal of Political Economy*, 1995, *103* (2), 360–399.

Hurd, Michael D., "Savings of the Elderly and Desired Bequests," *The American Economic Review*, 1987, *77* (3), 298–312.

_ , "Mortality Risk and Bequests," *Econometrica*, 1989, *57* (4), 779–813.

Hurst, Erik and James P. Ziliak, "Do Welfare Asset Limits Affect Household Saving? Evidence from Welfare Reform," *Journal of Human Resources*, 2006, *41* (1), 46–71.

Inkmann, Joachim and Alexander Michaelides, "Can the Life Insurance Market Provide Evidence for a Bequest Motive?," *The Journal of Risk and Insurance*, 2012, *79* (3), 671–695.

Kaji, Tetsuya, Elena Manresa, and Guillaume Pouliot, "An Adversarial Approach to Structural Estimation," *arXiv preprint arXiv:2007.06169*, 2020.

Keynes, John Maynard, *The General Theory of Employment, Interest and Money*, MacMillan, 1936.

Ko, Ami, "An Equilibrium Analysis of the Long-term Care Insurance Market," *The Review of Economic Studies*, 2022, *89* (4), 1993–2025.

Kopczuk, Wojciech and Joseph Lupton, "To Leave or Not to Leave: The Distribution of Bequest Motives," *Review of Economic Studies*, 2007, *74*, 207–235.

Kopecky, Karen and Tatyana Koreshkova, "The Impact of Medical and Nursing Home Expenses and Social Insurance Policies on Savings and Inequality," *American Economic Journal: Macroeconomics*, 2014, *6*, 29–72.

Kotlikoff, Laurence J. and Lawrence H. Summers, "The Role of Intergenerational Transfers in Aggregate Capital Accumulation," *Journal of Political Economy*, 1981, *89* (4), 706–732.

Laitner, John and Thomas F. Juster, "New Evidence on Altruism, A Study of TIAA-CREF Retirees," *The American Economic Review*, 1996, *86* (4), 893–908.

_ **, Dan Silverman, and Dmitriy Stolyarov**, "The Role of Annuitized Wealth in Post-retirement Behavior," *American Economic Journal: Macroeconomics*, 2018, *10* (3), 71–117.

Lee, Siha and Kegon T. K. Tan, "Bequest Motives and the Social Security Notch," May 2023.

Lockwood, Lee M., "Bequest Motives and the Annuity Puzzle," *Review of Economic Dynamics*, 2012, *15* (2), 226 – 243.

, "Incidental Bequests and the Choice to Self-insure Late-life Risks," *American Economic Review*, 2018, *108* (9), 2513–50.

Love, David A., Michael Palumbo, and Paul Smith, "The Trajectory of Wealth in Retirement," *Journal of Public Economics*, 2009, *93*, 191–208.

Marshall, Samuel, Kathleen M. McGarry, and Jonathan S. Skinner, "The Risk of Out-of-Pocket Health Care Expenditure at the End of Life," in David Wise, ed., *Explorations in the Economics of Aging*, University of Chicago Press, 2011, 101–128.

McGarry, Kathleen and Robert F. Schoeni, "Transfer Behavior within the Family: Results from the Asset and Health Dynamics Study," *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 1997, *52B* (Special Issue), 82–92.

McGee, Rory, "Old Age Savings and House Price Shocks," January 2022.

Mitchell, Olivia S., James M Poterba, Mark J. Warshawsky, and Jeffrey R. Brown, "New Evidence on the Money's Worth of Individual Annuities," *American Economic Review*, 1999, *89* (5), 1299–1318.

Modigliani, Franco, "Measuring the Contribution of Intergenerational Transfers to Total Wealth: Conceptual Issues and Empirical Findings," in Denis Kessler and Andre Masson, eds., *Modeling the Accumulation and Distribution of Wealth*, Clarendon Press, Oxford, 1988.

and Richard Brumberg, "Utility Analysis and the Consumption Function: An Interpretation of Cross-section Data," in K. Kurihara, ed., *Post-Keynesian Economics*, Rutgers University Press, 1954, pp. 388–436. Reprinted in Modigliani, Franco and others, *The Collected Papers of Franco Modigliani, Volume 6*, MIT Press, 2005, pp. 3-45.

and , "Utility Analysis and Aggregate Consumption Functions: An Attempt at Integration," in Andrew Abel, ed., *The Collected Papers of Franco Modigliani: Volume 2, The Life Cycle Hypothesis of Saving*, The MIT Press, 1980.

Mommaerts, Corina, "Long-Term Care Insurance and the Family," May 2023.

Nakajima, Makoto and Irina A. Telyukova, "Reverse Mortgage Loans: A Quantitative

Analysis," *The Journal of Finance*, 2017, *72* (2), 911–950.

_ **and** _ , "Home Equity in Retirement," *International Economic Review*, 2020, *61*(2), 573–616.

_ **and** _ , "Medical Expenses and Saving in Retirement: The Case of US and Sweden," January 2023.

National Center for Health Statistics, *Health, United States, 2011*, US Department of Health, Education, and Welfare, Public Health Service, Health Resources Administration, National Center for Health Statistics, 2011.

_ , *Health, United States, 2017*, 2017.

O'Dea, Cormac and David Sturrock, "Survival Pessimism and the Demand for Annuities," *The Review of Economics and Statistics*, 2021, pp. 1–53.

Pashchenko, Svetlana, "Accounting for Non-annuitization," *Journal of Public Economics*, 2013, *98*, 53–67.

_ **and Ponpoje Porapakkarm**, "Saving Motives over the Life-cycle," 2023. Available at SSRN 3585755.

Pauly, Mark V., "The Rational Nonpurchase of Long-term-care Insurance," *Journal of Political economy*, 1990, *98* (1), 153–168.

Peijnenburg, Kim, Theo Nijman, and Bas J. M. Werker, "Health Cost risk: A Potential Solution to the Annuity Puzzle," *The Economic Journal*, 2017, *127* (603), 1598–1625.

Poterba, James M., Steven F. Venti, and David A. Wise, "The Composition and Drawdown of Wealth in Retirement," *Journal of Economic Perspectives*, 2011, *25*, 95–117.

Reichling, Felix and Kent Smetters, "Optimal Annuitization with Stochastic Mortality Probabilities," *American Economic Review*, 2015, *105* (11), 3273–3320.

Scholz, John Karl, Ananth Seshadri, and Surachai Khitatrakun, "Are Americans Saving Optimally for Retirement?," *Journal of Political Economy*, 2006, *114*, 607–643.

Shorrocks, Antony F., "The Age-wealth Relationship: A Cross-section and Cohort Analysis," *The Review of Economics and Statistics*, 1975, *55* (3), 155–163.

Skinner, Jonathan, "Are You Sure You're Saving Enough for Retirement?," *Journal of Economic Perspectives*, 2007, *21* (3), 59–80.

Smith, James P., "Healthy Bodies and Thick Wallets: The Dual Relation between Health and Economic Status," *Journal of Economic Perspectives*, 1999, *13* (2), 145–166.

Social Security Administration, "The 2022 Annual Report of the Board of Trustees of the Federal Old-age and Survivors Insurance and Federal Disability Insurance Trust Funds," Technical Report 2022.

Sturrock, David, "Wealth and Welfare across Generations," 2023, No. W23/15, Institute for Fiscal Studies.

Waldron, Hilary, "Trends in Mortality Differentials and Life Expectancy for Male Social Security-Covered Workers, by Socioeconomic Status," *Social Security Bulletin*, 2007, *67* (3), 1–28.

Yaari, Menahem E., "Uncertain Lifetime, Life Insurance, and Theory of the Consumer," *Review of Economic Studies*, 1965, *32* (2), 137–150.

Yang, Fang, "Consumption over the Life Cycle: How Different is Housing?," *Review of Economic Dynamics*, 2009, *12* (3), 423–443.
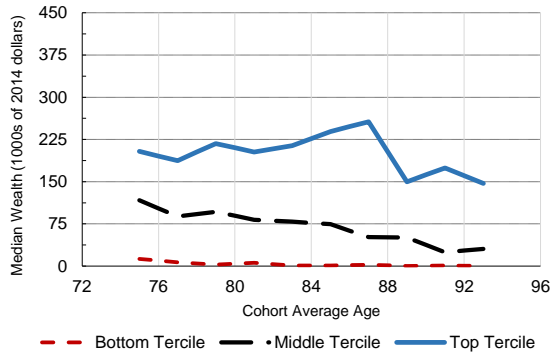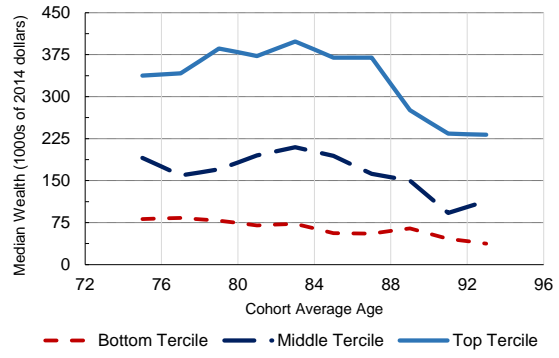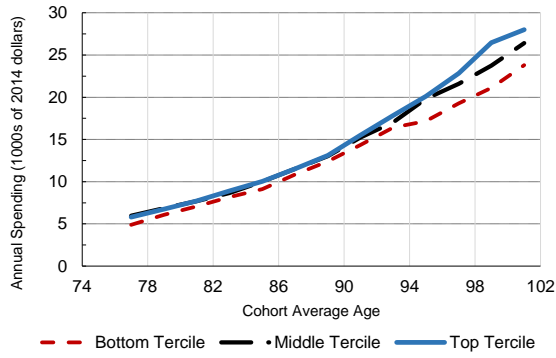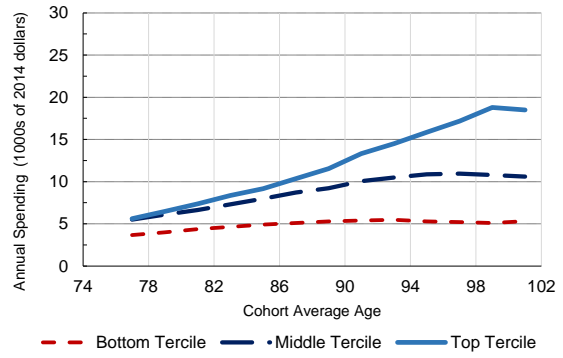
Figure 1: Evolution of Median Wealth for Retirees

Source: Data from De Nardi et al. (2023, Figure 1), based on the Assets and Health Dynamics of the Oldest Old (AHEAD) cohort of the Health and Retirement Survey (HRS). Each line shows medians over the period 1996-2014 for a subset of the AHEAD households aged 71-76 in 1996.
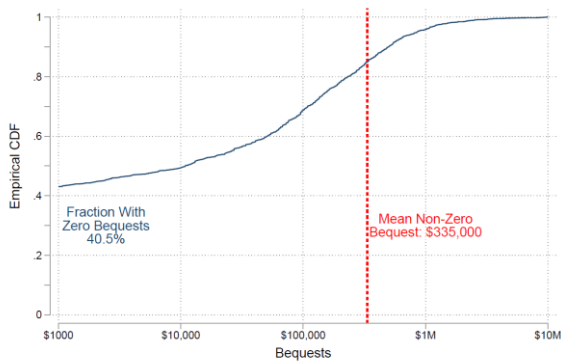
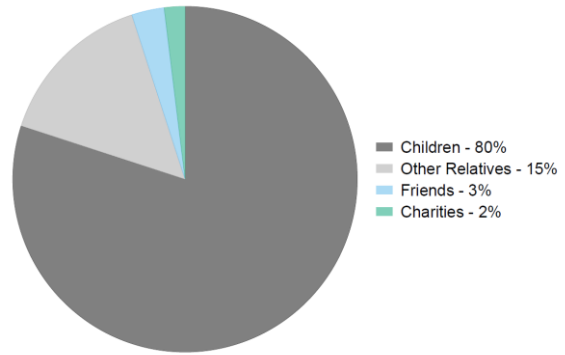(a) Out-of-pocket plus Medicaid (b) Out-of-pocket

Figure 2: Mean Medical Spending of Retired Singles

Source: Data from De Nardi et al. (2023, Figure 5).

(a) Distribution   (b) Recipients

Figure 3: Bequests and their Recipients

Source: Authors' calculations from the AHEAD cohort of the HRS.

Panel (a): Distribution of non-zero bequests at the death of final household member and mean value (red dashed line). Distribution censored at the 99th percentile of the conditional distribution.

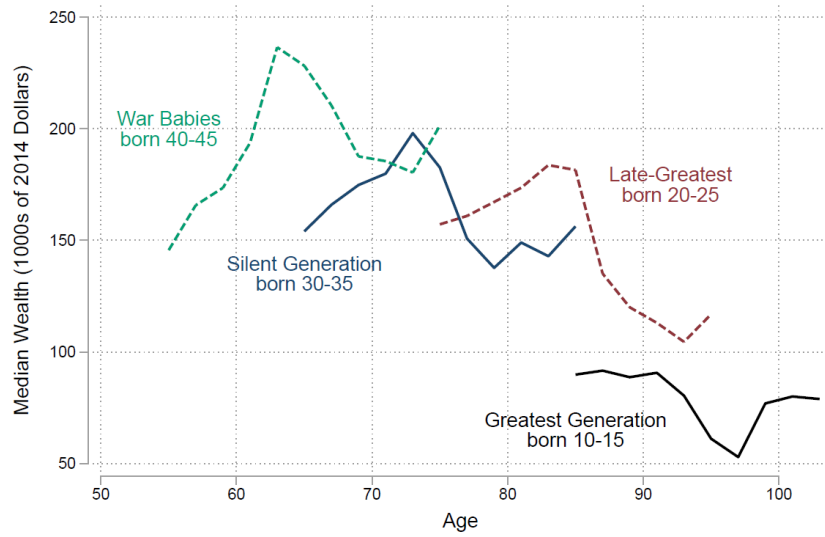Panel (b): Average share disbursed to recipient group.

Figure 4: Median Wealth of Successive Cohorts

Source: Authors' calculations from the HRS.