

# Chicago Fed Letter

## Savings after retirement: A survey

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Retired U.S. households, especially those with high income, decumulate their assets more slowly than implied by the basic life cycle model. The observed patterns of out-of-pocket medical expenses, which rise quickly with age and income during retirement, and longevity, which also rises with income, can explain a significant portion of U.S. retirement saving. However, more work is needed to disentangle these precautionary motives from other motives, such as the desire to leave bequests.

More than one-third of total wealth (Wolff, 1998)<sup>1</sup> in the United States is held by households whose heads are over

age 65. This wealth is an important determinant of their consumption and welfare. For example, Scholz, Seshadri, and Khitatrakun<sup>2</sup> document that, with the notable exception of people in the bottom lifetime income decile, net worth is a major source of funds. A striking feature of the wealth data is that retired U.S. households, particularly those with high income, decumulate their assets at a rate

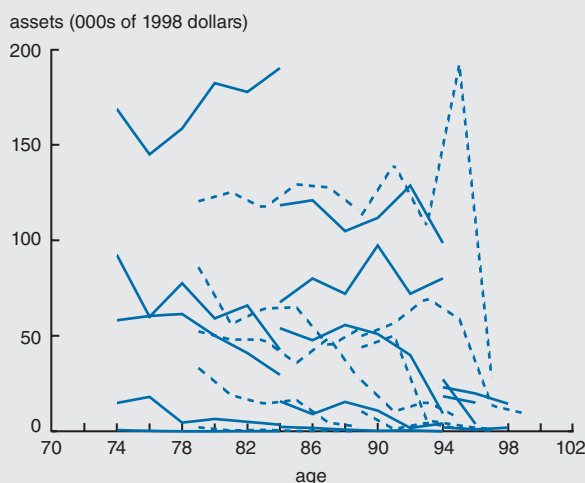
slower than that implied by the basic life cycle model. Understanding why they do so is important to understanding how savings would respond to potential policy reforms.

Most explanations for why assets fall so slowly fall into two categories. The first set of explanations emphasizes the

health-related risks that the elderly face late in life, such as uncertain life spans and medical spending. Elderly households may be holding onto their assets to cover expensive medical needs at extremely old ages. In fact, the observed patterns of out-of-pocket medical expenses, which rise quickly with age and income during retirement, coupled with heterogeneous life span risks, can explain a significant portion of U.S. savings during retirement. The second set of explanations emphasizes altruism. Individuals may receive utility from leaving bequests, or from not burdening their children with long-term care obligations. These two sets of motivations have similar implications for savings in old age, making it difficult to disentangle their relative importance.

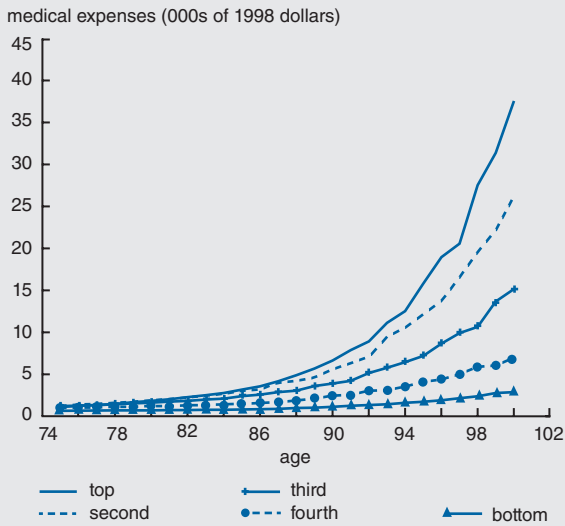
Our recent work<sup>3</sup> discusses promising research that attempts to resolve this problem by looking at additional features of the data. We point out the importance of going beyond total saving to look at housing, purchases of annuities and long-term care insurance, and government-provided medical insurance, especially the means-tested support provided by Medicaid. In this *Chicago Fed Letter*, we provide a summary of that research.<sup>4</sup>

### 1. Median assets, by birth cohort and PI quintile, for singles



NOTE: PI indicates permanent income.  
SOURCE: De Nardi, French, and Jones (2010).

## 2. Out-of-pocket medical expenses by age and PI



### Descriptive evidence

Figure 1, taken from De Nardi, French, and Jones (2010),<sup>5</sup> displays median assets, conditional on birth cohort and permanent income quintile, for older singles. The figure presents asset profiles for survivors; each point represents median assets for all the members of a particular income-cohort cell that are still alive at a particular date. Median assets are increasing in permanent income (PI), with 74 year olds in the highest PI quintile holding about \$200,000 and those in the lowest PI quintiles holding essentially no assets. Individuals with the highest income tend to hold significant wealth well into their nineties, those with the lowest income never save much, and those in the middle decumulate their assets at a moderate rate. Thus, even at older ages, richer people save more, a finding first documented by Dynan, Skinner, and Zeldes (2004)<sup>6</sup> for the whole life cycle.

The slow asset decumulation of the high-income elderly may be driven by health-related risks. Figure 2, also taken from De Nardi, French, and Jones (2010), plots the out-of-pocket medical spending of each PI quintile. Permanent income has a large effect on average medical expenses, especially at older ages. Average medical expenses are less than \$1,000 a year at age 75 and vary little

with income. By age 100, they rise to \$2,900 for those in the bottom PI quintile and to almost \$38,000 for those in the top PI quintile. Mean medical expenses at age 100 are \$17,700, which is greater than average income for that age.

An important reason why those with low income spend less on medical services is that they are more likely to be covered by Medicaid, a means-tested government health insurance program. For example,

in De Nardi, French, and Jones (2013),<sup>7</sup> we show that those in the bottom PI quintile have a Medicaid reciprocity rate of 70%, whereas those in the top quintile have a reciprocity rate of 5%. De Nardi et al. (2015) show that Medicaid transfers rise rapidly with age, as people enter nursing homes.

Like medical spending, longevity increases with income. Figure 3, also taken from De Nardi, French, and Jones (2010), presents predicted life expectancies at age 70. Individuals in the top PI quintile typically live three and a half years longer than those in the bottom quintile. Moreover, for rich people the probability of living to very old ages, and thus facing very high medical expenses, is significant. For example, we find that a healthy 70-year-old woman in the top quintile of the PI distribution faces a 14% chance of living 25 years, to age 95.

### Models of savings behavior

Can the risk of living long and having high medical spending explain the lack of asset decumulation shown in figure 1? In De Nardi, French, and Jones (2010), we show that when single retirees face the medical spending risks shown in figure 2 and the longevity risks shown in figure 3, a model of optimal savings decisions can fit the savings profiles shown in figure 1, even in the absence

of bequest motives. In De Nardi, French, and Jones (2009),<sup>8</sup> we use another version of this model to show that changes in the risk of living long and having high medical spending can generate significant changes in saving.

In De Nardi, French, and Jones (2010), we estimate a model with and without a bequest motive and find that both versions of the model closely fit the savings patterns in figure 1, as well as the distribution of observed bequests. When bequest motives are removed, modest changes in utility function parameters yield larger precautionary savings motives, allowing the model to fit the wealth data almost equally well. This shows the difficulty of distinguishing precautionary savings motives from bequest motives on the basis of wealth data alone. Both motivations encourage saving, and both motivations are strongest for the rich—bequests are typically modeled as luxury goods to match the data, and precautionary savings motives are strongest for rich people who rely less heavily on means-tested government insurance. As Dynan, Skinner, and Zeldes (2002)<sup>9</sup> note, many people are likely driven by both motivations. These identification problems mean that modest differences in model specification or sample selection may lead to significantly different findings regarding the importance of bequest motives.

De Nardi et al. (2015) survey research on the role of altruism and bequest motives. Much of this work utilizes additional information beyond wealth (or saving) data in order to improve identification. Hurd (1989) and Kopczuk and Lupton (2007) find that the presence or absence of children is not important to determining either the existence or the strength of bequest motives.<sup>10</sup> Lockwood (2014)<sup>11</sup> matches additional data on purchases of long-term care (LTC) insurance. His key idea is that matching the data without bequest motives requires strong precautionary motives, which implies that the demand for LTC insurance is very large. However, the data show that purchases of LTC insurance are low. In the absence of insurance market frictions, the only way to simultaneously match savings and low purchases of LTC insurance is to have modest precautionary

### 3. Life expectancy in years, conditional on reaching age 70

Income quintile	Healthy male	Unhealthy male	Healthy female	Unhealthy female	All <sup>a</sup>
Bottom	7.6	5.9	12.8	10.9	11.1
Second	8.4	6.6	13.8	12.0	12.4
Third	9.3	7.4	14.7	13.2	13.1
Fourth	10.5	8.4	15.7	14.2	14.4
Top	11.3	9.3	16.7	15.1	14.7
By gender: <sup>b</sup>			By health status: <sup>c</sup>		
Men	9.7		Unhealthy	11.6	
Women	14.3		Healthy	14.4	

<sup>a</sup>Calculations use the gender and health distributions observed in each permanent income quintile.

<sup>b</sup>Calculations use the health and permanent income distributions observed for each gender.

<sup>c</sup>Calculations use the gender and permanent income distributions observed for each health status group.

NOTE: Life expectancies calculated through simulations using estimated health transition and survivor functions.

SOURCE: De Nardi, French, and Jones (2010).

savings motives and a significant bequest motive. Using a complementary argument, Inkmann and Michaelides<sup>12</sup> conclude that the life insurance holdings of UK households are consistent with bequest motives. Ameriks et al. (2015)<sup>13</sup> match the responses to “strategic survey questions” that involve hypothetical trade-offs between consuming long-term care and leaving bequests. The hypothetical wealth splits chosen by survey respondents help identify the relative strength of bequest motives. Their results, based on samples of wealthy retirees, suggest that precautionary motives are at least as important as bequest motives. In De Nardi, French, and Jones (2013), we match Medicaid reciprocity rates and transfer amounts. Matching the Medicaid data bounds the medical expense risk and the strength of the associated precautionary saving motives generated by our model. To match observed assets holdings in this environment, the model attributes part of savings to bequest motives.

In addition to precautionary savings against health-related risks or bequest motives and altruism, elderly households may reduce savings slowly in order to continue living in their own homes. Nakajima and Telyukova (2012)<sup>14</sup> show that elderly households decumulate their housing assets more slowly than their financial assets (a fact also pointed out by Yang, 2009),<sup>15</sup> and emphasize the

difficulty of borrowing against housing wealth.

### Conclusion

The elderly run down their savings much more slowly than implied by a basic life cycle model with a known date of death. The literature suggests that uncertainty and heterogeneity in the length of life and medical spending, along with altruism and bequest motives, are important to understanding the slow decumulation of re-

irement wealth. Identifying the relative importance of the bequest and precautionary saving motives is a priority, because the consequences of policy reforms hinge on their relative strength. For example, the savings impact of public health insurance, which reduces the need to save against longevity and medical spending risk, is tied closely to precautionary motives. Looking at additional features of the data, especially those not matched in the calibration or estimation of the model, is a key assessment tool. Recent studies have brought additional information to bear in promising ways.

<sup>1</sup> Edward N. Wolff, 2004, “Changes in household wealth in the 1980s and 1990s in the U.S.,” Bard College, Levy Economics Institute, working paper, No. 407, May.

<sup>2</sup> John Karl Scholz, Ananth Seshadri, and Surachai Khitatrakun, 2006, “Are Americans saving ‘optimally’ for retirement?,” *Journal of Political Economy*, Vol. 114, No. 4, August, pp. 607–643.

<sup>3</sup> Mariacristina De Nardi, Eric French, John Jones, and Jeremy McCauley, 2015, “Medical spending on the U.S. elderly,” University College London, mimeo.

<sup>4</sup> This article previously appeared as a working paper (Mariacristina De Nardi, Eric French, and John B. Jones, 2015, “Savings after retirement: A survey,” National Bureau of Economic Research, working paper, No. 21268, June) and as a column on VoxEU.org, the policy portal of the London-based Centre for Economic Policy Research (<http://www.voxeu.org/article/savings-after-retirement-survey>).

<sup>5</sup> Mariacristina De Nardi, Eric French, and John B. Jones, 2010, “Why do the elderly save? The role of medical expenses,” *Journal of Political Economy*, Vol. 118, No. 1, February, pp. 39–75.

<sup>6</sup> Karen E. Dynan, Jonathan Skinner, and Stephen P. Zeldes, 2004, “Do the rich save more?,” *Journal of Political Economy*, Vol. 112, No. 2, April, pp. 397–444.

<sup>7</sup> Mariacristina De Nardi, Eric French, and John Bailey Jones, 2013, “Medicaid insurance in old age,” National Bureau of Economic Research, working paper, No. 19151, June.

<sup>8</sup> Mariacristina De Nardi, Eric French, and John Bailey Jones, 2009, “Life expectancy and old age savings,” National Bureau of Economic Research, working paper, No. 14653; see also De Nardi, French, and Jones, 2009, *American Economic Review: Papers and Proceedings of the 121st Annual Meeting of the American Economic Association*, May, pp. 110–115.

<sup>9</sup> Karen E. Dynan, Jonathan Skinner and Stephen P. Zeldes, 2002, “The importance of bequests and life-cycle saving in capital accumulation: A new answer,” *American Economic Review*, Vol. 92, No. 2, May, pp. 274–278.

<sup>10</sup> Michael D. Hurd, 1989, “Mortality risk and bequests,” *Econometrica*, Vol. 57, No. 4, July, pp. 779–813; and Wojciech Kopczuk and Joseph P. Lupton, 2007, “To leave or not to leave: The distribution of bequest motives,” *Review of Economic Studies*, Vol. 74, No. 1, pp. 207–235.

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ISSN 0895-0164

<sup>11</sup>Lee M. Lockwood, 2014, "Incidental bequests: Bequest motives and the choice to self-insure late-life risks," mimeo.

<sup>12</sup>Joachim Inkmann and Alexander Michaelides, 2012, "Can the life insurance market provide evidence for a bequest motive?," *Journal of Risk and Insurance*, Vol. 79, No. 3, September, pp. 671–695.

<sup>13</sup>John Ameriks, Joseph Briggs, Andrew Caplin, Matthew D. Shapiro, and Christopher Tonetti, 2015, "Long-term care utility and late in life saving," Vanguard Research Initiative, working paper, January.

<sup>14</sup>Makoto Nakajima and Irina Telyukova, 2012, "Home equity in retirement," mimeo.

<sup>15</sup>Fang Yang, 2009, "Consumption over the life cycle: How different is housing?," *Review of Economic Dynamics*, Vol. 12, No. 3, pp. 423–443.