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Reflections of the Holland Medal Recipient

SAVER HETEROGENEITY AND THE CHALLENGE OF ASSESSING RETIREMENT SAVING ADEQUACY

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Determining whether a particular household is saving enough for retirement, and estimating the fraction of a population cohort that is on track in retirement planning, are complicated by substantial heterogeneity in household spending needs during retirement years. Longevity, health status, capital market returns, and whether family networks will prove a source of support or a drain, all vary significantly across households. It is possible to calibrate each of these sources of uncertainty, but different modeling approaches can yield different answers. Differences in approach explain part of the disagreement about the fraction of U.S. households that are saving adequately for retirement.

Keywords: retirement saving, 401(k), IRA, lifecycle model

JEL Codes: H25, J26

I. INTRODUCTION

The members of every household confront the question of whether they are saving enough for retirement. Some who have saved enough ex ante to have covered most, but not all, contingencies may wish that they had saved more, while others may discover that their retirement resources are more than sufficient to support their lifestyle. There are unpredictable expenditure needs in retirement, and households cannot insure against all of them. The challenge facing individual households arises more generally when researchers and public policy analysts attempt to evaluate the adequacy of retirement preparation by various age cohorts in the U.S. population. Whether the "Baby Boom" generation has saved enough to provide for a secure retirement is a frequent topic of both

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scholarly and popular debate. There are many studies of retirement saving adequacy, and their results bear directly on tax and regulatory policy debates surrounding the design of retirement saving vehicles such as Individual Retirement Accounts, 401(k) plans, and 403(b) plans. They also feature in discussions of the changing role and nature of defined benefit pension plans, and of the current and future role of Social Security in supporting older households.

Despite a voluminous research literature on saving behavior and retirement planning, whether U.S. households are saving enough for retirement remains controversial. In part, this is because of the heterogeneity of household circumstances. It is difficult to make general statements about the retirement preparation of an entire age cohort when earnings trajectories, wealth holdings, future health status and associated medical spending needs, and preferences regarding retirement consumption vary widely. This paper highlights a number of dimensions of household heterogeneity that bear on assessments of retirement saving adequacy. It then describes several metrics for judging retirement saving adequacy.[1]

II. TWELVE QUESTIONS FOR RETIREMENT SAVERS

To illustrate the role of heterogeneity in circumstances and preferences that bear on the design of a retirement saving program, consider the information that a married couple in their mid-50s would need to evaluate when determining how much they need to save for retirement. There are at least a dozen questions that can significantly affect the appropriate level of retirement saving. Many of them can only be answered with probability distributions. This makes it challenging for many households to develop meaningful answers to these questions, and it complicates the formulation of a retirement saving plan. I describe these questions, and comment on the heterogeneity across households that each highlights.

1. How long are we likely to live? In addition to considering current information on life expectancy in the population as a whole, a married couple needs to consider their current health status, and the substantial differences in life expectancy that are associated with socio-economic status. Uncertainty about length of life is one of the most important risks facing an older household. The life tables used by the Board of Trustees, Federal OASI and Federal DI Trust Funds (2013), for example, suggest that the standard deviation of life length for a 65-year-old man in 2015 is about nine years, while life expectancy is 19.3 years. Transfer programs, such as Social Security and Medicare, provide a stream of annual benefits, so longevity risk is a less central concern for those who rely primarily on these programs in retirement than for those who have accumulated financial assets which they plan to draw down during their retirement years.

[1] This paper draws substantially on a presentation at the 2014 Retirement Summit hosted by the Investment Company Institute. It provides only a cursory review of a very large research literature on retirement security.

Over time there has been sharp improvement in life expectancy for the U.S. population, but the gains have been skewed toward those who are more economically successful. Waldron (2007) reports that for men whose earnings placed them in the bottom half of their cohort's earnings distribution, the improvement in life expectancy at age 65 between those who were born in 1912 and those who were born 30 years later was about 1.1 years. For those in the upper half of the earnings distribution, the increase in life expectancy was close to six years. This dispersion of life expectancies is important for assessing retirement security. The higher average mortality rates for those lower in the earnings distribution translate into substantially lower probabilities of "tail events" such as living beyond the age of 90. For those fortunate enough to be in the upper strata of the earnings distribution, it may be important to plan for a longer life than population aggregate data on life expectancy suggest.

2. How healthy are we likely to be as we move from our 50s, through our 60s, and into our 70s and beyond? The question may be hard to answer, but many households in their 50s may have information that has significant predictive value. A substantial component of health status is difficult to forecast more than a few years in advance. But a couple in good health in their late 50s will on average work longer, earn more, and accumulate a larger stock of retirement wealth than a couple in which one or both members have chronic health challenges. Those in poor health not only earn less on average, they also face a higher risk of tapping their retirement saving at a relatively early age to pay for out-of-pocket medical costs. Like life expectancy, average health status, and the prospective level and distribution of potential medical expenditures, is related to an individual's position in the socio-economic status distribution.
3. When will we retire? Will we decide the date, or will someone else? Those who plan to work longer have a longer period to accumulate retirement resources, and they are able to draw down their retirement accumulation over a shorter time period. The mortality tables developed in Board of Trustees, Federal OASI and Federal DI Trust Funds (2013) suggest that in 2015, a 55-year-old man had a remaining life expectancy of 29.6 years. If the husband in a hypothetical couple plans to work until 64, he can expect to save for nine more years, and to draw down his accumulation by age 64 over just over 20 years. If instead he plans to work until 67, he increases the remaining length of time over which he can accumulate, and reduces his expected draw-down period by almost 15 percent. The combination of these two forces, particularly for those for whom their last few working years are relatively high-saving years, can permit a higher income flow from private saving during each retirement year. This effect is strengthened if the longer working life also translates into claiming Social Security benefits at a later age. A forced retirement due either to adverse health shocks or unfavorable economic developments can substantially reduce an individual's or a couple's retirement security.

4. What do we hope to do when we are retired? Are we comfortable pursuing relatively low-cost pursuits, such as spending time with nearby family members, or do we hope to pursue expensive activities, such as foreign travel? This is one of the preference factors that may vary across individuals and households, and that makes it very difficult for an outside observer to definitively assess retirement security. The substitution of time for expenditures in leisure pursuits can reduce the cost of some activities after retirement.
5. How will inter-generational factors influence our retirement circumstances? Will our children be able to support us, either in-kind by providing care if needed, or financially if we deplete our resources? Or, alternatively, are we likely to need to support our adult children, or our grandchildren, in-kind or financially? Do we have elderly parents who may require care, and will their care needs affect our labor market activity in our late 50s or our 60s? Is it possible that one of us may need to leave the labor force before our planned retirement age to serve as a primary caregiver for an elderly parent? Have our parents made adequate financial plans for their potential future needs, or may we be called upon to help provide for them?
6. Is leaving a bequest to our children, or leaving resources to a charitable organization, an important goal in our retirement planning? If we have accumulated a substantial amount of savings, are we comfortable following a spend-down rule that will determine our bequest solely as a residual after our lifetime spending needs have been met? Do we expect to receive significant bequests from one or more of our parents? How likely is such a bequest, and how much do we expect to receive? Would such a bequest take the form of liquid assets that could be easily deployed to support our own retirement security, or illiquid assets that might be more difficult to tap for post-retirement needs? Is it possible that we will receive a bequest that places demands on our own finances, such as an heirloom property that we or others will feel a responsibility to maintain?
7. What level of defined benefit pension benefit can we expect to receive? Will our defined-benefit payouts be indexed for inflation, or will the real value of this income stream decline if and when prices rise during our retirement years? Have we studied the details of our defined benefit pensions, for example to learn about the benefit provisions for surviving spouses?
8. What is our financial net worth, including both our accumulation in defined contribution retirement plans, such as 401(k) plans and Individual Retirement Accounts, and our other financial saving? Do we recognize the difference between the pre-tax balances in traditional accounts and the post-tax balances in Roth accounts? What are the terms on which we can contribute to these accounts — in particular are we eligible for employer matching contributions? What is our asset allocation in these accounts, and in our other financial holdings, and what rate of return do we expect to be able to earn on these investments in the near term, as well as in the years when we will be retired? Have we considered the volatility of portfolio values that is associated with our asset allocation, and are we prepared for the possibility of poor financial returns in the coming decades?

There are wide disparities in the financial asset holdings of households in the age cohorts approaching retirement. Poterba, Venti, and Wise (2011, 2013) illustrate this by reporting the distribution, in 2008, of various components of household net worth for married households headed by someone between the ages of 65 and 69. The median household in this sample has a combined balance of $35,000 in all defined-contribution (DC) type accounts. Nearly half of the group has not accumulated anything in these accounts, but some have substantial holdings. The value at the 90th percentile is $464,000. Financial assets outside retirement accounts are similarly skewed; the median holding is $27,800, and the holding at the 30th percentile is only $6,000, while the corresponding value at the 90th percentile is $459,200. The statistics on the limited financial assets and DC plan balances of those in the lower half of the distribution of retirement resources imply, as noted in Poterba (2014), a tight connection between retirement resources and the benefit levels associated with Social Security and other social insurance programs.

9. What benefits can we expect to receive from Social Security, and when do we plan to claim these benefits? Have we begun to familiarize ourselves with the detailed rules associated with the age at which benefits may be claimed, and how the amount of benefits will depend on the age at which we claim? Have we explored benefit optimization strategies, such as those discussed in Kotlikoff, Moeller, and Solman (2015), and do we understand the relationship between some of our pre-retirement decisions, such as the number of years we continue to work, and our future benefit income? More speculatively, have we thought about how Social Security, and any other government transfer programs for which we are eligible, may evolve over the course of our retirement years? For higher-income and higher-wealth couples, an important question may be how prepared they are for potential means-testing of transfer programs targeted to older individuals.
10. How do we plan to finance our post-retirement health insurance and health care needs? If we retire after we become eligible for Medicare, do we plan to purchase supplemental health insurance? If we retire before Medicare eligibility, how will we procure health insurance during the years between retirement and age 65? Do we know how much we will need to pay for Medicare Part B and Part D coverage, for which premiums are related to a beneficiary's modified Adjusted Gross Income?
11. How will we finance long-term care if one or both of us should need it for a protracted period of time? Do we have a long-term care insurance policy, and have we explored whether it places limits on total payouts that could become binding constraints if one or both of us develops a condition that requires chronic care? Are we prepared to spend down our retirement resources and to rely on Medicaid for nursing home coverage if need be? Recent survey evidence collected by Ameriks et al. (2015), along with model-based evidence such as that provided by De Nardi, French, and Jones (2010), suggests that holding sufficient resources to cover the cost of late-life medical and nursing home needs is an important driver of saving decisions for many older households.

12. If we currently own our home — and most households approaching retirement do — are we prepared to leave our home and to move to a smaller house in a less expensive location if our financial resources prove inadequate for our retirement expenses? Would we be comfortable borrowing against our home equity through a product such as a reverse annuity mortgage, or do we have a strong desire to leave our house to our children? Venti and Wise (2004) find that the rate at which elderly households move from the homes that they have lived in for decades is very low, which is consistent with these households being reluctant to draw on accumulated home equity.

Some of these questions may be easy for the members of a married couple to answer. Other questions, however, may be very difficult, and the answers may depend on judgments about sequences of random events. Some shocks may have large effects on retirement security, such as developing a chronic disease or the death of a spouse at an unexpectedly early age. Some questions concern preferences, and they may be difficult to answer until the household members reach the decision node. Examples of such questions might include whether a married couple is prepared to sell and leave the home that they have lived in for many years, and whether an individual will delegate the care for an elderly parent to a hired caregiver or place the parent in a nursing home rather than a home-based care setting.

These 12 questions illustrate one of the reasons that economists and financial planners struggle to provide definitive answers to questions such as "what is the right saving rate?" and "how rapidly can I afford to draw down my resources?" The potential heterogeneity in the answers to the dozen questions posed above makes it clear that a one-size-fits-all answer is unlikely to be satisfactory for addressing the retirement security of pre-retirement households. This observation applies to replacement rate measures of income in retirement, and to studies that rely on lifecycle models that assume similar parameters for all households. It also underscores the challenge of making statements about the adequacy of retirement saving for an aggregate age cohort.

While many textbooks present retirement saving as a deterministic process in which individuals save while working and have a clear idea of their earning potential, length of working life, and retirement consumption needs, a more realistic description would capture the fundamentally stochastic nature of this process. Answers to questions about retirement saving adequacy are likely to be most informative when they offer probabilistic statements about the extent to which a household is prepared for retirement, or when they describe the fraction of a cohort's members that are likely to be well-prepared to defray their late-life expenses. A probabilistic focus also underscores the interaction between retirement resources, such as accumulated financial assets, the set of potential real and financial shocks that the household faces, and the public and private insurance arrangements that are available to offset the impact of these shocks.

III. ASSESSING RETIREMENT SECURITY

The foregoing discussion noted the wide disparities in retirement saving and in prospective retirement income across households, as well as the heterogeneity across households that can make it difficult to assess the adequacy of retirement resources. Is it impossible to draw any conclusions about whether households are saving enough for retirement? No, provided the results are viewed with some caution. For most households without defined benefit pension coverage or any assets in an IRA or 401(k), it is possible to project their level of retirement income with reasonable accuracy: it equals their Social Security benefits. If these benefits fall substantially short of their pre-retirement income and consumption levels, then it is likely — but not certain — that they have not saved enough for their retirement. A key question is what "substantial" means in this setting, and whether arbitrary thresholds such as 20 percent or 30 percent are appropriate. Aguiar and Hurst (2013) find that retired households substitute time for money in meal production and potentially in other activities as well. Some decline in spending capacity may therefore be consistent with a smooth path of marginal utility of spending over time.

Some households reach the last years of life with very low levels of financial resources. Poterba, Venti, and Wise (2012) report that for more than 40 percent of the survey participants in the Health and Retirement Study (HRS) who passed away during the first 15 years of the study, the combined value of their financial assets and defined contribution account balances the last time they were surveyed, which would be within two years of their death, was below $10,000. Some members of this group may have lived unexpectedly long lives, and saved enough to have provided adequately for a shorter lifespan. Others, who constitute a majority of this group, began retirement with very limited financial wealth. For such households, it was a lack of accumulation, rather than a speed of draw-down, that led to low late-life assets.

Purcell (2012) reports a related calculation using HRS data. He tabulates the distribution of income replacement rates for HRS respondents, and finds substantial differences within a cohort of retirees and over time as a cohort ages. For those in the first or second year of retirement, for example, he finds a replacement rate for total household income of 1.01 at the 75th percentile of the distribution, and 0.48 at the 25th percentile.

Three broad strategies have been used by researchers to estimate the fraction of households that have not saved adequately for their retirement. Munnell, Rutledge, and Webb (2014) explore the extent to which differences in the results from the different approaches can be attributed to differences in the assumptions that are made in implementing them, or to inherent differences in their depiction of retirement saving adequacy. Different assumptions appear to be the key driver of these differences.

One approach to measuring retirement saving adequacy focuses on the replacement rate, the ratio of retirement income to income received while working, for each household, and then tabulates the fraction of households for which this ratio falls below a fixed cutoff. While easy to explain, it can be difficult to implement because income prior to retirement exhibits substantial variation for many households. A second approach

employs a calibrated stochastic lifecycle model to compare the amount of wealth at different ages with the model's implied optimal wealth holding. Households that fall significantly below this estimated optimal value are designated as unprepared for retirement. This methodology can be quite sensitive to the assumptions and parameters of the corresponding model. Finally, a third approach examines wealth holdings at a given age, and uses estimates of the lifecycle consumption and medical spending trajectories for older cohorts, along with information on the distributions of life length and medical spending, to estimate the fraction of households that are likely to exhaust their resources before retirement. Each of these approaches can provide some information on retirement income adequacy.

The replacement rate is in intuitively attractive measure of whether a household's retirement saving has positioned it well for a retirement with a consumption level similar to that while working. It is the basis of the National Retirement Risk Index, presented for example by Munnell, Webb, and Golub-Sass (2012). It is also closely related to the Retirement Readiness Index compiled by the Employee Benefit Research Institute, and described for example in VanDerhei (2014). Calculations using the replacement rate often find that a substantial share of U.S. households, in some estimates as many as half, will be unable to sustain their pre-retirement consumption in retirement.

Some replacement rate calculations are forward-looking, comparing the income that a household approaching retirement is projected to receive after retirement with the household's current income. Others are backward-looking, comparing the household's income in retirement with data on its pre-retirement income. There are challenging issues involved in computing both the numerator and the denominator of the replacement rate in both settings. Brady (2010) and Pang and Schieber (2014) describe these approaches and note some of the measurement challenges that they face. They also demonstrate the sensitivity of the replacement rate methodology to various assumptions. The forward-looking measure is usually based on a single most likely case projection of retirement income, which may not capture the dependence of post-retirement income on various random shocks. How much a pre-retirement household will be able to draw from its IRA after retirement, for example, will depend on future contributions, the date of retirement, and the rate of return earned by the IRA assets.

A second challenge involves the "stock-flow problem," which arises when a household has non-annuitized financial assets that generate very little income but that nevertheless provide significant retirement income security. The rate at which a wealth stock can be converted to an income flow, for example by assuming that the household purchases an annuity, varies over time. It is sensitive to long-term interest rates and other factors. This means that two households with identical earnings and wealth histories, differing only in the macroeconomic environment that they face, would be assigned different replacement rates. This is an accurate assessment, but it may surprise some users of the replacement rate findings.

The denominator of the replacement rate can also be difficult to measure in both the forward-looking and backward-looking calculations. Earnings fluctuate. For someone who experiences health limitations late in their career, earnings in the years just prior

to retirement may not reflect the long-term average earnings that they are hoping to replace. One way to address this difficulty is by using household income at a relatively early age, say 55, in the denominator. While the incidence of health-related limits on labor market activity is lower at this age, focusing on earnings farther from the onset of retirement can introduce measurement error into the analysis.

By focusing on a single ratio for each household, replacement rate calculations may not capture the range of uncertainties that retirees may face. The replacement rate is most useful for households with stable consumption demands through their retirement years, and stable income flows before retirement. A single replacement rate is least helpful for households that may confront large health care needs or other large shocks to their resources or their expenditure needs. These are not inherent limitations of the replacement rate. It is possible, for example, to simulate a variety of income and income expenditure need shocks for each household in a household survey, and then to compute a distribution of replacement rates based on various scenarios. Such a distribution could be computed at multiple future ages, thereby offering some insight on how retirement security might evolve for, example, as payouts from defined benefit plans without cost-of-living adjustments decline in real value over time.

The second approach to assessing retirement income adequacy compares a household's wealth accumulation at a given age with the amount that a stochastic lifecycle model suggests as the optimal holding for this age. Scholz, Seshadri, and Khitatrakun (2006) proposed this approach and developed a stochastic lifecycle model to implement it. This measure incorporates the range of potential income and expenditure shocks that a household may face, since they are inputs to the lifecycle consumption model that delivers an optimal wealth stock for each age. The results of this analysis suggest that a much higher fraction of U.S. households, more than 80 percent, have saved as much as the model suggests that they should.

One challenge to this type of modeling is calibrating age-specific adjustments to consumption spending that incorporate changes in family size, work-related expenditures such as transportation costs and meals away from home, and related factors. These adjustment factors can be difficult to estimate because the data on the consumption spending of those who experience transitions such as retirement are dependent on the adequacy of retirement saving. If many households have saved too little for retirement, then the observed decline in consumption at retirement could be substantial on average. Disentangling the extent to which this reflects a change in consumption needs or consumption technology, and the extent to which it reflects a binding resource constraint, is a perennial empirical issue.

A second difficulty with the stochastic lifecycle comparison is that it is sensitive to the wealth measure that is used as a basis for comparison. Should housing wealth be included? If elderly households are prepared to draw down their housing equity by selling their home in the event of substantial spending needs, then including housing wealth is appropriate. Yet if the elderly are reluctant to leave their homes, then treating equity in an owner-occupied home as just another asset on the household balance sheet overstates the capacity of some households to respond to expenditure shocks.

Finally, a third approach to assessing retirement preparedness is to compute the probability that a household early in the retirement phase, or approaching retirement, will run out of wealth before they die. Making this calculation requires forecasting retirement income, as with the replacement rate, as well as the stochastic shocks that might affect the household in retirement, as with the stochastic lifecycle model. Hurd and Rohwedder (2012) apply this methodology and conclude that most households approaching retirement are likely to have sufficient resources to support their retirement needs. This measure must confront some of the same issues that arise with the replacement rate and the stochastic lifecycle model approaches, such as the smoothing of volatile earnings in the years before retirement, the need to disentangle changes in underlying consumption needs from changes in observed consumption that result from inadequate resources, and the possibility that the desired age-specific consumption trajectories for future cohorts may be different than those for current or past cohorts. One of the attractions of this approach, by comparison to the stochastic lifecycle approach, is that it does not rely on a particular set of functional form assumptions about utility functions to derive optimal wealth accumulation rules. It is essentially a "nonparametric" approach to asking the same question as the stochastic lifecycle model.

IV. CONCLUSIONS

While none of the retirement preparedness measures is ideal, each conveys information that can inform household saving choices as well as the broader policy debate about retirement saving adequacy. Studies using the most optimistic methodologies, the simulated lifecycle model and the "risk of running out of wealth" approach, suggest that a significant group of households — between 15 and 20 percent — is not well-prepared for retirement. Analyses that rely on the replacement ratio suggest that this group could be much larger, approaching half of the pre-retiree population. Refining these estimates, and understanding better the factors that lead to such substantial differences in measures of saving adequacy, is a key research priority.

Policy actions, particularly those that emphasize automatic saving programs and that exploit defaults to increase saving by households who may not otherwise choose to prepare for retirement, appear to hold promise for improving retirement preparation. Limited financial literacy is one of the greatest challenges in helping many households prepare for retirement. Lusardi and Mitchell (2014) provide a sobering overview of the lack of financial literacy in the U.S. population, and they review the limited evidence on interventions that have succeeded in addressing this challenge.

Despite both the conceptual and the empirical challenges of studying retirement saving, the last decade has witnessed important advances in our understanding of the factors that influence saving choices, and the heterogeneity of saving behavior in the population. This research has improved the knowledge base on which to build policies to enhance retirement income security, and represents an important springboard for continuing study in this area.

DISCLOSURES

The author is a trustee of the TIAA-CREF mutual funds and of the College Retirement Equity Fund; TIAA-CREF is a provider of retirement saving products.

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