Is There a Retirement Crisis? Examining Retirement Planning in the Household and Government Sectors

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ABSTRACT

In response to a widespread perception that households are undersaving for retirement, policymakers have proposed expanding Social Security and establishing supplementary retirement saving plans run by state governments. But these proposals take place against a background of record-high unfunded liabilities for government-run retirement programs. If government entities have either financial or political difficulty funding their existing obligations to retirees, shifting greater retirement provision from households to government could potentially worsen existing shortfalls in broad retirement saving. This paper reviews a range of studies of the adequacy of household saving, comparing estimated dollar savings shortfalls with unfunded liabilities in Social Security, in federal employee and uniformed military pensions, and in state and local government retirement plans. Even the most pessimistic forecasts of household undersaving fall short of the most optimistic estimates of government retirement plan underfunding. It appears that, on average, households are doing at least as well in saving for retirement as governments are in funding retirement plans on households' behalf.

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Both households and policymakers in the United States are concerned about the adequacy of saving for retirement. Although the phrase "retirement crisis" has no precise meaning, one might reasonably define it to mean that a large proportion of households will fall short by a substantial margin of the savings they require to maintain their preretirement standard of living once they stop working. The highest estimates find up to 85 percent of US households falling short and aggregate undersaving possibly totaling $14 trillion, which, if accurate, would foretell severe financial problems for future retirees.

Fears of a retirement crisis have prompted a number of potential policy responses. These range from expanding Social Security benefits to designing state policies that encourage households to save more for retirement. Although spending more tax revenue to finance Social Security benefits can complement policies to promote more household saving, evidence on governments' failure to follow prudential fiscal policies raises questions about whether efforts to expand government benefits make sense. Instead, the best way to encourage greater retirement security is to improve saving incentives for households.

Expanding Social Security benefits, an idea once promoted solely by a progressive fringe, is now firmly within the mainstream of recommendations by the Democratic Party. Unlike traditional Republicans, whose focus on fiscal issues often caused them to favor reductions in promised Social Security benefits for future retirees, Trump has pledged not to cut Social Security benefits. The baseline of potential actions on Social Security policy has shifted considerably to the left in recent years, with policy solutions to Social Security's future financing shortfalls likely to focus more heavily on revenue injections than on reductions in benefit outlays.

A revenue-heavy approach to Social Security is potentially problematic. Dedicating greater tax revenue to Social Security financing would necessarily either divert limited available funds from other government priorities or, via tax increases, reduce households' after-tax incomes, out of which households must

generate their own savings for retirement. Higher taxes discourage labor supply. Moreover, the higher benefits that those taxes finance discourage personal retirement saving by middle- and high-income households, which are more responsive to benefit changes than are the poor. Because in all existing benefit expansion proposals higher benefits are funded with taxes on a pay-as-you-go basis, there would be no increase in government saving to match reductions in household saving. Lower saving will tend to reduce productivity growth and economic output at least over several decades. Expanding Social Security, or even addressing its finances via tax increases rather than benefit reductions, would almost surely lead to a smaller economy in the future and lower retirement saving in the household sector.

Although action on Social Security reform may not be imminent, many states are enacting policies designed to address perceived shortfalls in household retirement saving. More than half of states either have passed or are considering legislation that would establish retirement plans for individuals who are not covered by an employer-sponsored retirement plan.

State and local governments also provide pensions to public employees; these pensions are, on average, substantially more generous than the defined contribution 401(k)-type plans offered to employees of private-sector firms. While comparisons are not straightforward, one might simply note that the average state and local plan in 2015 had an Actuarially Required Contribution of about 18 percent of employee payroll, versus a median employer contribution to 401(k)-type plans—among those employers who made contributions—of only about 3 percent of pay. However, in fiscal year 2014 only 36 percent of state and local plans received their full Actuarially Required Contribution payment, indicating that the affordability of pensions for state and local governments is in question.[1] One might expect

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1. Author's calculations here are based on plan data from the Public Plans Database, available online at http://publicplansdata.org/.

that, in a competitive labor market, more generous pensions for public-sector employees would cause wages or other benefits to bid down by a commensurate amount. However, public-sector labor markets lack the profit motives and strict budget constraints that would require excessive compensation through pensions to be offset by offering lower wages or fewer other fringe benefits.[2] In most states, total salaries and benefits for state government employees exceed those paid to private-sector workers with similar levels of education, experience, and other attributes, sometimes by a very substantial margin.[3]

Some policymakers propose reducing public employee pensions or shifting employees to 401(k)-style retirement plans. However, public pension advocates push back by citing claims that private-sector households—which for the most part are not covered by traditional pensions—are not saving enough for retirement. For instance, the National Public Pensions Coalition, a union-affiliated group that seeks to promote defined benefit pensions for public employees, states,

> It's increasingly obvious that there is a retirement savings crisis in the United States. At any given time, half of working Americans don't have access to a retirement savings plan through their employer. Even workers who do have an employer sponsored plan are mostly in risky and inadequate 401(k) plans. . . . This just goes to show what we at NPPC have known all along: pensions are the solution to the retirement savings crisis.[4]

Both the budgetary costs and financial risks of state and local government pensions have increased substantially over the years. Pensions are much larger relative to the budgets of their sponsoring governments than they were in prior decades, and pensions take substantially greater investment risk, because their portfolios have gradually shifted from bonds to stocks and then from stocks to alternative investments such as private equity and hedge funds. One useful measure of the changing budgetary risk of pensions to their sponsors is the value of a one-standard-deviation decline in plan assets as a percentage of the sponsor's annual budget. This figure, which represents the impact on the sponsor's budget from a uniform and predictably occurring change in plan assets, rose from 1.8

2. Josefa Ramoni and Don Bellante, "The Relative Pay of Public Employees in the US: An Assessment of Empirical Research," *International Business & Economics Research Journal* (IBER) 3, no. 11 (2011).
3. Andrew G. Biggs and Jason Richwine, "Overpaid or Underpaid? A State-by-State Ranking of Public-Employee Compensation" (American Enterprise Institute Working Paper No. 415891, American Enterprise Institute, Washington, DC, 2014).
4. National Public Pension Coalition, "Pensions Are the Solution to the Retirement Crisis," November 21, 2016.

percent of state and local budgets in 1975 to 19.8 percent in 2012.[5] Maintaining state and local pension benefit levels for fear of triggering a retirement crisis among public employees would almost certainly lead to higher budgetary costs and greater financial risk-taking in the future.

In all three areas—Social Security, state-run supplementary retirement plans for private-sector employees, and state and local government employee pensions—the perception of widespread and significant retirement savings deficits in the household sector has generated actual or potential policy responses on the government side. Yet any policy response must be formulated in light of retirement funding shortfalls among the government-run plans. Social Security and public employee plans at the federal, state, and local levels are themselves highly underfunded. While the details of government plan funding will be discussed in following sections, of the hundreds of retirement plans offered at all levels of government, almost none would be considered fully or even adequately funded by reasonable funding standards. Social Security's funding shortfalls have been a perennial policy concern. State and local pension funding is dramatically understated by these plans' use of a practically unique accounting structure that differs significantly from rules applied to corporate pensions or used by public employee plans overseas. Finally, public employee plans at the federal level—both for civilian and uniformed military employees—also face large unfunded liabilities.

If government retirement plans are underfunded because of policymakers' inability or unwillingness to address funding shortfalls, the shifting of greater responsibility for retirement income provision from the household to the public sector may not in practice address retirement savings shortfalls. If, for instance, promised Social Security benefits were increased but federal policymakers did not find realistic ways to fund those promises, existing retirement savings shortfalls might simply be shifted from the household to the public sector instead of being filled. Indeed, aggregate retirement savings shortfalls might increase if households reduced saving in response to higher promised government retirement benefits but then governments did not increase saving to fully fund those promises.

Alternately, household retirement savings shortfalls that are lower than those in government may reflect the ability of households to act more rationally or responsibly than government in funding future retirement incomes. Such an

5. Andrew G. Biggs, "The Multiplying Risks of Public Employee Pensions to State and Local Government Budgets," *AEI Economic Perspectives* (December 19, 2013).

outcome is imaginable because working-age households generally save to fund their own future retirement incomes while government programs often allow costs to be shifted from one group or one generation to another. Thus, incentives for responsible retirement saving may be greater for the household than for the public sector. If so, it might make sense to enact policies that would address household retirement saving more directly rather than counting on government programs to fill savings gaps.

The next section reviews the literature on household retirement saving, showing the range of estimates of how many households fall short of optimal retirement saving levels and of how large aggregate retirement savings shortfalls may be in dollar terms. The following section reviews the funding of government retirement programs, including Social Security, federal employee pensions, and state and local government pensions. As with household retirement saving, a range of plausible estimates is presented. The final section compares estimates of aggregate household retirement savings shortfalls with retirement plan unfunded liabilities in the government sector, discusses the differing ways in which retirement savings and funding shortfalls may arise, and explains the implications of these differences for public policy.

STUDIES OF HOUSEHOLD RETIREMENT SAVING

Concerns about retirement saving adequacy have led to a number of studies of retirement saving in recent years. These studies range from academic analyses published in peer-reviewed journals—that few Americans read or can understand—to "pop" studies using simpler, more understandable methods that often receive secondary reporting in newspapers and magazines. The academic studies tend to rely on the life cycle model favored by academic economists, while the popular studies rely more heavily on financial planning rules of thumb. Almost as a rule, the popular studies find larger retirement savings shortfalls than do the academic analyses. The studies do not project household retirement preparedness in a uniform way, meaning that to generate comparable figures I must in several cases rely on rough estimates. However, the differences even in these rough estimates are often quite large, providing an intuitive feel for the range of opinions on the current state of household retirement saving.

The studies selected here represent a variety of well-known analyses of retirement saving. Several of the studies are commonly cited in media reports on retirement saving, while others are commonly cited in academic studies. Other academic studies, not included, tend to rely on similar data sources and come

to similar conclusions to the academic studies discussed here. Distinguishing between "pop" and "academic" studies of retirement saving is not straightforward. Nearly all the authors of such studies have an academic background or affiliation. In general, however, the academic studies provide sufficient detail to make their methodology replicable for peer review, and such peer review has taken place.

The National Institute for Retirement Security

The National Institute for Retirement Security (NIRS) is the research arm of the defined benefit pensions industry, with a particular emphasis on public employee pensions. The NIRS is supported by a number of public pension stakeholders, including retirement plans themselves, public employee unions, and actuarial and financial advisers who consult with retirement plans. The NIRS has published a series of studies concluding that Americans are vastly undersaving for retirement. The basic framework was outlined in a 2013 report, which concluded that 84 percent of US households are falling short of reasonable retirement saving targets and that, even when total net worth is considered, two-thirds are at risk of an inadequate retirement income.[6] The total "retirement savings gap," the report concludes, may reach $14 trillion. According to *New York Times* writer Nancy Folbre, "The report lends weight to the longstanding criticisms of the increased reliance on individual savings in the United States retirement system."[7]

The NIRS study begins with retirement saving guidelines outlined in a 2012 Fidelity Investments report. Fidelity's guidelines assume that individuals will work until age 67 and that their retirement incomes should replace 85 percent of their preretirement earnings. To reach this goal, Fidelity's hypothetical workers start saving at age 25, putting away 6 percent of pay, with their saving rate rising to 12 percent by age 31 and remaining constant at that level until retirement. Savings are assumed to compound at a 5.5 percent real rate of return, producing target wealth levels at given ages. The NIRS then uses data from the Federal Reserve's Survey of Consumer Finances to compare Americans' actual savings with Fidelity's suggested contribution rates and savings. A household whose actual savings fall short of the Fidelity guidelines is considered at risk, and the shortfall is logged toward the "retirement savings gap."

6. Nari Rhee, *The Retirement Savings Crisis: Is It Worse than We Think?* (Washington, DC: National Institute on Retirement Security, 2013).
7. Nancy Folbre, "Rowboats for Retirement," *New York Times*, June 24, 2013.

The $14 trillion retirement savings shortfall found by the NIRS is by far the largest estimate of undersaving by US households. However, there are a number of reasons why the NIRS study may overstate Americans' retirement savings shortfalls.

First, the NIRS likely sets retirement saving goals too high for a typical person. Fidelity's benchmark recommends that individuals reach retirement age with retirement savings equal to eight times their final annual earnings. Although this goal might be appropriate for higher earners—who are more likely to be Fidelity's customers—for an average or below-average earner, these figures are almost certainly too high. Table 1 illustrates retirement incomes for workers at different earnings levels incorporating Social Security benefits and the NIRS benchmark that individuals retire with savings equal to eight times their final earnings. Actuaries from the Social Security Administration (SSA) created the stylized earners to illustrate benefit levels, and the benefits for each worker are taken from the annual Social Security Trustees report. In addition to their Social Security benefit, I assume that each retiree purchases an inflation-adjusted annuity with an interest rate based on projected yields on government bonds in the Social Security trust fund.[8]

The results show that most workers who followed the NIRS "8×" final earnings rule would end up with a retirement income that substantially exceeded their final working-age earnings. For a medium wage earner, estimated by the Social Security Administration's Office of the Chief Actuary (OACT) to most closely match the earnings of about 29.8 percent of the workforce, combined Social Security benefits and personal savings would replace 120 percent of age 65 earnings. For very low earners, who compose about 19 percent of the workforce, following the NIRS 8× rule would generate a total retirement income equal to 172 percent of final earnings. Even for an individual who

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8. Although few individuals actually purchase annuities, converting wealth to an annuity is a standard practice among researchers on retirement income.

TABLE 1. RETIREMENT INCOME REPLACEMENT RATES FOR SOCIAL SECURITY ADMINISTRATION STYLIZED EARNERS USING FIDELITY RETIREMENT SAVING RULE

	Income level of SSA stylized earner, retiring at age 66 in 2016				
	Very low	Low	Medium	High	Max
Percentage of workers whose earnings most closely match the SSA stylized earnings level	19.0%	22.5%	29.8%	20.1%	8.5%
Annual earnings at age 65	$8,095	$14,562	$32,370	$51,732	$117,500
Social Security benefit at age 66	$9,902	$12,962	$21,354	$28,310	$34,491
Target retirement savings	$64,757	$116,498	$258,963	$413,858	$940,000
Annual payment from savings	$4,800	$8,636	$19,197	$30,679	$69,682
Total retirement income	$14,703	$21,598	$40,551	$58,989	$104,173
Replacement rate	172%	141%	120%	110%	86%

Note: SSA = Social Security Administration.

earned Social Security's maximum taxable wage every year of his life, following the NIRS 8× rule would generate a retirement income replacement rate of 86 percent of final earnings, which is 16 percentage points higher than the 70 percent replacement rate commonly recommended by financial advisers.[9] Were individuals to target more reasonable replacement rates, as they tend to do in the real world, their required saving levels would be far smaller than the NIRS assumes. However, the NIRS analysis would report these more reasonable saving levels as undersaving.

Second, the NIRS's savings benchmark assumes that individuals begin saving for retirement at age 25. Although this might be desirable for some, under the standard life cycle model of retirement saving, most individuals don't start saving at young ages when their incomes are low but instead wait until their incomes have risen. It is easily possible that retirement saving would not begin until age 30 or later. However, if individuals began saving later in life, the NIRS methodology would count them as undersaving in every year of their working career even if they achieved the NIRS's recommended goals for income in retirement. The reason is simply that delaying the start of retirement saving lowers the level of retirement wealth in every year up until retirement age. Replicated over the full population, the NIRS's approach would find that every working individual of every age was undersaving for retirement, even if we assumed that every individual reached the NIRS 8× final earnings target wealth at retirement age. Given that delaying retirement saving past age 25

9. See Andrew G. Biggs and Glenn R. Springstead, "Alternate Measures of Replacement Rates for Social Security Benefits and Retirement Income," *Social Security Bulletin* 68, no. 2 (2008).

may be fully rational, the NIRS approach incorrectly biases the model toward finding retirement savings shortfalls.

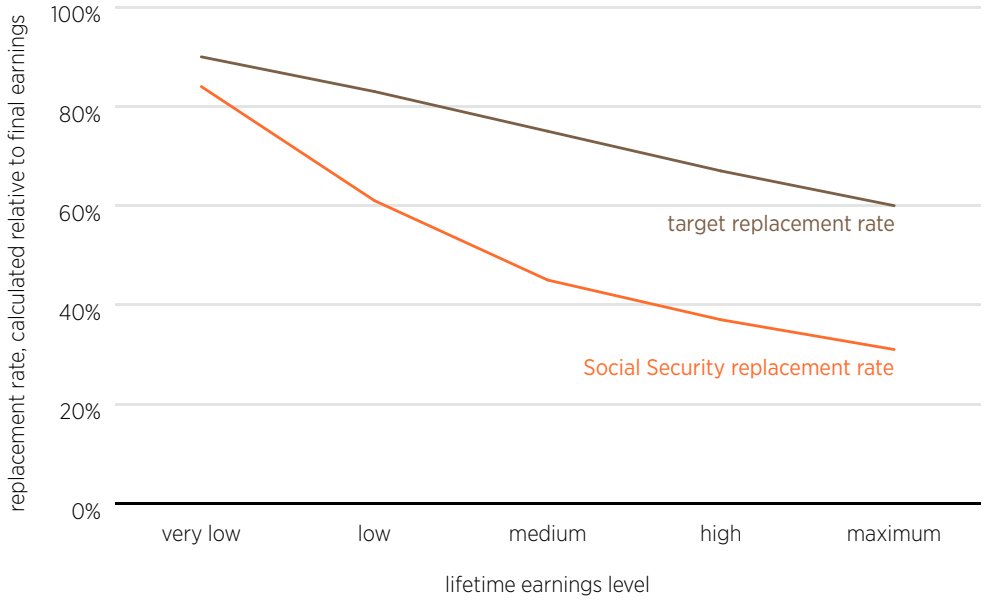
Third, the NIRS treats Social Security as if it pays a uniform replacement rate to all beneficiaries when, in fact, Social Security's progressive benefit formula provides higher replacement rates to lower earners. The NIRS justifies this treatment of Social Security benefits by pointing to the broadly accepted view that low earners require higher replacement rates than do higher earners. However, this treatment implicitly assumes that target replacement rates by earnings level run roughly in parallel with the replacement rates provided by Social Security, such that the need for additional retirement income on top of Social Security is the same (relative to preretirement earnings) across earnings levels. Put another way, the NIRS assumes that low earners should save the same percentage of their earnings for retirement as higher earners.

Robert J. Myers, the Social Security Administration's chief actuary from 1947 through 1970, calculates target replacement rates by earnings level, estimating that a total replacement rate of 70 to 75 percent of final earnings would be appropriate for an average wageworker, with recommended replacement rates of 85 to 90 percent of final earnings for the lowest-earning workers and 55 to 60 percent for workers earning the maximum taxable wage.[10] Figure 1 assigns these replacement rates to the SSA OACT stylized earners, choosing the higher target where Myers presents a range of options. Figure 1 also displays Social Security replacement rates calculated relative to final earnings for the same stylized earners. Social Security replacement rates decline much faster with earnings than do Myers's target total income replacement rates, indicating that personal saving rates necessary to reach Myers's targets will differ substantially by earnings levels. As a result, lower earners whose savings would be sufficient to reach Myers's target replacement rates would be judged by the NIRS methodology to have inadequate retirement savings.

Fourth, the NIRS assigns the assets held in corporate and state and local government defined benefit pensions to households according to their age, earnings, and whether the household reports being entitled to a benefit on the basis of current or past employment. Defined benefit pensions are significantly underfunded, particularly in the public sector. However, the NIRS methodology implicitly assumes that the entire funding shortfall will be addressed by reducing benefits, when in reality only a very small part is likely to be. Among corporate pensions passed to the Pension Benefit Guaranty Corporation because of

10. Robert J. Myers, *Social Security*, 4th ed. (Philadelphia: University of Pennsylvania Press, 1993).

FIGURE 1. TARGET REPLACEMENT RATES VS. SOCIAL SECURITY REPLACEMENT RATES BY EARNINGS LEVEL



Source: Robert J. Myers, *Social Security*, 4th ed. (Philadelphia: University of Pennsylvania Press, 1993).

the sponsor's inability to maintain the plan, roughly 85 percent of beneficiaries continue to receive their full promised benefit. In the public sector, accrued benefits are generally guaranteed under law or constitutional provisions, and it is extremely difficult for a government to renege on these promises.

A more accurate approach would instead credit households with the accrued benefits under defined benefit plans. This would be consistent with crediting households with scheduled Social Security benefits even if these benefits may not be fully funded. Various measures of defined benefit pension liabilities exist, particularly on the public-sector side. As of 2010, the year in which the NIRS measured retirement saving, total accrued defined benefit pensions in the public and private sectors equaled $7.1 trillion.[11] These accrued benefits exceeded pension assets by roughly $2 trillion. By itself, crediting households with the defined benefit pensions they have earned and are very likely to receive reduces NIRS's total retirement savings gap of $14 trillion by about 14 percent.

Taking these points together, there is little reason to believe that true retirement saving shortfalls among US households are anything close to the $14 trillion claimed by the NIRS. For context, the total stock of assets in employer-sponsored

11. See Federal Reserve, "Financial Accounts of the United States," Series L. 118 and L. 120.

defined benefit and defined contribution pension funds as of 2015 was about $18 trillion, implying that households are saving at little over half the required levels. The NIRS's results are even more astounding when one considers that its figures arise from an aggregated methodology, in which savings surpluses by some households cancel out savings shortfalls by others. If the NIRS's figures are to be believed, Americans are falling dramatically short of the amounts they need to be saving for retirement.

The National Retirement Risk Index

The National Retirement Risk Index (NRRI) was generated and is periodically updated by researchers at the Center for Retirement Research at Boston College.[12] The NRRI begins with the Federal Reserve's Survey of Consumer Finances to develop a model of the working-age population. The NRRI projects forward each household's earnings and the evolution of its household wealth. At retirement age, the NRRI compares the annuity income that can be derived from a household's wealth and Social Security benefits to its preretirement earnings. If the household's projected replacement rate falls short of a target level by more than 10 percent, that household is considered "at risk" of an inadequate income in retirement. Using this approach, the NRRI finds 44 percent of "early boomers" (ages 50 to 59), 55 percent of "late boomers" (ages 40 to 49), and 62 percent of "generation Xers" (ages 30 to 39) at risk. Overall, the NRRI finds that 53 percent of all working Americans are saving inadequately for retirement and that the total retirement savings shortfall is $6.6 trillion.

However, a number of facets of the NRRI model bias it toward finding larger retirement savings shortfalls. First, the NRRI sets replacement rate targets relative to a worker's "wage-indexed" earnings, a figure that overstates real, inflation-adjusted career-average earnings by about 20 percent.[13] Although wage-indexed earnings are used in the Social Security benefit formula, households seeking to maintain their preretirement standard of living will target something close to their real, inflation-adjusted average earnings. By raising the bar for what counts as an adequate retirement income, the NRRI overstates the number of households whose savings are falling short.

12. See Alicia H. Munnell, Anthony Webb, and Francesca Golub-Sass, "The National Retirement Index: An Update" (Issue Brief No. 12–20, Center for Retirement Research at Boston College, 2012).
13. Author's calculations using SSA's medium-scaled worker, with annual earnings discounted using the Average Wage Index and the Consumer Price Index for Urban Wage Earners and Clerical Workers.

"Whether a retiree receives Medicaid is a different question from whether that retiree has resources inadequate to allow him to maintain his preretirement standard of living."

Second, the NRRI defines preretirement income to include interest on retirement accounts such as 401(k)s and other savings. But working-age households don't consume the interest on their retirement savings, so there is no reason for them to seek to replace income they did not consume in the first place. Including capital income in the definition of preretirement income again raises the bar on what counts as an adequate replacement income in retirement.

Third, the NRRI relies on 401(k) data dating back to the years when 401(k)s served principally as supplements to traditional pensions rather than as primary retirement saving vehicles. For each household, the NRRI projects 401(k) assets on the basis of wealth-to-income ratios found in the Survey of Consumer Finances dating back to 1983. Because 401(k)s did not become truly widespread until the 1990s, relying on this older data may bias downward the NRRI's projections of future retirement savings.[14]

Finally, the documentation of the NRRI is insufficient for outside researchers to recreate its findings. This omission makes it more difficult to discern which methodological or data choice plays the largest role in the results it generates.

The NRRI is a more rigorous model than the NIRS approach. The NRRI simulates household saving and Social Security benefits in significantly greater detail than the NIRS does, and the NRRI considers more deeply what level of retirement income is adequate for different types of households. Nevertheless, for the reasons outlined here, it appears likely that the $6.6 trillion in retirement savings shortfalls projected by the NRRI is an overstatement.

The Employee Benefit Research Institute's Retirement Readiness Rating

The Employee Benefit Research Institute (EBRI) maintains the Retirement Security Projection Model, which

14. See Jack VanDerhei, "Contributory 'Negligence?' The Impact of Future Contributions to Defined Contribution Plans on Retirement Income Adequacy for Gen Xers," Employee Benefit Research Institute (2014).

projects a variety of retirement income sources including Social Security benefits, 401(k) and individual retirement account balances, defined benefit pensions, and housing equity. The EBRI model projects that 43 percent of Americans are currently at risk of falling short of income in retirement. The total projected retirement savings shortfall under the EBRI's model is $4.4 trillion. The EBRI's model is one of the most highly developed retirement income projection models inside or outside government. For instance, rather than being built on stylized workers, as are the NIRS model and the NRRI, the EBRI's Retirement Security Projection Model is built on a database of more than 24 million participants in hundreds of employer-sponsored retirement plans. Thus, one should take the model's projections seriously.

However, what is less clear to casual observers is precisely what the EBRI's researchers set out to measure. The Retirement Security Projection Model grew out of an effort in the late 1990s to assist governments of several states in projecting how many retirees would become reliant on Medicaid, including coverage for long-term care. Whether a retiree receives Medicaid is a different question from whether that retiree has resources inadequate to allow him to maintain his preretirement standard of living. Although the EBRI results have clear importance for governors and federal policymakers, they do not allow clear estimates of retirement savings shortfalls from a household financial planning perspective.

The EBRI model's criteria for retirement income adequacy are not established on a traditional income-replacement or consumption-smoothing basis. Thus, regardless of the quality of the model's underlying data or the accuracy of its future projections, it is difficult to interpret the model's outputs in a traditional retirement planning context. For each household, the EBRI model establishes a target level of retirement spending based on data from the Consumer Expenditure Survey (CE). The model then simulates whether the household will be able to maintain that level of spending throughout retirement, given uncertainties with regard to longevity and healthcare costs.

The target level of retirement spending is based on the household's broad income class, in which income is established on the basis of Social Security and traditional pension benefits along with the spend-down of individual retirement account and 401(k) assets over the expected life span plus a buffer period of five years. The broad income classes include retirees with incomes less than $20,000; those with incomes between $20,000 and $40,000; and those with incomes above $40,000. The target spending level for households in each income category is based on the average spending of households in these income ranges

according to data from the CE. For future cohorts of retirees, healthcare spending is increased along with historical rates of increase in the health component of the Consumer Price Index, while non-healthcare spending is increased along with the nonhealth Consumer Price Index.

Having established a target expenditure level on the basis of household income categories, the EBRI model then establishes a more realistic spending path for each household, incorporating patterns of retirement spending as households age and adding varying healthcare costs and investment returns. The model then tests whether each household's retirement benefits and financial assets will be sufficient to allow it to maintain its target spending level throughout retirement, resulting in the EBRI's retirement readiness rating.

What is difficult to determine is what such tests mean in the context of the desires of households to maintain their preretirement levels of consumption. For instance, imagine that retiree households represented in the CE are already unable to maintain their preretirement standard of living (or, alternately, that they were overprepared and were able to increase their consumption). If so, that deviation from a consumption-smoothing approach would be built into the target levels of spending that future retirees are judged against.

Likewise, households within a given income range could have very different levels of spending. For instance, imagine three retiree households with incomes between $20,000 and $40,000: the lower-income household has an income of $20,000, the middle-income household has an income of $30,000, and the higher-income household has an income of $40,000. All three households are judged in the EBRI model on whether their resources in retirement will allow them to maintain the spending level exhibited by the average household in the $20,000 to $40,000 income bracket. That average household is probably very similar to the household with a retirement income of $30,000.

Now imagine that each of the three households has retirement resources precisely sufficient for that household to maintain its preretirement standard of living. If we assume that household incomes in retirement are proportional to preretirement incomes, then one would expect the middle-income household with an income of $30,000 to consume roughly 50 percent more than the lower-income household with a $20,000 income. The higher-income household with an income of $40,000 would consume roughly 33 percent more than the middle-income household.

Again, we are assuming that—by construction—each household is perfectly prepared for retirement. Even so, in the EBRI model roughly half of these households would be judged to have inadequate retirement savings. Households with

incomes below $30,000 would not have sufficient savings to maintain the spending habits of the household with a $30,000 income, because they did not save with the intention of doing so. Rather, they saved with the intention of replacing their own preretirement earnings, which could be substantially lower than those of the average household in their income class.

This points to the need for a model to set household retirement saving targets on the basis of the preretirement earnings and other characteristics of the household in question, not of a broader range of households that might have very different retirement income needs.

Thus, even if the EBRI model perfectly projects future outcomes—that is, if it is able to accurately project how much income and savings households will have in retirement—the criteria applied by the model don't provide an intuitive answer to whether households will have *enough* income and savings when they retire. The EBRI model is capable of performing broader types of analysis, including replacement-rate and consumption-smoothing approaches. It would be useful for researchers to see the results of those types of analysis, which are easier to interpret as measures of retirement saving adequacy.

Scholz, Seshadri, Khitatrakun, and Gale

Two influential studies on retirement saving have been coauthored by University of Wisconsin economists John Karl Scholz and Ananth Seshadri, with their original 2006 paper coauthored by Surachai Khitatrakun of the Urban Institute and their 2009 extension study coauthored by William G. Gale of the Brookings Institution.[15] For the 2006 paper Scholz, Seshadri, and Khitatrakun won TIAA-CREF's Paul A. Samuelson Award for Outstanding Scholarly Writing on Lifelong Financial Security. The announcement for the award stated, "The research offers at least two important contributions: First, the innovative methodology provides a substantially improved technique for predicting how household wealth is related to lifetime income. Second, the results indicate most households plan reasonably and in a rational way for retirement."[16] In the 2009 extension, Gale, Scholz, and Seshadri refined the methodology and added additional birth cohorts to the original study.

15. See John Karl Scholz, Ananth Seshadri, and Surachai Khitatrakun, "Are Americans Saving 'Optimally' for Retirement?," *Journal of Political Economy* 114, no. 4 (2006): 607–43; and William G. Gale, John Karl Scholz, and Ananth Seshadri, "Are All Americans Saving 'Optimally' for Retirement?" (Michigan Retirement Research Center Working Paper 189, University of Michigan, 2009).
16. TIAA-CREF, "2007 TIAA Paul A. Samuelson Award Winners," press release, January 2007.

The basic framework of the Scholz and Seshadri studies is to apply a life cycle model of saving and spending to household data from the Health and Retirement Study. In the life cycle model, households seek to maximize the utility they derive from consumption over their lifetime by shifting resources from one period to another via saving and borrowing. The studies examined the adequacy of households' own saving in light of the retirement income they are entitled to receive from Social Security, traditional pensions, and home equity.

The Scholz and Seshadri studies gained some prominence in light of their more optimistic assessment of the adequacy of household retirement saving. Their 2006 study concluded that about 84 percent of US households had enough savings to maintain their standard of living in retirement, whereas the 2009 update concluded that about 75 percent of households did.

The Scholz and Sesahdri studies do not calculate an aggregated retirement savings shortfall as in the NIRS study, the NRRI, and the EBRI's work. Were they to do so on the same terms as the NIRS study, in which oversaving by some households cancels out undersaving by others, Scholz and Seshadri would report an overall retirement savings surplus because they find that on average household retirement wealth exceeds optimal levels. However, an aggregated dollar figure can hide significant undersaving by certain households.

Generating the dollar value of retirement savings shortfalls for households that are undersaving is not straightforward, and any approximation will be rough. However, it is possible to generate a broad estimate. Gale, Scholz, and Seshadri find that 25.9 percent of households have below-optimal levels of saving. For those falling short, the median shortfall is $32,260 (in 2004 dollars). Unfortunately, the authors do not compare savings shortfalls for undersaving households with the wealth of those specific households, making it difficult to determine by what percentage those households' wealth falls short. However, Gale, Scholz, and Seshadri do conclude that the probability of undersaving is not strongly correlated with household earnings. This implies that the median target saving amount for all households is likely to be a reasonable approximation of target saving amounts for households that fail to meet their targets. Thus, comparing the median savings deficit for undersaving households with the median optimal wealth for the whole population may provide a reasonable, if admittedly crude, approximation of the extent of undersaving. In Gale, Scholz, and Seshadri's sample, the median optimal wealth for all households studied was $188,835. While it is important to reiterate the above caveats, this implies that the wealth of the typical household that is underprepared for retirement falls about 17 percent short of its optimal wealth level. Other households have retirement savings at or above optimal levels.

However, this does not imply that undersaving households face a retirement income that is 17 percent below their optimal level. The reason is that Gale, Scholz, and Seshadri's optimal wealth targets include only the financial wealth directly held and managed by the household, not the implicit wealth provided through Social Security and defined benefit pensions. Gale, Scholz, and Seshadri do not provide a detailed breakdown of the components of total household retirement saving. However, Scholz, Seshadri, and Khitatrakun provide median values for Social Security, defined benefit pensions, and total financial assets for a variety of income and education levels, albeit for a slightly older sample of households. All values are calculated on a present value basis. With the exception of the poorest tenth of the population, the sum of median Social Security wealth and defined benefit pension wealth comes to between 46 and 66 percent of total household wealth. Likewise, a separate study finds that, for all retirees ages 64 to 66 in 2005, combined Social Security and defined benefit pension benefits made up 49 percent of household incomes.[17] While again noting the limitations of these figures, if we assume that Social Security and defined benefit pensions together provide these households with half their overall retirement wealth, this implies households that are undersaving in Gale, Scholz, and Seshadri's study face total retirement incomes that fall short of optimal levels by approximately 8 to 9 percent.[18] As a gross simplification to put this figure in more understandable terms, if we assumed that the typical household required a retirement income equal to 70 percent of its preretirement earnings, these figures would imply that the typical household that has undersaved for retirement would retire with a replacement rate of about 64 percent.[19] If Social Security and defined benefit pension wealth are assumed to be larger relative to households' savings via financial assets, then any given percentage shortfall in financial assets would imply a smaller shortfall in total retirement wealth relative to target levels.

Obviously, the figures presented in Gale, Scholz, and Seshadri's analysis are not what one would wish for in attempting to calculate aggregate undersaving. But they do not appear to be unreasonable or to be biased in terms of generating a broad estimate of the dollar amount by which Americans are

17. Biggs and Springstead, "Alternate Measures of Replacement Rates."
18. The relative contributions of Social Security and defined benefit pensions may vary over the course of retirement.
19. One of the findings of the broad life cycle research on retirement saving is that optimal retirement wealth can vary considerably from household to household, meaning that a one-size-fits-all threshold such as a 70 percent replacement rate will not provide a solid basis of analysis.

undersaving for retirement. The current total value of 401(k) plans, individual retirement account plans, and insurance contracts is about $14 trillion, according to the Federal Reserve's Financial Accounts of the United States.[20] Assuming that undersaving is evenly distributed through the population, that 25.9 percent of current households are undersaving, and that the median shortfall contingent upon undersaving is 17 percent of retirement savings, this implies a total retirement savings shortfall on the order of $615 billion. Given the approximations necessary to produce this figure, the actual retirement savings shortfall under Gale, Scholz, and Seshadri's methodology could possibly be larger or smaller than $615 billion. But, even if the true figure were twice that amount, it is a far, far smaller retirement savings shortfall than is found in other, more pessimistic studies.

Hurd and Rohwedder

The RAND Corporation's Michael D. Hurd and Susann Rohwedder, two of the nation's leading researchers on retirement income security, have generated a number of studies examining various aspects of retirement saving. In a 2011 study (and a 2014 write-up aimed at a nontechnical audience) Hurd and Rohwedder use data from the Health and Retirement Study to examine the ability of recent retirees to maintain desired levels of consumption as they age.[21]

Hurd and Rohwedder begin with Health and Retirement Study data on the spending and wealth of households as they near retirement. The authors then estimate whether each household can maintain a typical path of spending as it proceeds through retirement, including 100 simulations for each household of varying longevity, investment returns, and healthcare costs. If a household has a 95 percent chance of dying with positive wealth, Hurd and Rohwedder judge it to be adequately prepared for retirement. Hurd and Rohwedder find that 71 percent of households are likely to be able to maintain their standard of living in retirement.

Although their results are similar to the 75 percent prepared figure found in Gale, Scholz, and Seshadri, Hurd and Rohwedder find differences in the dis-

20. Board of Governors of the Federal Reserve System, "Financial Accounts of the United States," March 2017, https://www.federalreserve.gov/releases/z1/. Values are measured as of the fourth quarter of 2016.

21. See Michael D. Hurd and Susann Rohwedder, "Economic Preparation for Retirement" (NBER Working Paper No. 17203, National Bureau of Economic Research, Cambridge, MA, July 2011); and Michael D. Hurd and Susann Rohwedder, "More Americans May Be Adequately Prepared for Retirement Than Previously Thought" (RAND Research Brief, RAND Corporation, Santa Monica, CA, 2014).

tribution of preparedness. While Gale, Scholz, and Seshadri do not find strong patterns of preparedness among different subgroups of the population, Hurd and Rohwedder find that married couples are substantially better prepared than are singles and that in one group—single, less-educated women—only 27 percent will be able to maintain their pre-retirement standard of living once they stop working. Single individuals who self-report being in only fair or poor health are also disproportionately at risk, with only 38 percent of that group being able to maintain their standard of living throughout retirement with 95 percent or greater certainty.

Hurd and Rohwedder's finding that underpreparedness for retirement is most common among lower-income households implies that the total retirement savings shortfall in dollar terms is likely to be somewhat lower than in Gale, Scholz, and Seshadri's study. That is to say, it is less expensive to top up the savings of a low earner than of a high earner. However, Hurd and Rohwedder find that, among those who are underprepared for retirement, savings shortfalls can often be substantial, implying that underprepared households must significantly reduce their consumption in order to avoid running out of money in retirement.

Any quantification of the dollar value of retirement savings shortfalls in the Hurd and Rohwedder study would be little more than a guess. But as a guess, a figure similar to the $615 billion I estimated for Gale, Scholz, and Seshadri's study is probably not unreasonable.

FUNDING SHORTFALLS IN GOVERNMENT-RUN RETIREMENT PLANS

Federal, state, and local governments run a variety of plans that provide income in retirement. Some, such as Supplemental Security Income, are means-tested safety net programs not designed to play a role in providing income for typical households that save for retirement in a reasonable way. Others, however, are designed to, and in practice do, play crucial roles in providing retirement income even for

"In most cases, defined benefit pensions do not have assets currently on hand sufficient to fund all the benefits they have promised. In Social Security's case, neither current nor scheduled payroll tax rates will allow for the full payment of benefits past the early 2030s."

many upper-income households. Social Security is a near-universal program that replaces preretirement earnings on a progressive basis. Thus, although it provides higher replacement rates—that is, benefits relative to preretirement earnings—to lower-earning households, the dollar value of Social Security retirement benefits rises with households' career-average preretirement earnings. Other government programs provide benefits to supplement Social Security. Federal employees, the uniformed military, and state and local government employees all participate in retirement plans, generally defined benefit pensions, which together with Social Security should allow most workers to maintain their preretirement standard of living once they retire. Some state and local government employees do not participate in Social Security. Their pension plans provide total benefits that are designed to account for the lack of Social Security coverage.

However, all of these government-run retirement plans require adequate funding. In most cases, defined benefit pensions do not have assets currently on hand sufficient to fund all the benefits they have promised. In Social Security's case, neither current nor scheduled payroll tax rates will allow for the full payment of benefits past the early 2030s.[22]

Thus, the "retirement crisis" is not merely a problem of insufficient household preparation. Indeed, it is possible that funding shortfalls in the government sector exceed retirement savings shortfalls by households. If so, we might conclude that the retirement saving problem could be considerably larger than is currently understood. But it also may cast doubt on whether the government sector can be counted on to properly administer and fund programs designed to increase retirement benefits in light of perceived undersaving by households. Government programs have often focused on delivering near-term benefits while falling short on making benefit funding adequate over the long term. Although Social Security and state and local pensions are financed in very different ways, they share this common shortcoming.

Social Security

The Social Security program offers retirement, survivor, and disability benefits to individuals who become eligible via participation in covered employment, as well as to their spouse and dependents. Social Security's funding shortfalls

22. Social Security relies on assets held in its trust funds to pay full benefits through the early 2030s. These assets are special-issue US Treasury bonds, the redemption of which by Social Security creates a cost for the rest of the federal budget. For the purposes of this discussion, however, I treat Social Security as a freestanding program.

have been a matter of public attention, and sporadic legislative efforts, since the late 1980s; but no meaningful reforms have been enacted since 1983. Moreover, a movement has begun recently to expand Social Security benefits, a policy that would at the least make the program's deficits more difficult to address.

Many retirees, particularly those with low incomes, are heavily dependent on Social Security benefits for their retirement income. Thus, the depletion of the Social Security trust fund, which would trigger automatic across-the-board benefit reductions of 25 percent or more, would have a dramatic negative effect on Americans' retirement income security.[23] That said, placing Social Security's funding shortfalls in terms that are comparable to the personal retirement savings shortfalls reported in the preceding section is difficult because of the way Social Security benefits are financed. Most retirement plans are intended to be prefunded, such that a plan's assets are sufficient to pay all the future benefits currently owed by the plan. On that basis, Social Security's trust fund assets of roughly $2.8 trillion are far outstripped by the approximately $30 trillion in benefits that have been earned but not yet paid out by the program. However, Social Security is financed mostly on a pay-as-you-go basis in which current taxes are used to pay current benefits. Thus, policymakers have no intention of building Social Security assets to a level sufficient to pay full accrued benefits.

An alternate approach is to look at the plan's 75-year funding shortfall inclusive of future payroll tax revenues. This is the current dollar amount that, together with future taxes, would be sufficient for Social Security to pay full scheduled benefits over the next 75 years. The 75-year period is designed to encompass the projected lifespans of nearly all employees currently covered by Social Security. Thus, the 75-year unfunded obligation in dollar terms is roughly equivalent to a personal retirement savings shortfall applied to the full working and retired population.

There are different projections of Social Security's long-term funding shortfall. The best-known figures are those calculated by SSA's actuaries on the basis of demographic and economic assumptions made by Social Security's Board of Trustees. As of early 2016, the SSA actuaries/Trustees projection of Social Security's 75-year funding shortfall was $11.4 trillion.[24] Later in 2016, an expert panel appointed by the Social Security Advisory Board produced its own

23. Jason Schultz and Daniel Nickerson, "Unfunded Obligation and Transition Cost for the OASDI Program" (Actuarial Note 2013.1, Social Security Administration, Office of the Chief Actuary, Baltimore, MD, 2014).
24. Social Security Administration, *The 2016 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (Washington, DC: US Government Printing Office, 2016).

estimates of the long-term Social Security shortfall. The 2015 Technical Panel on Assumptions and Methods generated its own economic and demographic assumptions for Social Security, which the SSA actuaries used to recalculate the program's finances. Under the technical panel's assumptions, the long-term Social Security deficit as a percentage of the wage base is about 26 percent larger than under the Trustees projections.[25] This would lead to a present value funding gap of about $14.4 trillion.[26] Likewise, the Congressional Budget Office (CBO) projects a 75-year funding shortfall equal to 4.4 percent of taxable payroll, versus 2.66 percent projected by Social Security's Trustees.[27] If the CBO projections turn out to be accurate, the 75-year Social Security shortfall in dollar terms would be roughly $18.9 trillion.

These projections are, by their authors' own admission, imprecise. They are based on projections of myriad demographic and economic variables extending decades into the future. Nevertheless, there is little reason to believe that these are biased projections, such that the inevitable errors will tend to reduce Social Security's funding shortfall rather than increase it.

Federal Employee Pensions

Federal government employees participate in three retirement plans. Employees hired before 1987 participate in the Civil Service Retirement System (CSRS), a defined benefit pension plan. These employees do not participate in Social Security and receive their full retirement benefit via the CSRS. CSRS employees may participate in the defined contribution Thrift Savings Plan (TSP), a 401(k)-style defined contribution plan, on a voluntary basis, but they do not receive an employer match.

The Federal Employees Retirement System (FERS) is a smaller defined benefit plan that enrolls federal employees hired since 1987. In addition, FERS-covered employees participate in the TSP. The federal government contributes

25. Social Security Advisory Board, *Technical Panel on Assumptions and Methods, A Report to the Board* (Washington, DC, September 2015).
26. With both the technical panel's projections and the CBO's projections, the dollar value of the Social Security unfunded obligation may not be precisely equal to figures derived by comparing the actuarial deficits calculated by the different parties as a percentage of payroll, because of ways in which different demographic and economic assumptions can alter the present value of taxable payroll over the long run. However, multiplying the Trustees' $11.4 trillion unfunded obligation by the ratio of the technical panel or CBO actuarial deficit to the Trustees' actuarial deficit is a reasonable way of approximating the dollar values consistent with the technical panel and CBO calculations.
27. Congressional Budget Office, *CBO's 2015 Long-Term Projections for Social Security: Additional Information* (Washington, DC, December 16, 2015).

an amount equal to 1 percent of employee pay to the TSP for all employees. Employees who choose to make their own contributions may receive a federal matching contribution equal to up to 4 percent more of their salaries.

As a defined contribution plan, the TSP is always "fully funded" in the sense that it cannot have obligations in excess of its assets. However, as defined benefit plans the CSRS and FERS must match assets to liabilities to ensure that the plans can pay full benefits as scheduled. As of their most recent actuarial valuation for the fiscal year 2014, the CSRS is 31 percent funded and has an unfunded liability of $754 billion. FERS is 91 percent funded and has an unfunded liability of $50 billion.[28] In both cases, the plans' assets consist of special-issue government bonds similar to those issued to the Social Security trust funds. These bonds are assets to the CSRS and FERS programs, though they are equal and opposite liabilities to the US government and, by extension, the taxpayer. For these purposes, however, we ignore such distinctions. In total, civilian federal employee defined benefit pensions face a funding shortfall of approximately $800 billion. This shortfall is by itself comparable to the lowest estimates of household retirement savings shortfalls for the full US population inferred by the author from Gale, Scholz, and Seshadri.

Military Retirements

The Military Retirement System (MRS) pays pension benefits to uniformed members of the US military who satisfy certain criteria, in particular a vesting period of 20 years of service before retirement. In addition, the MRS pays disability and survivor benefits to eligible military members and their families.

The MRS is a funded defined benefit pension plan. However, like FERS and the CSRS, the MRS is funded with special-issue government bonds, which means that from a budgetwide perspective the plan is essentially funded on a pay-as-you-go basis. For these purposes, however, I analyze the plan on a freestanding basis and consider its fund's government bonds only as an asset to the plan. As of the end of fiscal year 2015, the MRS was 39 percent funded and had an unfunded liability of $868 billion, based on a valuation interest rate of 5.5 percent.[29]

28. United States Office of Personnel Management, *Civil Service Retirement and Disability Fund Annual Report, Fiscal Year Ended September 30, 2015* (Washington, DC, January 2016).
29. US Department of Defense Office of the Actuary, "Valuation of the Military Retirement System," valuation as of September 30, 2014 (Alexandria, VA, June 2016).

State and Local Government Employee Pensions

Although 401(k)-type defined contribution plans have taken over the private sector, state and local governments still generally provide defined benefit pensions for their employees. Unlike federal employee pensions, state and local government plans invest in nongovernmental assets such as stocks, corporate bonds, and alternative investments like hedge funds and private equity. However, state and local plans have, by their own admission, amassed far fewer of these assets than is needed to pay the benefits they have promised.

"How much state and local plans have fallen short is a matter of debate."

How much state and local plans have fallen short is a matter of debate. Using the figures that plans themselves generate using accounting guidelines from the Governmental Accounting Standards Board, state and local plans have unfunded liabilities of about $1.2 trillion.[30] However, these figures are calculated using a very high discount rate—generally in the range of 7 to 8 percent—that understates the plans' benefit liabilities and thus improves their funded ratios and lowers their measured unfunded liabilities. These 7 to 8 percent discount rates are based on the annual returns that pension plans assume on their investment portfolios. However, economists almost universally agree that, when a benefit liability is guaranteed, as public pension benefits are intended to be and as many legal rulings have found them to be, a lower discount rate that matches the low risk of the liability is warranted. If state and local pensions promise to pay their benefits under all circumstances, come what may, then the cost of keeping that promise is best measured by discounting benefit liabilities using the yield on riskless US Treasury securities.

The Society of Actuaries Blue Ribbon Panel on Public Pension Underfunding, of which I was a member, recom-

30. Alicia H. Munnell and Jean-Pierre Aubry, "The Funding of State and Local Pensions: 2015–2020" (State and Local Pension Plans Brief No. 50, Center for Retirement Research at Boston College, 2016).

mended that state and local pensions measure their liabilities using the yield on 10-year US Treasury securities. As of November 2016, this yield averaged about 2.2 percent. Discounting on the basis of the Treasury yield, unfunded liabilities on state and local pension rise to about $5.5 trillion.[31] Using a middle ground of the corporate bond yield—which is how private sector pensions are required to measure their liabilities—state and local plans would be underfunded by about $3.4 trillion. This figure is produced by discounting pension liabilities at the 3.8 percent corporate bond yield listed in the Citibank pension yield curve for mature pension plans with benefit liabilities of relatively short duration.

Thus, although there remains disagreement about the precise size of state and local government pension underfunding, the $1 trillion figure acknowledged by public plans is very much on the low end of the scale, with plausible figures rising as high as $5.5 trillion. At the low end, state and local pension underfunding approximately matches the personal savings shortfalls in studies such as Gale, Scholz, and Seshadri and Hurd and Rohwedder. At the high end, public pension shortfalls are closer, though not equal, to the personal retirement savings shortfalls found in the NRRI.

TOTALING UP AND DISCUSSION

Neither the estimates of personal retirement undersaving nor those of government retirement plan funding shortfalls are precise. The most pessimistic estimates of personal savings shortfalls total $14 trillion, with the more optimistic figures likely falling under $1 trillion. Likewise, it is possible that unfunded liabilities in Social Security, federal government employee, and state and local government employee retirement plans range from as low as $14.3 trillion to as high as $26.1 trillion in present value. Although estimation error and methodological disagreement are possible on nearly all the estimates included here, it is noteworthy that the lowest estimates for governmental retirement underfunding exceed the highest estimates of personal retirement savings shortfalls. In other words, given the plausible range of estimates—and it is questionable whether the NIRS study's $14 trillion figure can be considered plausible, given the methodological weaknesses of the study—government underfunding exceeds personal retirement savings shortfalls even when government funding is at its highest and personal savings shortfalls are at their largest.

31. Author's calculations here are based on interest rate sensitivity analysis found in Munnell and Aubry, "Funding of State and Local Pensions."

If one takes a more pessimistic view of government funding and a more optimistic view of personal saving, the differences are huge. In my admittedly imprecise judgment, a best guess for government plan underfunding would lie around $21.5 trillion, combining the baseline estimates for federal employee pensions with the midline estimates of Social Security underfunding produced by the Social Security Advisory Board's technical panel and the high estimates of state and local pension underfunding produced by discounting liabilities using a Treasury bond yield. With regard to personal retirement savings shortfalls, my guess is that the truth lies closer to the Gale, Scholz, and Seshadri and Hurd and Rohwedder figures in the $1 trillion range than to the NRRI's $6 trillion to $7 trillion figure, for reasons discussed in the text. Personal retirement savings shortfalls may be somewhat higher than calculated in the more optimistic set of studies, because of rising longevity and difficulties in saving during the Great Recession, but it also is not difficult to imagine those declines being offset by rising individual retirement ages and increased retirement saving via the use of automatic enrollment in 401(k)s and other employer-sponsored retirement accounts.

An obvious but important point is that the household retirement savings shortfalls do not offset government underfunding of retirement plans. The total problem facing future retirees is the sum of the shortfalls, meaning that the financial challenges facing future retirees remain potent. If undersaving households are confronted with underfunded government plans, a true retirement crisis could occur. The goal of retirement saving policy, reasonably, is not merely to forestall a retirement crisis but to allow households to retire with dignity and to maintain their standard of living as they shift from work into retirement. This requires efforts to improve retirement saving and funding in both the household and the government sectors. Put another way, households' apparent superiority over government programs in funding their retirement needs is an advantage at the margin and does not imply that the government's role in the provision of retirement income should be eliminated.

However, households' advantage at the margin should inform policymakers' choices regarding marginal changes in the sector from which retirement income is generated. The relative sizes of household and governmental undersaving should give pause to those who believe that government must and can take on a greater role in retirement income security. There is nothing improper about increasing government support for retirement incomes at the margin; it is difficult to conceive that private-sector retirement plans could easily fill shortfalls in retirement savings, such as for unmarried, low-income women. But on a

populationwide basis it is hard to imagine why responsibility should be shifted from the household sector, which is doing a better job of saving for retirement, to the government sector, which is doing a poorer job.

This is particularly so when one considers the potential causes of undersaving. No one suggests that households wish to impoverish themselves in retirement. Rather, household saving tends to fall short for practical reasons: some households lack the opportunity to save because they are not offered a retirement plan at work; others that might wish to save lack the financial sophistication, such that they are scared off from saving or choose inappropriate or costly investments; and still others have such low incomes that they cannot afford to reduce current spending. Most of the problems facing households are a matter either of plan design or of basic economic constraints. The former issues can and are being addressed through policies such as automatic retirement plan enrollment, which overcomes inertia or reluctance to participate in a plan; life cycle funds, which automatically reallocate investment portfolios over time; and index funds, which simplify investment choices and dramatically reduce administrative costs. Likewise, a better-designed safety net for public plans such as Social Security could help low-income households for whom personal saving will never be a primary source of retirement income.[32] But again, these are practical issues that in most cases have practical solutions via improved plan design.

In the public sector, by contrast, the principal problem is not plan design. Presidents and Congress have known since the late 1980s that Social Security requires another round of reforms as baby boomers retire and life spans increase. The menu of reform options has similarly been well understood for more than a quarter-century. Current readers reviewing media coverage regarding Social Security reform from the late 1980s would find almost nothing that is unfamiliar to them. Yet in those three decades precisely nothing has been enacted to fix Social Security because taking those difficult steps would require informing Americans that the terms of the deal they have been offered—for such-and-such a tax rate you will receive such-and-such benefits—must be changed for the worse. As everyone in government knows, and constantly tells everyone else in government, delay only makes the problems larger. But, importantly, *not* larger for the elected officials in question: by delaying, they shift the problems from their own docket to that of the legislators who follow them in office.

Things are little different at the state- and local-government levels. Elected officials have seen the worldwide shift from traditional defined benefit pensions

32. See Andrew G. Biggs, "A New Vision for Social Security," *National Affairs* 16 (2013).

to defined contribution plans that offer plan sponsors lower costs and greater funding certainty. The principal reason state and local governments have not sought more far-reaching reforms is the desire to avoid offending a politically powerful interest group: public employee labor unions. Avoiding that fight, however, means being faced with ever-increasing costs for public employee pensions—costs that state and local governments are unable to pay. Since 2001 the annual required contribution for the average state and local pension plan has more than tripled as a percentage of employee payroll. Today, fewer than 60 percent of state and local pensions receive their full annual contributions, despite operating under accounting rules that allow annual contributions that are only about one-fourth of those required for corporate pensions.[33]

The core problem with retirement plan underfunding at the government level isn't plan design but human nature: individuals wish to promise things without paying for them, and individuals who seek public office seem to have a greater-than-average desire to do so. These intractable human failings join hands with defined benefit pensions that, because of their complexity, are perfectly suited for allowing sponsors to avoid making timely contributions to fund the benefits they have promised. Traditional pension funding requires myriad assumptions regarding interest rates, mortality tables, future employee wage growth, employee separation rates, and other factors. Each of these assumptions can be tweaked ever so slightly—or not so slightly, in the case of state and local plans' treatment of pension discount rates—to reduce current costs to the plan sponsor. But, if promised benefits are to be paid, reducing current contributions invariably increases future costs.

Individual saving decisions are about how one person decides to consume his own resources over his own lifetime. He may decide unwisely, but the fact that he largely bears the costs of his own decisions tempers the temptations to undersave for retirement. At the government level, however, retirement plan funding decisions shift costs from one person to another and from one generation to the next. Both the temptations to shift costs and the practical means of doing so are much greater at the government level than at the household level. And the amount of retirement plan underfunding, at every level of government in the United States, makes it difficult to deny that these forces are at work. There are practically no retirement plans at any level of government in the United States

33. Andrew G. Biggs, "How Much Would It Cost for State and Local Governments to Actually Fully Fund Their Pensions?," *Forbes.com*, April 1, 2016.

that have fully funded accrued benefits and that will not pass on substantial costs to future generations of taxpayers.

None of this is to say that government has no role to play in enhancing retirement saving. Governments should seek to fully fund their retirement plan benefit obligations. If doing so is impossible, governments should seek to honor all benefits that have already been earned while altering the rate at which future benefits are accrued in order to make the plans more affordable. On top of that, government policies can facilitate household retirement saving, such as by making it easier for employers to offer retirement plans and requiring employers, as a condition of the federal tax preference for retirement plan contributions, to automatically enroll employees, a step that leaves employee choice on the table but also can dramatically enhance retirement saving. A possible exception to automatic enrollment may be lower-wage employees, who may receive Social Security benefits sufficient to maintain their preretirement standard of living.[34]

But government policy with regard to retirement saving cannot be blind to government's manifest failures to fully fund the benefits it has already promised. Adding new benefit promises on top of the trillions of dollars in existing unfunded retirement plan liabilities is, as Samuel Johnson said of second marriages, the triumph of hope over experience.

34. See Andrew G. Biggs, "How Hard Should We Push the Poor to Save for Retirement" (Economics Working Paper 2017-13, American Enterprise Institute, Washington, DC, 2017).

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Andrew G. Biggs is a resident scholar at the American Enterprise Institute (AEI), where he studies Social Security reform, state and local government pensions, and public-sector pay and benefits. Before joining AEI, Biggs was the principal deputy commissioner of the Social Security Administration (SSA) and associate director of the White House National Economic Council. In 2013, the Society of Actuaries appointed Biggs co-vice-chair of a blue ribbon panel tasked with analyzing the causes of underfunding in public pension plans and determining how governments can securely fund plans in the future. In 2014, *Institutional Investor Magazine* named him one of the 40 most influential people in the retirement world. In 2016, President Obama appointed him a member of the Financial Oversight and Management Board for Puerto Rico. Biggs holds a bachelor's degree from Queen's University Belfast in Northern Ireland, master's degrees from Cambridge University and the University of London, and a PhD from the London School of Economics.

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