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*BULLETIN ON AGING AND HEALTH*

# Do Retirement Savings Policies Increase Total Retirement Saving?

The adequacy of retirement saving has become an area of increasing concern for policy makers and the general public, in light of a shifting private pension landscape that puts more responsibility on individuals to save for retirement and looming fiscal challenges that may lead to future cuts in public old age support programs. The U.S. and many other developed countries spend substantial amounts on policies to encourage individuals to save for retirement; for instance, the U.S. spends $125 billion per year on tax subsidies for retirement savings accounts. But the effect of such policies on financial preparedness for retirement may be limited if people either do not respond to the incentives or offset higher retirement saving by saving less in non-retirement accounts.

In "**Active vs. Passive Decisions and Crowdout in Retirement Savings Accounts: Evidence from Denmark**" (NBER Working Paper 18565), researchers **Raj Chetty, John Friedman, Soren Leth-Petersen, Torben Nielsen**, and **Tore Olsen** provide new evidence on the effectiveness of retirement saving policies.

The authors use a panel dataset with 45 million observations on savings in both retirement and non-retirement accounts for the population of Denmark for the period 1994–2009. The Danish context not only offers a large and rich data set, but also a series of policy reforms that the authors use to identify the impacts of retirement savings policies.

The authors first explore the impact of automatic contributions such as default settings on retirement saving, policies which in a neo-classical world should have no effect on savings. They use two quasi-experimental approaches. First, the authors track individuals' savings rates when they switch to different jobs with higher or lower employer retirement contributions. These contributions are automatic in that they require no active choice by individuals. Workers could change their own retirement saving to offset any increase (or decrease) in employer contributions. But total savings rise by more than 85 cents when workers move to a firm that contributes an additional dollar to retirement saving. These changes in saving behavior persist for more than ten years after the firm switch and ultimately result in higher wealth balances at retirement. Second, to explore the effect of automatic contributions outside of employer-provided pensions, the authors examine the effect of the Mandatory Savings Plan (MSP). This policy required all Danish citizens to contribute 1 percent of their earnings to a retirement savings account from 1998 until 2003. The authors find that total saving rose by roughly 1 percent as a result of the policy, suggesting similarly little offset in other accounts.

Next, the authors study the impact of subsidies for retirement savings, again making use of a change in government policy. In 1999, the government reduced the subsidy for contributions to a popular type of retirement savings account for individuals in the top tax bracket by 14 percentage points, while leaving subsidies for those in lower tax brackets unchanged. Aggregate contributions from affected savers to this type of account fell by roughly 50% following the reform, but this substantial drop was due to the actions of relatively few savers. In contrast to a neo-classical model, in which all savers should respond, just 15% of affected savers reduced their pension contributions following the subsidy reduction. The authors then examine what happened to total savings for these 15%. For each dollar by which these savers reduced their pension contributions, the authors estimate that 98 cents went right back into taxable saving accounts. As a result of this shifting, each dollar of government expenditure on subsidies for pension savings generates only 1 cent extra of total savings.

Why are automatic contributions so much more effective at raising savings than price subsidies? The authors

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explore this question in the final section of the paper by examining the heterogeneity in response across individuals to the savings policies. They find that there are two different types of savers: 15% are "active" savers who think regularly about retirement and respond to incentives, while 85% are "passive" savers who are not focused on retirement and do not pay attention to relevant policy changes. Price subsidies induce active savers to shift assets across accounts but have no impact on passive savers' behavior. In contrast, automatic contributions raise the savings of passive savers. Passive savers tend to be less wealthy and financially prepared than active savers. As a result, automatic contributions not only have larger effects on aggregate savings than price subsidies, but also do more to increase the savings rates of those who are least prepared for retirement.

Overall, the study's findings suggest that price subsidies are less effective as a policy tool than automatic contributions in increasing savings. The authors conclude, "policies that influence the behavior of passive savers have lower fiscal costs, generate relatively little crowd-out, and have the largest impacts on individuals who are paying the least attention to saving for retirement."

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## Behavioral Hazard in Health Insurance

While health insurance offers valuable protection against the risk of incurring large health expenses when a serious illness strikes, it has long been understood that there is a down-side to insurance as well — by making health care cheaper (lowering its cost to a generally modest copayment), health insurance may induce people to consume more health care. This phenomenon, known as "moral hazard," can result in the inefficient overuse of health care, as individuals opt to consume care that is worth less to them than it costs to produce. The well-known RAND Health Insurance Experiment of the 1970s and other studies have documented that people's use of care does indeed depend on the price they face.

More recently, health care analysts have documented another type of inefficiency in health care — the underuse of (often inexpensive) care that provides large health benefits. Examples of this abound, from diabetics' lack of adherence to drug regimens that reduce the risk of limb loss and blindness, to the underuse of beta blockers in the treatment of heart disease, to the failure of some pregnant women to make use of free prenatal care available through Medicaid.

What can explain this inefficiency? This question motivates a new study by researchers **Katherine Baicker, Sendhil Mullainathan,** and **Joshua Schwartzstein, "Behavioral Hazard in Health Insurance"** (NBER Working Paper 18468). The authors attribute this inefficiency to what they term "behavioral hazard" — misbehavior resulting from mistakes or behavioral biases.

Drawing from the behavioral economics literature, the authors note that there may be more than one source of bias at work. Specifically, "attention matters: choice of care may depend on the salience of symptoms, which is particularly problematic because many severe diseases have few salient symptoms. Timing matters: people may overweigh the immediate costs of care such as co-pays and hassle costs of setting up appointment or filling prescriptions. Memory matters: people may simply forget to take their medications or refill prescriptions. Beliefs matter: people may have false beliefs and poor learning mechanisms about the efficacy of different treatments."

Incorporating behavioral hazard into one's thinking about health insurance alters the standard conclusion that having consumers pay only a fraction of the cost of care (by charging them only a copayment) necessarily leads them to consume too much care. Instead, the reduced cost of care might in some cases improve the efficiency of the health care system by inducing individuals to use valuable care they would have forgone if they had faced the full cost. Indeed, research suggests that higher copays can dissuade the use of high-value care (care for which health benefits are large relative to costs) as much as of low-value care, suggesting that behavioral hazard is quite prevalent.

The authors illustrate the importance of considering behavioral hazard in the context of a recent large-scale field experiment that eliminated copayments for one group of recent heart attack victims, while another group faced a 25 percent copayment. Per patient spending was $106 higher in the free care group. Under the traditional assumption that rational patients only use care that they value at least as much as its cost, this policy generated health benefits of at most $26.50 per patient and a cost of $79.50 per patient. Yet the increased use of prescription drugs in the treatment group was associated with a reduction in mortality rates, which the authors conservatively value at $3,000. Viewed in this way, the policy generated a surplus of $2,894 per patient, or a return of $28 for every $1 spent. In short, a policy that might be viewed as having a modest welfare cost under the standard way of thinking can be seen to generate a large welfare gain once behavioral hazard is taken into account.

More generally, behavioral hazard changes the optimal design of insurance. In the standard model, the more responsive health care use is to price, the greater the efficiency cost of low copayments, as people overuse care to a greater extent. With behavioral hazard, the optimal copayment depends not only on how price affects the use of care but also on how the use of care affects health. For example, it may be optimal to have no copayments on certain drugs where health benefits are large and demand is quite sensitive to price. Interestingly, while behavioral economics has often been associated with the use of psychological interventions or "nudges" such as defaults and reminders, incorporating

the behavioral point of view also changes how we analyze standard price levers.

With this new point of view, "insurance no longer provides only financial protection, it can also increase the efficiency of health care utilization by reducing behavioral hazard." However, private insurers may not set prices so as to mitigate underuse of care if naïve consumers do not understand and fully value the health benefits that result. This may be particularly true when insurers expect many of their enrollees to eventually switch to another private insurer or Medicare, implying that the insurer will not realize all of the future cost savings that may result from inducing an enrollee to use more high-value care today.

The authors conclude by noting that the areas of the health care system in which we observe substantial underutilization, such as management of chronic diseases like diabetes, high blood pressure, asthma, and high cholesterol, are responsible for a large share of total health care costs. Much of the cost of these diseases is incurred in the late stages and likely involves overuse of care following earlier underuse as the disease progressed. "That many of these domains of care seem sensitive both to small changes in copayments and potentially to behavioral nudges — and that many of the treatments affected seem to be of high health value — suggests that incorporating not only moral hazard but behavioral hazard into our models of optimal insurance design may have large-scale implications for public policy."

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## The Revenue Demands of Public Employee Pension Promises

The recent financial and economic crisis and lingering low interest rates have heightened concerns about the ability of state and local governments to pay promised pension benefits to their current and future retired workers. By some estimates, the present value of pension promises may exceed pension system assets by $3 trillion.

While there are numerous studies of the extent of underfunding in public pensions, the past literature has generally not focused on the tax revenue implications of underfunding. This question is at the heart of a new paper by NBER researchers **Robert Novy-Marx** and **Joshua Rauh**, **"The Revenue Demands of Public Employee Pension Promises"** (NBER Working Paper 18489).

The primary data for the analysis comes from the Comprehensive Annual Financial Reports of nearly 200 state and local pension plans. The authors aggregate data for all plans within each state and combine this with tax revenue data from the U.S. Census Bureau and gross state product (GSP) data from the Bureau of Economic Analysis.

For their core calculations, the authors first forecast expected future benefit payments to retirees, current employees, and former employees who are vested in the plan but not yet receiving benefits. They next calculate new service costs, defined as any increase in the present value of expected future benefits from one year to the next (as plan participants progress in age and seniority) in excess of new contributions to the plan. Finally, they calculate the additional amount that state and localities would need to contribute to the plan annually for the next 30 years to completely amortize the unfunded pension liability.

The authors estimate that in aggregate, contributions from state and local governments to pay for public employee retirement benefits currently amount to 5.7 percent of all revenues generated by these entities (including state and local taxes, fees, and other charges). In their base case simulation, contributions would need to rise by 8.4 percent of own revenue, to a total of 14.1 percent of own revenue, to achieve fully funded systems in 30 years. This corresponds to an immediate and permanent increase of $1,385 per household per year.

Naturally, the required new revenue varies across states. While Indiana requires an increase of only $329 per household per year, the required increase in New York is $2,250; four other states also face required increases of at least $2,000 per household per year.

While benefits already accrued by current and former employees account for a sizeable share of the new revenue needs, all states (with the possible exception of Indiana) are increasing their unfunded liabilities each year, with newly accrued pension benefits exceeding new contributions. At least thirteen states would need to double contributions just to pay these newly incurred service costs.

Next, the authors explore how much the required contribution increases would be reduced under several policy changes that reduce future benefit accruals. One policy they examine is a "soft freeze" of pension plans, where new hires participate in a defined contribution (DC) pension plan rather than the traditional defined benefit (DB) plan. Utah and Alaska have instituted soft freezes, and this policy is also under consideration in Florida. They find that instituting a soft freeze in all states would have a moderate revenue-saving effect — the required average revenue increase declines from $1,385 to $1,210 per household.

One reason the decline is not greater is that affected employees would be eligible for Social Security and the authors assume that states would bear the full cost of the Social Security payroll tax in addition to contributing 10 percent of wages into the DC plan. Interestingly, for some states with high employee contribution rates and low Social Security coverage, instituting a soft freeze would be more costly than funding DB promises for new workers.

The authors also examine the effects of a "hard freeze," which would entail stopping all future benefit accruals in the DB plan, even for existing workers. Although this policy is not uncommon in the private sector, it has not yet been implemented by any public DB system. The authors estimate that if all plans were hard frozen, total required increases would average only 4.8 percent of own revenue, or $800 per household per year. This figure declines to 4.2 percent or $701 if Social Security costs for new workers could

be shared equally between employers and employees.

Finally, the authors explore the sensitivity of the findings to some of their assumptions. If pension assets perform very poorly (at the 10th percentile of the asset return distribution), the required contribution rises to $2,468 per household per year; if assets perform well (90th percentile), the contribution drops to $756. They also estimate a version of the model in which taxpayers are allowed to move in response to rising tax rates — this raises the dispersion of required tax increases but does little to affect the average increase.

As the authors conclude, "one theme that emerges [from our work] is that substantial revenue increases or spending cuts are required to pay for pension promises to public employees even if pension promises are frozen at today's levels."

*The authors acknowledge funding from the Zell Center for Risk Research at the Kellogg School of Management.*

## What Makes Annuitization More Appealing?

Relatively few U.S. households annuitize their private pension balances at retirement or purchase annuities with other assets. In defined benefit (DB) pension plans that offer the choice of receiving benefits as an annuity or a lump sum, between 50 and 75 percent of benefits are taken as a lump sum, even though receiving an annuity is the default option. In defined contribution (DC) plans, only 10 percent of those leaving their jobs after age 65 choose to annuitize.

Economists have long pointed out that the benefit of buying insurance against the risk of outliving one's assets should create strong demand for annuities. Numerous rational motives have been suggested to explain the puzzlingly low demand for annuities, including bequest motives, uncertain healthcare expenses, high annuity prices (due in part to adverse selection, the tendency of those with longer expected lives to purchase annuities at higher rates), the existence of means-tested government benefits such as Medicaid, and the level of mandatory annuitization through Social Security and some DB plans.

In a new paper, researchers **John Beshears, James Choi, David Laibson, Brigitte Madrian,** and **Stephen Zeldes** ask **"What Makes Annuitization More Appealing?"** (NBER Working Paper 18575). In posing this question, the authors take no stand on how much of the "annuitization puzzle" remains after accounting for these rational motives. Instead, the authors explore how annuity demand responds to annuity product design and choice architecture.

To study these issues, the authors field two large surveys in which they elicit hypothetical annuitization choices from individuals aged 50 to 75. As the authors note, the use of such surveys has both advantages and disadvantages. On the one hand, they are able to ask questions that directly measure preferences, including preferences for products that may not exist on the market today. On the other hand, the answers people give do not translate into choices that affect their actual outcomes, so the results may not correspond to the choices people would make in real life.

The authors have five major findings. First, the three considerations respondents report as being most important for their decision about whether or not to annuitize include: a desire to "make sure I have enough income later in life," a desire for "flexibility in the timing of my spending," and being "worried about [the] company not being able to pay me in the future." The authors point out that insurance companies are currently banned from mentioning government insurance of annuity payments, a policy that may reduce annuity demand. Other issues, including worries about inflation, the desire to invest one's own money, and the desire to prevent overspending were intermediate level concerns, while the desire to give money to children and concerns about dying early were less relevant.

Second, the authors find that a majority of individuals choose partial annuitization when it is offered. Furthermore, offering partial annuitization increases both the share of respondents who say they would annuitize and the average percentage of pension balances that is annuitized. The U.S. Treasury Department has proposed a new regulation that would make it easier for DB plans to offer partial annuitization — the authors' findings suggest that this proposal would increase annuitization in plans that already offer a lump sum withdrawal option.

Third, the authors find that for a given present value of payments, respondents prefer flat or rising real payments over time to declining payments. This finding makes it all the more surprising that there are few inflation-indexed annuities available on the market. The authors also find that highlighting the effects of inflation on fixed nominal payments increases the demand for annuities with a cost of living adjustment.

Fourth, the authors test how various frames affect annuity demand. They find that framing that focuses on flexibility and control or on investment attributes decreases the demand for annuities. Other frames are found to have little effect on annuity demand, including explaining that the annuity being offered is a better deal than what could be purchased on the private market (as would generally be true for an annuity offered through a DB plan), presenting the total expected undiscounted lifetime payments from the annuity, explaining that an annuity provides insurance against outliving one's savings, and explaining that an annuity transfers money from states where one is dead and the value of money is low to states where one is alive and the value of money is high.

Finally, the authors find that a majority of respondents prefer an annuity that pays an annual bonus in a month of their choosing over a traditional annuity with a uniform monthly payment. This is consistent with respondents highlighting flexibility in the timing of spending as an important factor in their annuity decision.

The authors conclude by noting that their findings have implications for annuity product design and choice architec-

ture. First, to increase annuity demand, annuity providers could design products that give beneficiaries more flexibility and control. This could include, for example, giving annuitants control over the payout stream within each year or over asset allocation (as already occurs in the variable annuity market), though the authors caution that there is a tradeoff between flexibility and complexity. Providing greater access to partial annuitization for DB plan balances, using frames that downplay investment, and adopting regulations that reduce fear that providers will be unable to meet their annuity obligations are other policies that may increase annuity demand.

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## The Prevalence and Economic Consequences of Disability

With the U.S. Disability Insurance (DI) program serving an ever-increasing number of beneficiaries and the DI trust fund projected to be exhausted by 2016, the DI program is likely to be the object of increasing scrutiny by policy makers in coming years. A solid base of research will be needed to inform the evaluation and design of DI policies. Yet currently there are major gaps in our understanding of the economic consequences of disability.

One study that aims to help bridge these gaps is **"Disability, Earnings, Income and Consumption"** (NBER Working Paper 18869) by researchers **Bruce Meyer** and **Wallace Mok**. The authors note that designing an optimal DI system requires understanding the frequency of disability, the fall in consumption that results from disability, and the potentially negative effects of DI on work effort ("moral hazard"). While there is an extensive literature on the latter, there is less information on lifetime disability rates and the fall in consumption with disability.

The authors use over 40 years of data from the Panel Study of Income Dynamics (PSID) to estimate lifetime disability risk, as well as the changes in earnings, income, public transfer receipt, poverty, work, food consumption, and housing consumption that follow disability. In taking this wider view, the authors aim to obtain a better picture of the well-being of the disabled. Importantly, the authors' estimates account for underreporting of public transfers, a common problem in survey data. The authors also explore how the effects of disability vary with the severity and duration of the disability. In the analysis, respondents are characterized as disabled if they report that they have "any physical or nervous condition that limits the type of amount of work you can do."

A first key finding is that disability rates are high — a 50-year-old male household head has a 36 percent chance of having been disabled at least once during his working years. By age 50, nearly one in ten (9 percent) of men have begun a spell of disability that is both chronic (lasting at least four years) and severe (greatly limiting or eliminating the ability to work). These odds rise to one in four by age 60.

Second, the authors show that disability is associated with bad economic outcomes. Ten years after onset, respondents with a chronic and severe disability have on average experienced a 79 percent drop in earnings, a 35 percent drop in after-tax income, and a 22 percent drop in food consumption. Two-thirds of this group never returns to work. The declines in income and consumption for the chronically and severely disabled group are more than twice as large as those experienced by average disabled individuals.

Another key finding is that personal savings, family support, and private and government insurance only partially fill the drop in consumption that follows disability. One-sixth of families with a chronically and severely disabled household head fall below the poverty line in the long run, even after accounting for the value of in-kind transfers and the underreporting of benefits. The authors show that consumption begins to fall prior to the reported onset of disability, indicating that future disability status is somewhat (if imperfectly) predictable in the short run.

Some have argued that reported consumption may understand the true consumption of groups such as the retired and disabled because they get more for their money through increased shopping and home food preparation. Evidence from time-use surveys, however, suggests that the disabled do not spend more time on shopping or food preparation. Instead, it appears that they spend more time using medical services, watching television, relaxing, and sleeping. The authors also examine food surveys and find suggestive evidence that the diet of the disabled is worse than that of the non-disabled along a number of dimensions.

Finally, the authors use their findings to consider the optimality of current DI benefits. While there is necessarily some uncertainty in such calculations because of the difficulty of knowing certain key parameters (for example, how the generosity of DI benefits affects the number of people applying for and receiving DI), the authors "find that for a substantial range of plausible parameter values, current compensation for the most disabled appears to be lower than this standard model suggests is optimal. However, stronger statements require knowing preference parameters that have not been pinned down in the literature."

The authors conclude that there are many important questions remaining for future research, including the prevalence and consequences of disability for women, the effects of disabilities that begin at later ages, and the varying effects of disability by health condition.

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# NBER Profile: *Jeffrey Liebman*

Jeffrey Liebman is a Research Associate in the NBER's Programs on Aging, Public Economics, Children and Education, as well as the Associate Director of the NBER Retirement and Disability Research Centers. He is the Malcolm Wiener Professor of Public Policy at the Harvard Kennedy School.

Liebman's research focuses on tax and budget policy, social insurance, and social policy. Much of his research involves large randomized evaluations of government programs and policies. Liebman and his coauthors spent 12 years working with HUD on the evaluation of the Moving to Opportunity housing voucher experiment. In another study, Liebman and coauthors conducted a randomized experiment with 14,000 low and moderate-income taxpayers to test whether the matching of savings could increase the fraction of tax refunds that were saved rather than spent. In a more recent randomized experiment, Liebman and a coauthor tested whether providing information about Social Security to older workers could affect retirement decisions.

During the first two years of the Obama administration, Liebman served at the Office of Management and Budget, first as Executive Associate Director and Chief Economist and then as Acting Deputy Director. From 1998 to 1999, he served as Special Assistant to the President for economic policy and coordinated the Clinton Administration's Social Security reform technical working group.

Since returning to Harvard from OMB, Liebman has established the Social Impact Bond Technical Assistance Lab (www.hks-siblab.org) to conduct research on how governments can foster social innovation and improve the results they achieve with their social spending. As part of its research model, the SIB Lab provides pro bono technical assistance to state and local governments implementing pay-for-success contracts using social impact bonds.

The SIB Lab recently announced that it will be providing technical assistance in the coming year to 6 new governments: South Carolina, Ohio, Illinois, Denver/Colorado, New York, and Connecticut.

Liebman lives in Brookline, Massachusetts with his wife and two daughters.


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