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• Can Low-Cost Interventions Affect Retirement Saving Behavior?
• Labor Market Effects of the Massachusetts Health Insurance Reform
• Can Germany's Riester Pensions Fill the Pension Gap?
• Retirement Before the Social Security Entitlement Age
• Are Consumers Forward-Looking in Responding to Health Care Prices?

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BULLETIN ON AGING AND HEALTH

Can Low-Cost Interventions Affect Retirement Saving Behavior?

The shift towards defined contribution pension plans has placed much of the responsibility and risks associated with saving for retirement on individuals. Yet a growing body of literature raises questions about how well equipped individuals are to make optimal savings decisions. For example, past studies have documented relatively low levels of financial literacy and the large impact that default rules have on saving decisions.

Employers have a number of potential levers at their disposal to affect individuals' retirement saving decisions, including the match rate; policy makers can change tax incentives or even impose a mandate. Communication interventions represent a simple, low-cost alternative to these mechanisms. But do such interventions affect saving behavior?

This question is explored in two new studies by NBER researchers. In **"What Will My Account Really Be Worth? An Experiment on Exponential Growth Bias and Retirement Saving" (NBER Working Paper 17927)** authors **Gopi Shah Goda**, **Colleen Flaherty Manchester**, and **Aaron Sojourner** conduct a large-scale field experiment designed to inform subjects about how a stream of retirement contributions would accumulate into an account balance at retirement and income in retirement and examine whether this information influences saving decisions.

Understanding how current contributions translate into retirement savings balances and retirement income requires knowledge of exponential growth and is a key element in optimal retirement planning. However, many individuals systematically underestimate the returns to saving that accrue from compound growth.

To conduct their experiment, the authors randomly assign employees of the University of Minnesota system to one of four groups. Three of the four groups received a brochure designed to encourage individuals to reflect on whether they are on target to reach their retirement goals, while the control group did not receive the mailing. Among the three groups, one received the basic brochure, while the other two groups also received a customized projection of how hypothetical additional contributions would translate into additional assets at retirement or into both assets and retirement income. Along with the brochure, individuals also received materials to assist them through the process of changing their contribution rate.

The authors find that providing income projections along with general plan materials resulted in an increased probability of changing contribution levels relative to the control group over a six-month period. Individuals in this group increased their annual contributions by $85 more than the control group on average, though since relatively few people changed their contribution, the magnitude of the increase among those who made a change was much larger, approximately $1,150 per year. The findings also suggest that providing planning materials without projections may have had a positive effect on contributions.

The study included a follow-up survey of subjects, which provided corroborative evidence that the intervention influenced saving decisions. The income group reported being better informed about retirement planning, more likely to have figured out how much to save, and more certain about their expected retirement income, as well as having higher overall financial satisfaction. The authors also find that the intervention was less effective for those with a higher discount rate, liquidity constraints, or procrastination tendencies.

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The authors conclude "this study provides proof of concept for a policy that requires no additional mandate on individuals or subsidy for saving. Providing retirement income projections — an extremely low-cost intervention — can actually affect individuals' saving behavior." They caution "the effects manifested were not large on average and were found in only a small share of the sample; thus, this policy is not likely to lead to a saving revolution. However, among those who made changes,

effects were substantial and suggest that similar policies may help some individuals move closer to their retirement goals."

The study "**Small Cues Change Savings Choices" (NBER Working Paper 17843)** by authors **James Choi, Emily Haisley, Jennifer Kurkoski,** and **Cade Massey** also makes use of a field experiment to learn more about retirement saving decisions. The focus of this study is on learning whether inserting cues designed to activate phenomena identified in the psychology and behavioral economics literature into retirement saving materials would affect saving behavior.

To explore this, the authors randomly assigned employees of a large technology company to receive one of several versions of an email reminding them about the opportunity to change their 401(k) savings plan contribution before the end of the year. Control subjects received a message specifying their own contributions to date and reminding them to take advantage of the company match. Treatment subjects received the same message with an additional one- to two-sentence cue related to anchoring, goal setting, or a saving threshold. The added anchoring cue text read: "For example, you could increase your contribution rate by 1% of your income and get more of the match money for which you're eligible. (1% is just an example, and shouldn't be interpreted as advice on what the right contribution increase is for you)." The authors also randomized the numerical value used in the cue across subjects.

Turning to the findings, the authors report that during the first four months after the email, a low anchor (1 percent) decreased contribution rates relative to a control email with no anchoring cues by as much as 1.4 percent of income within a pay period, while high anchors (3, 10, or 20 percent) had no effect. In the longer run, the 1 percent anchor continued to depress contribution rates by up to 1.2 percent of income within a pay period, while the higher anchors increased contribution rates by up to 1.9 percent of income within a pay period. For the goal setting cue, a higher ($11,000) savings goal raised contribution rates significantly — by 2.2 percent of income at ten weeks after the email was sent — while a lower ($7,000) savings goal had little effect. In addition, highlighting high savings thresholds, such as the $16,500 annual limit on contributions or the 60 percent maximum contribution rate, led to larger increases in saving than mentioning lower thresholds.

The authors note that due to the constraints of their field setting, they "cannot establish beyond all doubt that the psychological mechanisms that motivated our cues are in fact responsible for our treatment effects." Nonetheless, if their treatment effects are driven by employees drawing inferences about their optimal contribution rates from the cues, "employees at this firm must have extremely diffuse prior beliefs about how much they should be saving in their 401(k)." They conclude "our paper's central message is, irrespective of the exact psychological channels through which they operate, small cues of the types we have tested have large effects on savings choices. Organizations and policymakers should be cognizant of these facts when designing their communications."

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Labor Market Effects of the Massachusetts Health Insurance Reform

The Patient Protection and Affordable Care Act (PPACA), passed in 2010 and recently upheld by the U.S Supreme Court, is the most profound change to health policy in the United States since the introduction of Medicare and Medicare in 1965. The PPACA is similar in many ways to the Massachusetts health reform law, which was implemented starting in 2006. As such, the Massachusetts experience can provide some guidance as to the likely effects of the national law.

In earlier work, NBER researchers **Jonathan Kolstad** and **Amanda Kowalski** have shown that the Massachusetts reform led to higher levels of insurance coverage, as well as decreases in inpatient hospital admissions for some preventable conditions and from the emergency room, consistent with greater provision of preventative care outside of hospitals. In their latest study, "**Mandate-Based Health Reform and the Labor Market: Evidence from the Massachusetts Reform" (NBER Working Paper 17933)** they examine another critical question — the effect of the reform on the labor market.

The PPACA and the Massachusetts reform share three key provisions to expand coverage: a mandate that employers offer coverage or pay a penalty, a mandate that individuals obtain coverage or pay a penalty, and expansions in publicly-subsidized coverage. The reforms also call for the establishment of health insurance "exchanges" to ensure that individuals without access to employer-sponsored health insurance (ESHI) can obtain coverage.

Economists have long understood that the cost of a benefit mandate, such as a requirement to provide health insurance, is likely to be passed on to the worker in the form of lower wages, so long as workers value the benefit and wages can adjust freely. In this study, the authors calculate the "compensating differential for ESHI" — that is, the change in wages associated with gaining ESHI. While past studies on mandated benefits have typically examined how an incremental mandate — for example, to provide coverage for pregnancy-related expenses — affects wages, the Massachusetts reform offers a unique opportunity to explore what share of the full cost of health insurance is passed on to workers, using reform-induced transitions into and out of ESHI.

The analysis makes use of the 2004 panel of the Survey of Income and Program Participation, which followed participants from late 2003 through the end of 2007. As the Massachusetts

reform began to be implemented in July 2006 and was fully implemented by July 2007, the authors are able to observe the labor market outcome of survey participants before, during, and after implementation of the law. Their sample includes over 90,000 workers, including over 2,500 in Massachusetts. In their empirical analysis, the authors use the experience of other states to control for other factors that might have affected wages over this period and pay close attention to the possibility of differential trends in Massachusetts versus the rest of the country.

The paper's central finding is that there is a substantial compensating differential for ESHI. Full-time workers who gained coverage as a result of the reform earned $6,055 less per year relative to what their wages would have been had they not gained ESHI. This value represents nearly the entire average cost of their health insurance to their employers.

Building on this estimate, the authors estimate the welfare impact of the labor market distortion induced by health reform. They estimate that individuals who gained coverage through their employers valued approximately 76 cents of every dollar that their employers spent on their coverage. As the authors note, "because individuals valued ESHI, mandate-based health reform in Massachusetts resulted in significantly less distortion to the labor market than it would have otherwise." Contrasting the effect of the reform with a hypothetical wage tax to pay for health insurance, they estimate that the distortion to the labor market would have been more than 20 times as large under the tax.

The authors conclude, "Our results suggest that mandate-based reform has the potential to be a very efficient approach for expanding health insurance coverage nationally."

The authors acknowledge funding from the National Institute on Aging (grant P30-AG012810) and the Wharton Dean's Research Fund.

Can Germany's Riester Pensions Fill the Pension Gap?

Many developed countries have reduced the generosity of public pension benefits in recent years to improve the long-term financial outlook of their pension systems. Yet these reforms will create a gap in old-age income relative to current benefit levels. To avoid a drop in replacement rates, workers will need to bolster the second and third pillars of retirement security, occupational pensions and private savings.

One interesting recent effort to strengthen retirement saving is Germany's Riester pensions. Somewhat like Individual Retirement Accounts (IRAs) in the US, Riester pensions provide tax incentives as well as subsidies to encourage people to save. A decade after their introduction, are Riester pensions demonstrating promise as a way to fill the pension gap? This question is explored in a new study by researchers **Axel Boersch-Supan, Michela Coppola,** and **Anette Reil-Held, "Riester Pensions in Germany: Design, Dynamics, Targetting Success and Crowding-In" (NBER Working Paper 18014)**.

Riester pensions are state-subsidized voluntary individual savings accounts. While all contributors benefit from a tax deduction, there are additional direct subsidies for low-income households and households with children, since it was assumed by policy makers that these groups would have the most difficulty saving. Upon retirement, the majority of the pension benefit is converted to an annuity.

Due to the complex design, the value of the subsidy varies considerably across households, ranging from 24 percent to 90 percent depending on family income and the number of children. Overall, government subsidies (including the value of the tax deduction) average about 45 percent of contributions.

Riester pensions have proven popular with German workers. The number of accounts grew to 4 million within several years of the introduction of the scheme, and jumped again after the subsidy design was simplified in 2005. By the end of 2009, about 40 percent of eligible households had at least one Riester plan. This figure exceeds the share of households with occupational pensions. Moreover, the share of households with no private supplemental pension fell sharply after the introduction of the scheme, dropping from 73 percent in 2001 to 45 percent in 2009.

The authors explore the characteristics of those taking up Riester pensions using the SAVE data, a panel study of saving behavior by German households. They find that takeup is strongly age-related, with young households, who were more affected by recent benefit cuts, being much more likely to have a pension. Takeup is also higher in families with more children, as might be expected since subsidies increase linearly with the number of children. However, reaching low-income households has proven to be more difficult — only one in five households in the lowest income bracket have Riester pensions, as compared to nearly half of those in the two upper income brackets. Interestingly, high-income households have also greatly increased their participation in occupational pensions and unsubsidized private pensions since Riester pensions were introduced.

Riester pensions generate costs for the government, including both the direct costs of the subsidy and the foregone revenue from the tax deduction. In 2010, costs were 3.5 Billion Euros, 80% of which came from the subsidies. This expenditure is modest compared to the total cost of public pensions, 225 Billion Euros.

An important (and difficult) question to answer is whether Riester pensions have increased private and national saving, given that they may have displaced other forms of private saving and entail direct government spending. While the authors "cannot provide an analysis which unambiguously isolates the causal effect of the subsidies on total saving," they note that occupational and unsubsidized pension plans remained flat or increased during the rise of Riester pensions. The aggregate household saving rate also rose from 9.4 percent of disposable income in 2001 to 11.4 percent in 2010. The authors conduct an empirical analysis

of the demand for Riester pensions and other saving products and find results that are "consistent with a form of 'crowding in' among pension products."

Finally, the authors explore the extent to which Riester pensions will fill the pension gap created by recent benefit cuts. They suggest that while on average Germans will be able to more than close the gap, one in four will have lower retirement income than under the old system. Lower-income households have particular difficulty in closing the gap.

In concluding, the authors note "this new pension instrument can be regarded as a success story for the middle of the income distribution in Germany," though it has not been equally successful in reaching lower-income households. They conclude, "Riester pensions have produced some interesting achievements although clearly they are not a panacea to fully solve the challenges of adequate retirement income levels."

The authors acknowledge financial support from the Research Institute for Policies on Pension and Aging (RIPPA) and the German Science Foundation (DFG).

Retirement Before the Social Security Entitlement Age

In the U.S. and many other developed countries, increasing longevity and long-term fiscal imbalances in the social security system are prompting policy makers to consider increasing the age at which retired workers would be eligible for benefits. While this policy change would undoubtedly save money, it also raises concerns about whether workers would be able to continue working until the new eligibility age and how their well-being might be affected if they were unable to do so.

Some light may be shed on this question by examining the experiences of U.S workers who retire before the Social Security early eligibility age of 62. This is the goal of a new paper **"How Is Economic Hardship Avoided by Those Retiring Before the Social Security Entitlement Age?" (NBER Working Paper 18051)** by **Kevin Milligan**. Specifically, the paper asks three questions. First, who retires early? Second, what are the sources of income before Social Security benefits are available? And third, how do non-workers avoid hardship?

Making use of data from the Health and Retirement Study, the author first conducts a descriptive analysis to determine the characteristics associated with early retirement. The analysis focuses on individuals working at ages 53 to 54, for whom retirement is a salient concept.

Among women, the more highly-educated work longer, as do those with employer-provided pensions or health insurance, though having a defined benefit pension is associated with earlier retirement, likely because of the incentives imbedded in the benefit formulas. Job characteristics such as stress or physical demands do not predict exit. Patterns for men are similar, except that there is no effect of education; there are no patterns with respect to race for either gender. Overall, demographics and work place characteristics (other than pensions) do a relatively poor job of explaining retirement before age 62. The single best predictor of retirement is age, which may reflect changing tastes for work or the effect of eligibility for Social Security and Medicare.

Next, the author explores the composition of income by age and has several key findings. First, the income distribution compresses with age, as the retirement of those in the top half of the income distribution lowers their income, while those at the bottom see their incomes rise when they become eligible for Social Security. Second, government income makes up only a small share of total income until age 62 and a large share thereafter, as individuals become eligible for and claim Social Security benefits. Third, non-labor private income — including private pensions, annuity income, and capital income — is widely held, but its distribution is skewed, particularly in the case of capital income.

Finally, the author focuses on those retired before age 62 in order to understand poverty rates in this group and the role that different income sources may play in keeping individuals out of poverty. Poverty rates are about 10 percent for women throughout their late 50s and a bit lower for men, but those who are retired (have zero earnings) have poverty rates twice as high, around 20 percent. Interestingly, the gap in poverty rates narrows considerable after age 62, suggesting an important role for Social Security.

The last part of the analysis is an accounting exercise designed to measure the extent to which different income sources, on their own, would be sufficient to lift each family out of poverty. For women ages 55 to 66, husband's income is the most important source of income, lifting 56 percent of women over the poverty line. While most women (64 percent) have some capital income, fewer than one in five are lifted over the poverty line on this basis. Pension and annuity income is held by less than 20 percent of women and lifts only 5 percent over the poverty line (10 percent after age 62). Own Social Security benefits are (unsurprisingly) more important after age 62, yet even then lift only 11 percent of women out of poverty.

Results for men are a bit different. Spousal income is also the single most important means of poverty avoidance, but spousal government income is much less important, perhaps due in part to the fact that many wives are younger and may not have claimed Social Security benefits yet. Capital income and pension and annuity income are more important, lifting 26 and 17 percent of men out of poverty, respectively.

In concluding, the author notes, "four out of five people not working at ages 55 to 66 are able to avoid poverty through some combination of government and non-labor private income." Even so, poverty rates for early retirees are substantially higher than those for workers. This gap in poverty rates narrows after age 62, suggesting "among those remaining in poverty, Social Security entitlement at age 62 offers some respite."

This research was supported by the U.S. Social Security Administration through a grant to the NBER as part of the SSA Retirement Research Consortium. The author has disclosed a financial relationship of potential relevance for this research; further information is available at http://www.nber.org/papers/w18051.ack.

Are Consumers Forward-Looking in Responding to Health Care Prices?

The rising cost of public and private health insurance is a cause of mounting concern for policy makers, employers, and individuals. One frequently mentioned demand-side approach to controlling cost growth is to increase consumer cost-sharing, for example by incorporating larger deductibles or coinsurance into the design of insurance plans.

A number of past studies dating back to the landmark RAND Health Insurance Experiment of the 1970s have established that demand for health care is sensitive to price, suggesting the existence of what is often called "moral hazard" in health utilization. Yet these studies typically look at the relationship between demand and a single consumer price, even though the health insurance price schedule is usually non-linear, with consumers facing different prices at different points in the year depending on whether they have satisfied their deductible or hit their out-of-pocket maximum for the year.

This observation is the motivation for a new study **"Moral Hazard in Health Insurance: How Important is Forward-Looking Behavior?" (NBER Working Paper 17802)** by researchers **Aviva Aron-Dine, Liran Einav, Amy Finklestein**, and **Mark Cullen**. The authors ask whether consumers who face the same health care price today but are likely to face a different price at the end of the year make different choices in their usage of health care today. If so, this would suggest that consumers are forward-looking in their health care consumption decisions. On the other hand, if the future price is unrelated to current behavior, this would suggest that consumers are myopic in health care decisions (alternatively, consumers could be poorly-informed about the price schedule or liquidity constrained).

The challenge is to find a source of variation in future health care prices that is unrelated to health care consumption today (except through the desired price channel). For example, sicker individuals will face a lower price at the end of the year because they are more likely to satisfy their deductible and reach the out-of-pocket maximum, yet their higher health care consumption today may be more a function of their illness than a response to the lower future price.

The authors' solution is to compare workers who are hired (or join the company's health insurance plan) at different points in the year. A worker who starts work later in the year will face a pro-rated premium, but the same deductible and coinsurance amounts as a worker joining the firm on January 1. As a result, the worker who is hired later in the year is less likely to satisfy the deductible and therefore faces, on average, a higher expected end-of-the-year price. For their empirical analysis, the authors use data on medical claims for 7,000 employees of Alcoa, Inc. hired over the period 2004 through 2007, as well as similar data for nearly 100,000 employees hired by two other large firms in the early 2000s.

The study's results reject the hypothesis of completely myopic behavior. Health care utilization appears to respond to the future price of health care, with a ten percent increase in future cost resulting in a 4 to 6 percent decrease in utilization today. To put these results in context, the authors develop and calibrate a dynamic model of individual behavior. This exercise "suggests that, at least in the populations we study, individuals may be far from fully forward looking, but that, nonetheless, the extent of forward looking behavior we detect has a non-trivial impact for forecasting how medical spending will respond to changes in non-linear health insurance contracts."

The authors conclude, "these findings have important implications for estimating or forecasting the impact of alternative health insurance contracts on medical spending, which is a topic that receives great interest and attention both by academics and in the public policy arena."

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Patricia Danzon is a Research Associate in the NBER's Program on Health Care. She is the Celia Moh Professor at the Wharton School, University of Pennsylvania, where she is a Professor and former Chair of the Health Care Management Department.

Danzon is a member of the Institute of Medicine and the National Academy of Social Insurance. She is an Associate Editor of the *International Journal of Health Care Finance and Economics* and was previously an Associate Editor of the *American Economic Review*, the *Journal of Health Economics,* the *Journal of Risk and Insurance,* and the *Journal of Biolaw and Business.* She has served on the board of a biotech company and as a consultant to a wide variety of domestic and international groups on health care issues, including the World Bank, the U.S. Agency on International Development, the Global Alliance for Vaccines and Immunization (GAVI) and the American Medical Association. She recently received the Agency for Health Research and Quality (AHRQ)'s John Eisenberg Award for Excellence in Mentoring.

Danzon received a B.A. First Class in Politics, Philosophy, and Economics from Oxford University and a Ph.D. in Economics from the University of Chicago. Prior to joining

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Danzon's research interests are in the area of health economics, with a particular focus the biopharmaceutical industry, international health care systems and medical malpractice. She recently co-edited the *Oxford Handbook on the Biopharmaceutical Industry* and is currently editing the Pharmaceuticals and Medical Technology Section for the *Elsevier Encyclopedia of Health Economics*. Some of her recent research has explored exits from the vaccine market in the U.S., the importation of prescription drugs, pharmaceutical markets in emerging economies and international prices, regulation and availability of pharmaceuticals.

Danzon's personal interests include international travel and photography (www.patriciandanzonphoto.com).

NBER Profile: *Doug Staiger*

Doug Staiger is a Research Associate in the NBER's Programs on Health Care, Aging, Children, and Education. He is the John French Professor in Economics at Dartmouth College, where he has worked since 1998. Prior to joining the faculty at Dartmouth, he was a faculty member at Stanford University and at the Kennedy School of Government at Harvard University. Staiger holds a Ph.D. in Economics from the Massachusetts Institute of Technology and a B.A. in Economics and Mathematics from Williams College.

Staiger is the recipient of the 2007 Arrow Award for the best paper in health economics and the 2008 Eugene Garfield Economic Impact of Medical and Health Research Award. He has received grants from numerous government agencies and foundations, including the Bill & Melinda Gates Foundation, the Robert Wood Johnson Foundation, the National Institute on Aging, and the U.S. Department of Education. He is an Associate Editor at the *Review of Economics and Statistics,* and was previously Associate Editor of the *Journal of Health Economics* and the *Journal of Business and Economic Statistics.*

Staiger's current research in the field of health care investigates the productivity and quality of medical care, and labor markets for nurses and physicians. He also has interests in the field of education and is currently exploring teacher effectiveness in elementary and secondary education. His work has been published in leading economics and medical journals including *Econometrica, The Journal of Political Economy, The Quarterly Journal of Economics, JAMA,* and the *New England Journal of Medicine.*

Staiger lives in Hanover, New Hampshire, with his wife, Beth, and their four children, where he enjoys cross-country skiing in the woods behind his house.

Additional NBER Working Papers on Health and Aging

Because of space limitations, the listing of other current Working Papers of interest is regretfully omitted from this double issue.

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