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NBER NATIONAL BUREAU OF ECONOMIC RESEARCH

BULLETIN ON AGING AND HEALTH

Does Knowledge about Social Security Affect Behavior?

Decisions about when to retire and claim Social Security benefits influence the economic well-being of older workers and their families for the rest of their lives. Yet getting these decisions right can be challenging, as it requires understanding the details of Social Security rules and making complex calculations that incorporate uncertainty and trade-offs over time.

An important policy question is whether there are relatively simple and inexpensive ways to provide information that can potentially improve retirement decision-making and increase well-being. This is the subject of a new working paper by **Jeffrey Liebman** and **Erzo Luttmer**, “**Would People Behave Differently If They Better Understood Social Security? Evidence from a Field Experiment**” (NBER Working Paper 17287). The authors conduct an intervention that provides information about Social Security to older workers and examine its effect on their retirement behavior.

The intervention designed by the authors has two components, an informational brochure mailed to participants’ homes and an invitation to participate in a web-based tutorial. The brochure and tutorial both provide information on longevity, the relationship between retirement age and standard of living (e.g., the fact that Social Security benefits rise if the worker delays claiming or stays in the work force longer), and the Social Security earnings test. The information is provided through vignettes featuring actual

retirees as well as more standard text, figures, and statistics.

The authors use a sample of about 2,500 older workers, mostly aged 60 to 65, in their analysis, assigning half of them to receive the intervention, while the other half did not. One year after the intervention, participants are invited to take a follow-up survey to assess the effects of the intervention on their understanding of Social Security rules and on their retirement and claiming behavior.

The authors first examine the effect of the intervention on labor supply. They find that those who received the intervention were 4.2 percentage points more likely to be working for pay one year later (this compares to an overall participation rate of 74% in their sample). Interestingly, the effect is concentrated among women, who were 7.2 percentage points more likely to work if they received the intervention. The intervention also increased hours worked and earnings, again primarily for women. The authors do not detect an effect of their treatment on Social Security claiming behavior.

To better understand the results, the authors explore whether the intervention increased knowledge about different aspects of Social Security. They find that the intervention generally increased awareness of the benefits of working longer and delaying claiming. The treatment had a particularly strong effect on the perceived incentive for women to work more years, which is consistent with women’s stronger labor supply response to the intervention. For men, the primary effect of the intervention on knowledge was to

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increase their awareness of the return to delayed claiming between ages 66 and 70. Overall, these findings suggest that one important pathway through which the intervention affected behavior was by changing respondents’ perceptions of incentives.

To explain the gender differences in their findings, the authors note that while men’s and women’s knowledge of Social Security prior to the intervention was generally quite similar, women were much less likely to think that they got a “better deal” from Social Security if they worked longer. The authors speculate that many women believed that as secondary earners, their Social Security benefits would be determined on the basis of their husbands’ earnings records. While this was true for most women in the past, about 70 percent of women claiming today receive benefits based on their own

earnings record. As the authors note, “it is possible, therefore, that our intervention affected women by counteracting the notion that working women get no benefit on the margin from Social Security.”

Finally, the authors explore the effect of the intervention on expected future behavior, since the time frame of their survey does not allow them to observe all participants’ retirement and claiming decisions. They find that the intervention delayed the average expected claiming age by about 4 months for men, consistent with the finding that the intervention raised men’s aware-

ness of the gains from delaying claiming between ages 66 and 70.

The authors conclude that their experiment “demonstrates that a relatively mild informational intervention can have important impacts on the labor force participation of older individuals.” While their results suggest that having better information about Social Security program rules was at least part of the reason for the labor supply response, they caution that further information is needed about the mechanisms through which such interventions affect behavior. For example,

if the primary effect of interventions is to educate workers and allow them to make better choices, then interventions will generally improve well-being. By contrast, if the intervention’s effect came from delivering a general message such as “working to older ages is better,” it is less certain that the intervention will improve welfare, as this message might or might not constitute good advice for any individual worker.

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Determinants of Vaccine Supply

Vaccines can be an extremely cost-effective type of medical care, helping to slow or prevent the spread of infectious diseases, reduce medical expenditures, and save lives. But vaccines can suffer from supply interruptions and shortages, a situation exacerbated by the often small number of suppliers—or in some cases, the existence of a sole supplier—for a given vaccine.

The government plays a large role in the market for vaccines in the U.S. As with all pharmaceuticals, the Food and Drug Administration (FDA) must authorize new vaccines before they can enter the market and monitors their safety after introduction. The Centers for Disease Control and Prevention (CDC) issues recommendations for pediatric and adult vaccinations. The CDC is also an important purchaser of vaccines, in some cases buying over 50 percent of all doses of a particular vaccine sold on the market.

Is the large government role in purchasing vaccines partly to blame for the small number of suppliers for many vaccine products? This question is explored by researchers **Patricia Danzon** and **Nuno Pereira** in their paper “**Vaccine Supply: Effects of Regulation and Competition**” (NBER Working Paper 17205).

The conventional wisdom is that having the government as a large purchaser is a major contributor to lack of vaccine profitability and eventual exit

of vaccine suppliers. However, competition, limited market size, and cost structure may produce this result. The vaccine industry is characterized by large fixed costs of initial vaccine development as well as substantial “semi-fixed” costs of producing an individual batch (a process that may take 6 to 18 months) but low marginal costs of producing an additional dose, up to the batch limit, and low storability. If there are multiple competing suppliers with large sunk costs and low marginal costs, competition may drive the price low enough that it is relatively unattractive for multiple firms to remain in the market and for new firms to enter.

To explore this issue, the authors assemble a data set on the dates of grant and withdrawal of all vaccine licenses authorized by the FDA between 1901 and 2003. They explore how the firm’s decision to cease production of a particular vaccine relates to a number of factors, including the number of competing vaccines on the market, the time since the license was awarded, the liability environment, and, importantly, whether the government has recommended the vaccine for universal purchase and the role of the CDC as a purchaser of the vaccine.

The authors find that vaccines that face more competition are more likely to be withdrawn from the market, as are older vaccines. Vaccines that are recommended for universal purchase

are much less likely to exit. However, there is no effect of whether the CDC is a purchaser of the vaccine, the amount purchased, or the CDC price on exit. One possible explanation for these findings is that the negative effect of government purchase on price may be offset by the positive effect on volume.

Taking a global view, the authors note that there are likely to be high country-specific fixed costs, for example costs incurred in satisfying each country’s regulatory agency, and country-specific preferences about pediatric vaccine schedules. It may be unsurprising, then, that few vaccines are sold globally in exactly the same formulation and dosing and that each country has relatively few producers of any given vaccine. Interestingly, for several vaccine types the U.S. has fewer suppliers than countries with a smaller market and a higher level of government purchase. This suggests that more stringent and costly regulatory requirements may reduce the number of suppliers.

Finally, the authors turn to a recent, well-publicized case study of vaccine scarcity, the 2004–05 influenza vaccine shortage. They note that while several suppliers did exit the market in the years before the shortage, this cannot be blamed on government purchase and price controls, as less than 20 percent of the flu vaccine is publicly purchased.

The authors conclude that U.S. vaccine markets are likely to have either one

or a few suppliers of each vaccine type once the market is mature. They argue that this is not due to the government's role as a purchaser of vaccines. Rather, it is the result of high fixed costs of vaccine development, price-sensitive demand in the private market (physician and hospital receive a fixed reimbursement per vaccination and thus capture any mar-

gin between their cost and the reimbursement), and dynamic quality competition in which vaccine makers have weak incentives to invest in existing products because they are likely to be supplanted by new and improved products, such as combination vaccines.

In the long run, scientific advances that improve the storability of vaccines

or reduce the lead time required for production may help alleviate vaccine shortages. In the short term, however, the authors warn that new technologies are more likely to "exacerbate supply shortages, by undermining incentives to invest in older plants that are destined to become obsolete."

Can Comparative Effectiveness Research Help Reduce Health Care Costs?

The U.S. and other developed countries are struggling with rising health care costs that absorb an ever-larger fraction of government and private budgets, threatening their ability to maintain spending on other goods and services. What is the "right" amount of money to spend on health care, and how should this money be allocated across different type of health care services to generate the greatest health benefits?

While there are no easy answers to these big questions, there may be tools that can help policy makers and health researchers delve into them. In **"The Pragmatist's Guide to Comparative Effectiveness Research"** (NBER Working Paper 16990), researchers **Amitabh Chandra, Anupam Jena, and Jonathan Skinner** discuss the merits of comparative effectiveness research and its cousin, cost-effectiveness analysis.

Comparative effectiveness research is defined by the Institute of Medicine as "the generation and synthesis of evidence that compares the benefits and harms of alternative methods to prevent, diagnose, treat, and monitor a clinical condition or improve the delivery of care." One commonly used measure of health benefits is "quality-adjusted life years" or QALYs, a measure of life-years saved that discounts the value of the year if the individual is in less-than-perfect health. Cost-effectiveness analysis goes a step further, examining both the benefits and costs of different medical treatments.

An example may help to illustrate the difference between the two methods. Percutaneous coronary intervention (PCI) is a technique in which narrowed or blocked blood vessels of the

heart are opened by inserting an inflatable balloon and may then be kept open by introducing a coronary stent. PCI dramatically improves survival after a heart attack and compares favorably with drug therapy on both a comparative and cost effectiveness basis. When PCI is used for patients with stable angina, however, the health benefits are only slightly better than with drug therapy, while the costs are much greater. For this group, PCI passes the comparative effectiveness test but fails the cost effectiveness test because the modest health gains (when valued at standard levels, for example \$100,000 per QALY) are dwarfed by the costs.

Economists are naturally inclined towards cost effectiveness because of its consideration of costs as well as benefits. Using cost effectiveness to determine our level of health spending would ensure that we would spend just to the point where our resources would generate greater value if expended elsewhere. However, the application of this criterion would mean that some services with positive health benefits, like PCI for patients with angina, would not be covered by insurance.

While sympathetic to the economist's point of view, the authors argue that comparative effectiveness research "still holds promise." First, it sidesteps objections from policy makers and voters to the idea of rationing access to health services based on cost effectiveness. Indeed, when rationing was tried in the Medicaid program in Oregon in the 1990s, it was met with resistance and the experiment ultimately failed. In the 2010 health care law, Congress prohibited the use of "a dollars-per-qual-

ity adjusted life year (or similar measure...) as a threshold to establish what type of health care is cost effective or recommended."

Second, there is little or no evidence of the comparative effectiveness of treatments for many conditions, since most studies compare a given treatment to a placebo rather than head-to-head with competing treatments. Even in the absence of any explicit consideration of costs, comparative effectiveness studies add to the public knowledge base about what works in health care and what does not, and may lead to cost savings. For example, a recent study found that patients with terminal lung cancer who were randomly assigned to receive early palliative care rather than standard chemotherapy had better quality of life, longer survival, and lower costs.

Critics of comparative effectiveness research point to several challenges. The first is patient heterogeneity. While a study may establish that treatment A yields greater health benefits than treatment B for the typical patient, there may be subpopulations who fare better with treatment B. In theory this problem can be overcome by conducting studies of relevant subpopulations, but cost and difficulties in identifying which groups to study may be difficult obstacles in practice. As an alternative, information from comparative effectiveness studies could be used to "nudge" patients away from less effective therapies (for example, by imposing higher co-payments) while maintaining access for those who truly need it.

A related issue is heterogeneity in provider skill. The results of a study conducted at a teaching hospital may

not apply to all providers, for example if there are economies of scale, learning by doing, or spillovers to other therapies.

A final concern is the cost of comparative effectiveness research. Randomized controlled trials are the gold standard for establishing the health benefits of medical treatments, but they can be extremely expensive—for example, the final phase of testing by pharmaceutical companies seeking approval for a new drug can cost upwards of \$100 Million. However, “given that the United States now spends close to 18 percent of GDP on healthcare, it seems reasonable to pay a small fraction of this cost towards figuring out what works and what does not.” If the research “bends the cost curve trajectory, it could be considered a potential investment.” No individual

insurer will reap all the benefits of such research, indicating that it will be underprovided and that there is “a powerful role for federal funding of these trials.”

Can comparative and cost effectiveness research help to moderate the growth of health care costs? The authors’ answer is “a guarded yes: the research provides necessary but not sufficient information to change the behavior of patients and providers.” They caution that “the inability or unwillingness of providers and policymakers to use the information gleaned from comparative effectiveness research to make actual changes in reimbursement or patient cost-sharing” may be as big an obstacle as the current paucity of research. They suggest that insurers might pay providers more for treatments shown to produce

better outcomes rather than covering some treatments and not others, easing concerns about rationing.

Finally, the authors note that studies of the relative efficiency of different health care delivery systems may offer a particularly fertile area for study, given long-standing concerns about the excess costs of the U.S.’s complex and fragmented health care system. The authors conclude “comparative effectiveness research and its half-sibling cost effectiveness research will provide a solid foundation for reform, once politicians and voters understand how dismal is the alternative.”

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NBER Profile: *Andrew Samwick*

Andrew Samwick is a Research Associate in the NBER’s Programs on Aging and Public Economics and the co-chair of the NBER’s Social Security Working Group. He is the Sandra L. and Arthur L. Irving ‘72a, P’10 Professor of Economics and Director of the Nelson A. Rockefeller Center for Public Policy and the Social Sciences at Dartmouth College.

Samwick served as the Chief Economist on the staff of the Council of Economic Advisers in 2003–04. He has testified several times before Congress on social security’s financial condition and its possible reform, and in 1999 and 2011, he served on the Social Security Advisory Board’s Technical Panel on Assumptions and Methods. He is an editor of *Economics Letters* and blogs about economics and current events at Capital Gains and Games (www.capitalgainsandgames.com).

Samwick’s research interests are in the areas of pensions and saving, executive compensation, taxation and portfolio choice, and social security. In recent work, he and Dartmouth

and NBER co-author Erzo Luttmer investigate the welfare costs of perceived political uncertainty in social security. Through the use of an original internet survey, they show that on average households would be willing to forego 4–6 percent of the benefits they are supposed to get under current law to remove the political uncertainty associated with their future benefits. In current work, he is comparing the efficiency and equity properties of means-testing federal health entitlement benefits based on current income to alternatives based on concepts of lifetime average income that underlie the calculation of social security benefits.

Samwick received his A.B. in Economics summa cum laude from Harvard College and his Ph.D. in Economics from the Massachusetts Institute of Technology. He has been a visiting professor at Columbia University’s Graduate School of Business. In 2009, he was selected as the New Hampshire Professor of the Year by the Carnegie Foundation for the Advancement of Teaching and the Council for the Advancement



and Support of Education.

Samwick lives in Norwich, Vermont, with his wife, Terry, and their two children. They enjoy skiing down nearby mountains when they are covered with snow and hiking up them when they are not. Samwick serves as a trustee of the Montshire Museum of Science and a director of the Hanover Conservancy and the Ledyard Financial Group (LFGP).

Abstracts of Selected Recent NBER Working Papers

WP 17107

Annamaria Lusardi, Olivia S. Mitchell
**Financial Literacy around the World:
An Overview**

In an increasingly risky and globalized marketplace, people must be able to make well-informed financial decisions. Yet new international research demonstrates that financial illiteracy is widespread when financial markets are well developed as in Germany, the Netherlands, Sweden, Japan, Italy, New Zealand, and the United States, or when they are changing rapidly as in Russia. Further, across these countries, we show that the older population believes itself well informed, even though it is actually less well informed than average. Other common patterns are also evident: women are less financially literate than men and are aware of this shortfall. More educated people are more informed, yet education is far from a perfect proxy for literacy. There are also ethnic/racial and regional differences: city-dwellers in Russia are better informed than their rural counterparts, while in the U.S., African Americans and Hispanics are relatively less financially literate than others. Moreover, the more financially knowledgeable are also those most likely to plan for retirement. In fact, answering one additional financial question correctly is associated with a 3–4 percentage point higher chance of planning for retirement in countries as diverse as Germany, the U.S., Japan, and Sweden; in the Netherlands, it boosts planning by 10 percentage points. Finally, using instrumental variables, we show that these estimates probably underestimate the effects of financial literacy on retirement planning. In sum, around the world, financial literacy is critical to retirement security.

WP 17118

John Beshears, James J. Choi, David Laibson, Brigitte C. Madrian
The Availability and Utilization of 401(k) Loans

We document the loan provisions in 401(k) savings plans and how participants use 401(k) loans. Although only about 22% of savings plan participants who are allowed to borrow from their 401(k) have such a loan at any given point in time, almost half had used a 401(k) loan over a longer, seven-year horizon. The probability of having a loan follows a hump-shaped pattern with respect to age, job tenure, account balance, and salary, but conditional on having a loan, loan size as a fraction of 401(k) balances declines with respect to these variables. Participants are less likely to use loans in plans that charge a higher interest rate, and loans are smaller when plans allow fewer simultaneously outstanding loans, impose a shorter maximum possible loan duration, or charge a lower interest rate.

WP 17148

David M. Cutler, Mary Beth Landrum
**Dimensions of Health in the Elderly
Population**

In this paper, we characterize the multi-faceted health of the elderly and understand how health along multiple dimensions has changed over time. Our data are from the Medicare Current Beneficiary Survey, 1991–2007. We show that 19 measures of health can be combined into three broad categories: a first dimension representing severe physical and social incapacity such as difficulty dressing or bathing; a second dimension representing less severe difficulty such as walking long distances or lifting heavy objects; and a third dimension representing vision and hearing impairment. These dimensions have changed at different rates over time. The first and third have declined rapidly over time, while the second has not. The improvement in health is not due to differential mortality of the sick or a new generation of more healthy people entering old age. Rather, the aging process itself is associated with less rapid deterioration in health. We speculate about the factors that may lead to this.

WP 17168

Jonathan Gruber
**The Impacts of the Affordable Care Act:
How Reasonable Are the Projections?**

The Patient Protection and Affordable Care Act (ACA) is the most comprehensive reform of the U.S. medical system in at least 45 years. The ACA transforms the non-group insurance market in the United States, mandates that most residents have health insurance, significantly expands public insurance and subsidizes private insurance coverage, raises revenues from a variety of new taxes, and reduces and reorganizes spending under the nation's largest health insurance plan, Medicare. Projecting the impacts of such fundamental reform to the health care system is fraught with difficulty. But such projections were required for the legislative process, and were delivered by the Congressional Budget Office (CBO). This paper discusses the projected impact of the ACA in more detail, and describes the evidence that sheds light upon the accuracy of the projections. It begins by reviewing in broad details the structure of the ACA and then reviews evidence from a key case study that informs our understanding of the ACA's impacts: a comparable health reform that was carried out in Massachusetts four years earlier. The paper discusses the key results from that earlier reform and what they might imply for the impacts of the ACA. The paper ends with a discussion of the projected impact of the ACA and offers some observations on those estimates.

WP 17203

Michael D. Hurd, Susann Rohwedder
Economic Preparation for Retirement

We define and estimate measures of economic preparation for retirement based on a complete inventory of economic resources while taking into account the risk of living to advanced old age and the risk of high out-of-pocket spending for health care services. We ask whether, in

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a sample of 66–69 year-olds, observed economic resources could support with high probability a life-cycle consumption path anchored at the initial level of consumption until the end of life. We account for taxes, widowhood, differential mortality and out-of-pocket health spending risk. We find that 71% of persons in our target age group are adequately prepared according to our definitions, but there is substantial variation by observable characteristics: 80% of married persons are adequately prepared compared with just 55% of single persons. We estimate that a reduction in Social Security benefits of 30 percent would reduce the fraction adequately prepared by 7.8 percentage points among married persons and by as much as 10.7 percentage points among single persons.

WP 17223

Cathy J. Bradley, David Neumark, Meryl I. Motika

The Effects of Health Shocks on Employment and Health Insurance: The Role of Employer-Provided Health Insurance

We study how men's dependence on their own employer for health insurance affects labor supply responses and loss of health insurance coverage when faced with a serious health shock. Men with employment-contingent health insurance (ECHI) are more likely to remain working following some kinds of adverse health shocks, and are more likely to lose insurance. With the passage of health care reform, the tendency of men with ECHI as opposed to other sources of insurance to remain employed following a health shock may be diminished, along with the likelihood of losing health insurance.

WP 17300

Guy David, Richard Lindrooth, Lorens A. Helmchen, Lawton R. Burns
Do Hospitals Cross Subsidize?

Cross-subsidies are often considered the principal mechanism through which hospitals provide unprofitable care. Yet, hospitals' reliance on and extent of cross-subsidization are difficult to establish. We exploit entry by cardiac specialty hospitals as an exogenous shock to incumbent hospitals' profitability and in turn to their ability to cross-subsidize unprofitable services. Using patient-level data from general short-term hospitals in Arizona and Colorado before and after entry, we find that the hospitals most exposed to entry reduced their provision of services considered to be unprofitable (psychiatric, substance-abuse, and trauma care) and expanded their admissions for neurosurgery, a highly profitable service.

WP 17310

Janet Currie, Erdal Tekin

Is the Foreclosure Crisis Making Us Sick?

We investigate the relationship between foreclosure activity and the health of residents using zip code level longitudinal data. We focus on Arizona, California, Florida, and New Jersey, four states that have been among the hardest hit by the foreclosure crisis. We combine foreclosure data for 2005 to 2009 from RealtyTrac with data on emergency room visits and hospital discharges. Our zip code level quarterly data allow us to control for many potential confounding factors through the inclusion of fixed effects for each zip code as well as for each combination of county, quarter, and year. We find that an increase in the number of foreclosures is associated with increases in medical visits for mental health (anxiety and suicide attempts), for preventable conditions (such as hypertension), and for a broad array of physical complaints that are plausibly stress-related. They are not related to visits for cancer morbidity, which arguably should not respond as rapidly to stress. Foreclosures also have a zero or negative effect on elective procedures, as one might expect. Age specific results suggest that the

foreclosure crisis is having its most harmful effects on individuals 20 to 49. We also find that larger effects for African-Americans and Hispanics than for whites, consistent with the perception that minorities have been particularly hard hit.

WP 17410

Jeffrey R. Kling, Sendhil Mullainathan, Eldar Shafir, Lee Vermeulen, Marian Wrobel
Comparison Friction: Experimental Evidence from Medicare Drug Plans

Consumers need information to compare alternatives for markets to function efficiently. Recognizing this, public policies often pair competition with easy access to comparative information. The implicit assumption is that comparison friction—the wedge between the availability of comparative information and consumers' use of it—is inconsequential because information is readily available and consumers will access this information and make effective choices. We examine the extent of comparison friction in the market for Medicare Part D prescription drug plans in the United States. In a randomized field experiment, an intervention group received a letter with personalized cost information. That information was readily available for free and widely advertised. However, this additional step—providing the information rather than having consumers actively access it—had an impact. Plan switching was 28 percent in the intervention group, versus 17 percent in the comparison group, and the intervention caused an average decline in predicted consumer cost of about \$100 per year among letter recipients—roughly 5 percent of the cost in the comparison group. Our results suggest that comparison friction can be large even when the cost of acquiring information is small, and may be relevant for a wide range of public policies that incorporate consumer choice.

NBER

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