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Disability Insurance and Retirement Around the World

In the U.S. and many developed countries, older men's labor force participation declined steeply after WWII, during the same period that social security and disability insurance programs were growing rapidly. Since the 1990s, labor force participation has rebounded in many of these countries. Many countries have also made reforms to their pension programs over the past two decades, such as increasing the retirement age or reducing the generosity of the benefit formula.

What are the effects of pension program provisions on the labor force participation of older persons? For over a decade, the International Social Security (ISS) project has used the vast differences in program provisions across a dozen developed countries as a natural laboratory to study this question. A central finding of the ISS project is that the provisions of social security and related government programs provide strong incentives for workers to leave the labor force at relatively young ages, and that reducing the inducement to leave the labor force can lead workers to delay retirement and yield large improvements in the financial position of government budgets.

In "**Social Security Programs and Retirement Around the World: Disability Insurance and Retirement — Introduction and Summary**" (**NBER Working Paper** No. **20120**), **Courtney Coile**, **Kevin Milligan**, and **David Wise** summarize the findings of the most recent phase of the ongoing ISS project, which reflects work by three dozen researchers in the represented countries. This phase focuses on the effect of disability insurance (DI) programs, asking how changing the provisions of country DI programs would affect retirement behavior.

The authors begin by pointing out that the share of men age 60 to 64 on DI varies substantially across countries, from 16 percent in the U.K. to 14 percent in the U.S. to 6 percent in France and 2 percent in Japan in 2009.

Trends in DI participation over time are also informative. In most of the countries, DI participation rose until the late-1980s to mid-1990s and fell dramatically thereafter. The DI participation rate for men age 60 to 64 peaked at or above 20 percent in six of these countries, reaching 36 percent in Sweden in 1993. Since then, participation rates have declined by 30 to 50 percent. The U.S. is a distinct outlier from this trend, as participation dipped briefly after 1980 but has climbed steadily since then.

Are these differences in DI participation across countries and within countries over time driven solely by differences in health? The sheer magnitude of cross-country differences casts doubt on this theory, as does the fact that mortality improved steadily in all countries during the period that participation rates first rose then fell.

Education may be another factor affecting DI participation. In all countries, men in the lowest education group are 3 to 7 times more likely to be on DI than men in the highest education group. In part, this reflects the fact that the less educated tend to be in poorer health. However, even among men of similar health status, education matters — U.S. men in the lowest quintile of health who are high school dropouts are 50 percent more likely to be on DI than are college graduates in similar health.

Finally, the time trends suggest that there may be a relationship between DI participation and employment. In Canada, Denmark, Italy, the Netherlands, Sweden, and the U.K., the employment rate fell as DI participation increased and then reversed course and rose as DI participation decreased.

To explore this relationship further, members of the ISS project team in each country conduct empirical analyses. The first step is constructing a retirement incentive measure that

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reflects how the provisions of the country's social security, DI, and other programs provide a greater or lesser return to continued work at a given age for each worker. This process incorporates the potential value of retirement via different pathways, for example social security and DI, into a single measure, the "inclusive option value."

Next, the researchers construct a comprehensive health index that aggregates information from over 20 health indicators. This index can be constructed in a comparable way across countries and has been validated by its strong correlation to future health events and mortality. Finally, the researchers estimate models that relate a worker's labor force participation to the inclusive option value and health index measures.

The researchers find that the inclusive option value measure has a strong and highly significant relationship with retirement in nearly all of the countries. The authors then use these results to simulate the effect of increasing the stringency of admission to the DI program. In the U.S., for example, eliminating eligibility for DI for one-third of DI participants is estimated to increase years of work between ages 50 and 69 by 5 percent among current DI participants. Comparable estimates in other countries range from 2 to 13 percent. Thus, the results of the empirical analysis support the theory that making it easier or harder for workers to access the DI program can affect labor supply at older ages.

The authors conclude, "with large increases in life expectancy in all participating countries, there is considerable interest in prolonging work lives. Indeed there has been a large increase in the employment of men in most of the participating countries since the late 1980s and mid-1990s — the same period over which DI participation has been declining in most countries." In future work, the ISS team plans to explore how the capacity to work at older ages varies across countries and over time.

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The Affordable Care Act Young Adult Mandate and Use of Inpatient Care

One of the key potential benefits of increasing health insurance coverage is providing greater access to health care. Yet it is notoriously difficult to find good evidence of the effect of having insurance on utilization, since people who have insurance may differ from those who do not — for example, they may be more educated or less healthy – in ways that could also affect their use of health care.

Researchers **Yaa Akosa Antwi**, **Asako Moriya**, and **Kosali Simon** take up this question in their paper, "**Access to Health Insurance and the Use of Inpatient Medical Care: Evidence from the Affordable Care Act Young Adult Mandate**" (**NBER Working Paper No. 20202**). The authors note that the Affordable Care Act (ACA)'s young adult mandate provides a valuable opportunity to explore the effect of health insurance on utilization.

The mandate allows young adults to remain as dependents on their parents' private health insurance plans until they turn 26 years old. This provision of the ACA went into effect in September 2010. The past literature has established that the mandate increased insurance coverage among young adults, but has not explored the mandate's effect on young adults' use of care.

The paper focuses on inpatient admissions, making use of a nationally representative database, the Nationwide Inpatient Sample. Inpatient visits are rare but costly events for the young adult population — in 2008, only about 5 percent of people age 19 to 25 had an inpatient visit, but these visits accounted for over 30 percent of health care expenditures. The authors have data on nearly 800,000 non-birth hospital visits during the period 2007 to 2011.

The authors look at use of any inpatient care as well as care related to treatment of mental health issues. Mental health care is of particular interest for this age group because the life changes that occur during the transition from adolescence to adulthood can trigger mental health problems. In fact, mental disorder is the second most common reason why young adults seek hospital-based medical care, after childbirth. Moreover, past research has established that the use of mental health care may be more sensitive to price than the use of other health care services, and thus more likely to be affected by insurance coverage.

The empirical strategy employed by the authors is to examine how inpatient care use changed after the law was implemented for the group potentially affected by the mandate, young adults ages 19 to 25. Young adults ages 27 to 29, who were unaffected by the mandate, are used as a control group to pick up any trends over time in the use of care that are unrelated to the mandate. The authors confirm that young adults ages 19 to 25 and 27 to 29 had similar visit trends before the law.

The authors find that inpatient visits increased by 3.5 percent in the affected group, those ages 19 to 25, relative to the unaffected group, following the mandate's implementation. This increase is driven primarily by visits that do not originate in the emergency room (ER), which are more likely to be scheduled and thus may be more sensitive to price.

The effect of the mandate on young adults' use of mental health care is even larger, as visits increased by 9 percent. Unlike general admis-

sions, much of the increase came from visits that originated in the ER.

The authors also show that the mandate decreased the share of inpatient admissions from uninsured patients by nearly 3 percent, while increasing the share from patients with private health insurance. The share of admissions from Medicaid patients also declined after the mandate's implementation, indicating that young adults may have found remaining on their parents' insurance plan to be a more attractive source of coverage than Medicaid.

The authors note that their findings are consistent with the hypothesis that health insurance increases the use of medical services, including inpatient care. They note that their results on the use of hospital-based mental health services differ from a previous study of the effect of health reform in Massachusetts. This "could reflect the availability of outpatient mental health care providers in Massachusetts that might be absent in other states." They note that "future work using household- or individual-level surveys as well as more comprehensive hospital data sets will help us better understand the mechanism behind the increase in inpatient care use found in this study, as well as shed light on the effects of the law on the use of care in other settings."

Teaching Financial Planning through "Five Steps"

Americans are increasingly responsible for planning for their own retirement security, as private pensions shift to a defined contribution (401(k)-style) model that requires individuals to decide whether, how much, and how to save and invest for retirement. While financial knowledge has been convincingly linked to improved financial behavior, basic understanding of economics and finance remains low among the general population and across all age, income, and education groups.

What is the best way to teach basic economics and finance concepts? Some past research suggests that intensive interactive programs can have sizeable effects on participation in retirement savings plans, but these programs can be costly in terms of money and time and may not scale easily to an audience that is larger or different than the one for which they were designed. More limited interventions such as distributing printed materials or hosting a one-time benefits fair generally have smaller effects.

In **"Five Steps to Planning Success: Experimental Evidence from U.S. Households" (NBER Working Paper No. 20203)**, researchers **Aileen Heinberg, Angela Hung, Arie Kapteyn, Annamaria Lusardi, Anya Samek,** and **Joanne Yoong** take up the question of how to provide effective *yet highly-scalable* financial education for the general population.

The authors design a financial education program called Five Steps that draws on insights from psychology to more effectively deliver information about five core concepts underlying financial planning for retirement. The program's format is suitable for easy, low-cost replication and mass dissemination.

The first concept addressed by the program is compound interest. People tend to underestimate how compound interest grows, a phenomenon referred to as future value bias. If individuals can be shown how quickly interest accumulates over time, they may realize the importance of starting to save early and the dangers of borrowing at high interest rates. The second concept is inflation. Many people suffer from money illusion, meaning that they think in terms of nominal rather than real monetary values. Correcting money illusion can help people to understand the real rate of return earned on investments and to appreciate that a fixed nominal stream of payments has falling purchasing power over time.

The third concept is risk diversification. Research has found that individuals often view their company stock as a safer investment than a diversified stock fund and follow "naïve diversification" strategies such as dividing contributions equally among all available funds, which may needlessly expose them to higher return risk. The fourth concept is the tax treatment of retirement savings vehicles such as 401(k) s and IRAs. Investing in such vehicles conveys significant tax benefits, but because people possess limited knowledge and attention and often do not deliberatively consider all features of complex decisions, they may overlook these benefits. The final concept is employer matches of defined contribution savings plans. Matches greatly increase the rate of return to retirement plan contributions, but many employees do not take full advantage of these matches, behavior that research suggests is not fully rational.

In creating the Five Steps program, these five concepts were embedded in simple short stories. The stories had a number of features designed to increase their impact, based on principles of psychology and marketing. First, the stories were dialogues between two people, with a few key take-away points and minimal jargon. The stories followed a narrative in which characters accomplished desired tasks and achieved their goals after overcoming obstacles. As the program was targeted towards young adults, when the narratives were turned into videos, the actors employed were in their 20s and 30s and were filmed in everyday settings. All of these choices were made in order to heighten the viewer's comprehension of program content and the viewer's belief that he or she could learn from the program and successfully perform the modeled behaviors.

The program was provided using two alternative delivery methods, written narratives and videos. Past research suggests that video content may have greater impact by providing an observational learning experience and creating the

opportunity for cognitive engagement.

The program was tested through a field experiment using the RAND American Life Panel (ALP). The ALP is a sample of respondents who are regularly interviewed over the internet and are representative of the US population. At the time of the experiment, the ALP comprised about 3000 respondents (currently, about 6000). Survey respondents were randomly assigned to receive either written narratives or videos, though all respondents saw both the video and the narrative for one of the five topics. Respondents were administered a baseline survey to assess their financial knowledge several months before being exposed to the program, then were re-surveyed immediately after exposure as well as about six months later.

The results indicate a number of positive effects of the treatment on financial knowledge. Interestingly, effects are larger when baseline knowledge is modest, as with the tax treatment of retirement savings plans, and smaller when knowledge is higher, as with compound interest and inflation. While the video treatments have somewhat more positive effects than the narrative treatments, this is not uniformly true. Respondents also do not appear to learn more when they see both the video and written narrative versus when they receive only one of these treatments. In general, the effects of the program are somewhat stronger for women, younger respondents, and for those with higher incomes.

In the follow-up survey, positive effects of the treatment remained but were much smaller, on the order of one-third to one-fifth the size of the original effect.

Overall, the authors find that their Five Steps program has sizeable short-run effects on objective measures of respondent knowledge. The authors note that the ultimate goal of the study is to examine effects on behavior, with outcomes to be collected in a follow-up survey. They conclude, "in general, the program presented is an example of how field experiments can contribute to better understanding of the effectiveness of financial literacy interventions."

This research was performed pursuant to a grant from the U.S. Social Security Administration funded as part of the Financial Literacy Research Consortium.

NBER Profile: *Arie Kapteyn*

Arie Kapteyn is Professor of Economics and the founding Executive Director of the Dornsife Center for Economic and Social Research at the University of Southern California.

Prior to his appointment at USC in 2012, Kapteyn was a Senior Economist and Director of the Labor & Population division of the RAND Corporation. Before joining RAND in 2001, Kapteyn held a chair in econometrics at Tilburg University in the Netherlands, where he was also dean of the Faculty of Economics and Business Administration and founder and director of CentER (a research institute and graduate school) and of CentERdata (a survey research institute). He has held visiting positions at Princeton University, the California Institute of Technology, Australian National University, the University of Canterbury, New Zealand, and the University of Bristol, U.K. In 2006, he received a knighthood in the order of the Netherlands Lion.

Kapteyn is a fellow of the Econometric Society, past president of the European Society for Population Economics, and corresponding member of the Royal Netherlands Academy of Arts and Sciences. He received an M.A. in econometrics from Erasmus University Rotterdam, an M.A. in agricultural economics from Wageningen University, and a Ph.D. from Leiden University, all in the Netherlands.

Much of Professor Kapteyn's recent research is in the field of aging and economic decision making, with papers on topics related to retirement, consumption and savings, pensions and Social Security, disability, economic well-being of the elderly, and portfolio choice. He currently leads projects on several topics, including the measurement and explanation of subjective well-being, the analysis of health and economic determinants of retirement in the U.S. and Western Europe, and a center on the analysis of economic decision making related to retirement and saving and investing for retirement. He is a pioneer in the design and organization of probability Internet panels (where respondents without prior Internet are provided with Internet connections and the required hardware). He was the founding director of the CentERpanel in the Netherlands, the oldest existing probability Internet panel in the world. While at RAND

he founded the American Life Panel, a nationally representative sample of 6000 households. Since he joined USC he founded yet another Internet panel: the Understanding America Study, which currently covers about 2,000 households. He generally has a strong interest in the use of new technology to improve data collection in the social sciences.

In his free time, Kapteyn likes to ride his bike—a decidedly less new technology.

Abstracts of Selected Recent NBER Working Papers

WP 19793
Timothy Moore
The Employment Effect of Terminating Disability Benefits

While time out of work normally decreases subsequent employment, Social Security Disability Insurance (DI) may improve the health of disabled individuals and increase their ability to work. In this paper, I examine the employment of individuals who lost DI eligibility after the 1996 removal of drug and alcohol addictions as qualifying conditions. Approximately one-fifth started earning at levels that would have disqualified them for DI, an employment response that is large relative to their work histories. This response is largest for those who had received DI for 2.5–3 years, when it is 50% larger than for those who had received DI for less than one year and 30% larger than for those who had received DI for six years. A similar relationship between time on DI and the employment response is found among those whose primary disability was an addiction, mental disorder, or musculoskeletal condition, but not those with chronic conditions like heart or liver disease. The results suggest that a period of public assistance can maximize the employment of some disabled individuals.

WP 19884
Jessamyn Schaller, Ann Huff Stevens
Short-Run Effects of Job Loss on Health Conditions, Health Insurance, and Health Care Utilization

Job loss in the United States is associated with long-term reductions in income and long-term increases in mortality rates. This paper examines the short- to medium-term changes in health, health care access, and health care utilization after job loss that lead to these long-term effects. Using a sample with more than 9800 individual job losses and longitudinal data on a wide variety of health-related measures and outcomes, we show that job loss results in worse self-reported health, including mental health, but is not associated with statistically significant increases in a variety of specific chronic conditions. Among the full sample of workers, we see reductions in insurance coverage, but little evidence of reductions in health care utilization after job loss. Among the subset of displaced workers for whom the lost job was their primary source of insurance we do see reductions in doctor's visits and prescription drug usage. These results suggest that access to health insurance and care may be an important part of the health effects of job loss for some workers. The pattern of results is also consistent with a significant role for stress in generating long-term health consequences after job loss.

WP 19954
Silvia Barcellos, Mireille Jacobsen
The Effects of Medicare on Medical Expenditure Risk and Financial Strain

We estimate the current impact of Medicare on medical expenditure risk and financial strain. At age 65, out-of-pocket expenditures drop by 33% at the mean and 53% among the top 5% of spenders. The fraction of the population with out- of-pocket medical expenditures above income drops by more than half. Medical- related financial strain, such as problems paying bills, is dramatically reduced. Using a stylized expected utility framework, the gain from reducing out-of-pocket expenditures alone accounts for 18% of the social costs of financing Medicare. This calculation ignores the benefits of reduced financial strain and direct health improvements due to Medicare.

WP 20017
Jason Hockenberry, Lorens Helmchen
The Nature of Surgeon Human Capital Depreciation

To test how practice interruptions affect worker productivity, we estimate how temporal breaks affect surgeons' performance of coronary artery bypass grafting (CABG). Using a sample of 188 surgeons who performed 56,315 CABG procedures in Pennsylvania between 2006 and 2010, we find that a surgeon's additional day away from the operating room raised patients' inpatient mortality risk by up to 0.067 percentage points (2.4% relative effect) but reduced total hospitalization costs by up to 0.59 percentage points. In analyses of 93 high-volume surgeons treating 9,853 patients admitted via an emergency department, where temporal distance effects are most plausibly exogenous, an additional day away raised mortality risk by 0.398 percentage points (11.4% relative effect) but reduced cost by up to 1.396 percentage points. These estimates imply a cost per life-year saved ranging from $7,871 to $18,500, rendering additional treatment intensity within surgery cost-effective at conventional cutoffs. Our findings are consistent with the hypothesis that after returning from temporal breaks surgeons may be less likely to recognize and address life-threatening complications, in turn reducing resource use. This form of human capital loss would explain the decrease in worker productivity and the simultaneous reduction in input use.

WP 20021
Joseph Newhouse, Mary Price, J. Michael McWilliams, John Hsu, Thomas McGuire
How Much Favorable Selection Is Left in Medicare Advantage?

There are two types of selection models in the health economics literature. One focuses on choice between a fixed set of contracts. Consumers with greater demand for medical care services prefer contracts with more generous reimbursement, resulting in a suboptimal proportion of consumers in such contracts in equilibrium. In extreme cases more generous contracts may disappear (the "death spiral"). In the other model insurers tailor the contracts they offer consumers to attract profitable consumers. An equilibrium may or may not exist in such models, but if it exists it is not first best. The Medicare Advantage program offers an opportunity to study these models empirically, although unlike the models in the economics literature there is a regulator with various tools to address selection. One such tool is risk adjustment, or making budget neutral transfers among insurers using observable characteristics of enrollees that predict spending. Medicare drastically changed its risk adjustment program starting in 2004 and made a number of other changes to reduce selection as well. Previous work has argued that the changes worsened selection. We show, using a much larger data set, that this was not the case, but that some inherent selection may remain.

Additional NBER Working Papers on Health and Aging

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WP 20132
John List, Anya Samek
The Behavioralist as Nutritionist: Leveraging Behavioral Economic to Improve Child Food Choice and Consumption

Childhood obesity has reached epidemic proportions in the U.S., with now almost a third of children ages 2–19 deemed overweight or obese. In this study, we leverage recent findings from behavioral economics to explore new approaches to tackling one aspect of childhood obesity: food choice and consumption. Using a field experiment where we include more than 1,500 children, we report several key insights. First, we find that individual incentives can have large influences: in the control, only 17% of children prefer the healthy snack, whereas the introduction of small incentives increases take-up of the healthy snack to roughly 75%, more than a four-fold increase. There is some evidence that the effects continue after the treatment period, consistent with a model of habit formation. Second, we find little evidence that the framing of incentives (loss versus gain) matters. While incentives work, we find that educational messaging alone has little influence on food choice. Yet, we do observe an important interaction effect between messaging and incentives: together they provide an important influence on food choice. For policymakers, our findings show the power of using incentives to combat childhood obesity. For academics, our approach opens up an interesting combination of theory and experiment that can lead to a better understanding of theories that explain healthy decisions and what incentives can influence them.

WP 20137
Robert Clark, Annamaria Lusardi, Olivia Mitchell
Financial Knowledge and 401(k) Investment Performance

Using a unique new dataset linking administrative data on investment performance and financial knowledge, we examine whether investors who are more financially knowledgeable earn more on their retirement plan investments, compared to their less sophisticated counterparts. We find that risk-adjusted annual expected returns are 130 basis points higher for the most financially knowledgeable employees, and those scoring higher on our Financial Knowledge Index have slightly more volatile portfolios while they do no better diversifying their portfolios than their peers. Overall, financial knowledge does appear to help people invest more profitably; this may provide a rationale for efforts to enhance financial knowledge in the population at large.

WP 20159
Seth Freedman, Haizhen Lin, and Kosali Simon
Public Health Insurance Expansions and Hospital Technology Adoption

This paper explores the effects of public health insurance expansions on hospitals' decisions to adopt medical technology. Specifically, we test whether the expansion of Medicaid eligibility for pregnant women during the 1980s and 1990s affects hospitals' decisions to adopt neonatal intensive care units (NICUs). While the Medicaid expansion provided new insurance to a substantial number of pregnant women, prior literature also finds that some newly insured women would otherwise have been covered by more generously reimbursed private sources. This leads to a theoretically ambiguous net effect of Medicaid expansion on a hospital's incentive to invest in technology. Using American Hospital Association data, we find that on average, Medicaid expansion has no statistically significant effect on NICU adoption. However, we find that in geographic areas where more of the newly Medicaid-insured may have come from the privately insured population, Medicaid expansion slows NICU adoption. This holds true particularly when Medicaid payment rates are very low relative to private payment rates. This finding is consistent with prior evidence on reduced NICU adoption from increased managed-care penetration. We conclude by providing suggestive evidence on the health impacts of this deceleration of NICU diffusion, and by discussing the policy implications of our work for insurance expansions associated with the Affordable Care Act.

WP 20181
Christopher Afendulis, Anna Sinaiko, Richard Frank
Dominated Choices and Medicare Advantage Enrollment

Research in behavioral economics suggests that certain circumstances, such as large numbers of complex options or revisiting prior choices, can lead to decision errors. This paper explores the enrollment decisions of Medicare beneficiaries in the Medicare Advantage (MA) program. During the time period we study (2007–10), private fee-for-service (PFFS) plans offered enhanced benefits beyond those of traditional Medicare (TM) without any restrictions on physician networks or additional cost, making TM a dominated choice relative to PFFS. Yet more than three quarters of Medicare beneficiaries remained in TM during our study period. We explore two possible explanations for this behavior: status quo bias and choice overload. Our results suggest that status quo bias plays an important role; the rate of MA enrollment was significantly higher among new Medicare beneficiaries than among incumbents. Our results also provide some evidence of choice overload; while the MA enrollment rate did not decline with an increase in the number of plans, among incumbent beneficiaries it failed to increase. Our results illustrate the importance of the choice environment that is in place when enrollees first enter the Medicare program.

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