

NBER Reporter

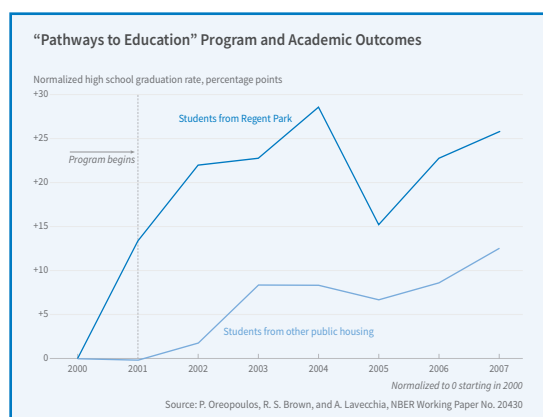
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Program Report

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The Program on Corporate Finance

Malcolm Baker*

Narrowly interpreted, corporate finance is the study of the investment and financing policies of corporations. Because corporations are at the center of economic activity, the causes and consequences of corporate finance — and hence the research activities of the program — touch almost every aspect of micro- and macroeconomics, allowing the center of gravity to shift from the narrow concerns of corporate managers.

The NBER Program on Corporate Finance recently completed its 25th year. In his first program report, the founding director, Robert Vishny, described corporate finance as “institutionally oriented, with research often driven by issues of current importance” and the program’s empirical studies as “motivated by relevant, applied theory.”¹ Back then, the takeover and restructuring wave of the late 1980s was salient; soon afterwards, in the mid-1990s, it was cross-country comparisons of legal systems, governance, enforcement, and financial development, often with implications for emerging institutions in the transitional economies of Eastern Europe and the former Soviet Union. The phenomena were studied with firm-level, market, and institutional data, and with then-novel empirical technologies. Notably, these included event studies and the quasi-experimental analysis of colonial legal origins. The applied theoretical lens was, for the most part, agency problems arising from the separation of ownership and control.

The influence of “issues of current importance” remains as apparent now as in the program’s first report. The defining moment for corporate finance over the past decade has been the financial crisis of 2008. Broadly speaking, our program’s research has found its greatest impact in exploring the role of credit cycles, the fragility of financial institutions, the behavior of households, and the associated macroeconomic consequences. A boom and bust in credit conditions, stretched bank balance sheets, and contagious defaults in the mortgage market were the proximate causes of

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the crisis, and the consequences were macroeconomic. So, credit markets, financial institutions, and household finance, including their macroeconomic and regulatory implications, are the current centers of activity among NBER researchers in corporate finance. Traditional topics of corporate investment and financing are receiving less attention. In some ways, this brings the program—which emerged from the NBER Financial Markets and Monetary Economics program, which was founded in the late 1970s and divided into Asset Pricing, Corporate Finance, and Monetary Economics in 1991—back to its roots.

New empirical tools also have emerged. Techniques have been imported from labor economics and other fields. For example, NBER researchers exploit discontinuities in policy, which generate fruitful natural experiments, and design randomized controlled trials in partnership with firms, government agencies, and nongovernmental organizations. The rising demand for empirical rigor in identifying policy-relevant causal mechanisms has meant a microempirical shift, with the study of household financial products, for example, serving as an auspicious lamppost. At the same time, structural estimation of theoretical models is often used to tease out the macroeconomic implications of microempirical insights.

The program's empirical studies are grounded in a wider range of "relevant, applied theory." The seminal work of Merton Miller and Franco Modigliani, approaching its 60th anniversary, continues to be the organizing framework for understanding the market imperfections that allow finance to create or destroy value: whether in firms, as the authors originally intended, or more broadly in households, financial institutions, and the macroeconomy. Agency and information problems remain central imperfections, with a recent focus on conflicts of interest along the chain from savers to household borrowers; so do the costs of financial distress, fire sales, and the fragility of short-term financing, experienced on a systemic scale with the 2008 failure of Lehman Brothers.

In a new trend, affiliates of the program have become increasingly attentive to behavioral factors, frequently delving into the role of bias in households, managers, investors, and, ultimately, markets. Traditional theoretical lenses and new behavioral ones are at the forefront of research that could help miti-

gate the effect of the past crisis and inform macroprudential regulation for lowering the probability of a sequel. In that sense, the organizing frameworks and the research output of the NBER Program on Corporate Finance have proven robust, relevant, and sometimes central in fields that are outside the program's narrow mandate.

In particular, corporate finance has played a key role in enhancing traditional macro models, some of which were narrowly focused on a single policy instrument. Tweaking the federal funds rate without completely understanding its mechanism proved effective when the global economic engine required routine maintenance. But the economic breakdown of the financial crisis revealed limitations of the New Keynesian models. Without an explicit modeling of the financial sector, these models were less useful for restarting the engine. In contrast, the corporate finance toolkit proved essential in analyzing the alphabet soup of the Troubled Asset Relief Program (TARP), Quantitative Easing (QE), Home Affordable Refinance Program (HARP), and many other regulatory interventions.

This program report moves from small to large, from individuals to institutions to markets, and their influence on the macroeconomy. Regulation perhaps deserves a separate section, but I have opted instead to embed the discussion of regulatory analysis in context throughout. Each topic could fill an entire report, and there are far too many papers to mention. I will cite only a few recent NBER working papers in each area, with my sincere apologies to those I have missed, to earlier foundational work, and to related work outside of the program.

Individuals

The Corporate Finance program now places more emphasis on individual actors than it did in the past. These include household borrowers, who account for the majority of bank loans in the form of mortgages and credit card balances; household savers and investors, who provide bank and corporate funding; household financial advisers, who provide guidance; and, of course, corporate managers, but with a focus not just on their function in allocating capital, but also on their identities and beliefs.

Starting with borrowers, Hong Ru

for transmission of monetary policy.

Moving to savers, Adriano Rampini and S. Viswanathan develop a theory of household risk management that helps to explain why poorer households bear the brunt of macroeconomic fluctuations, and perhaps also helps explain their demand for safe securities.⁴ Safety may be in the eye of the beholder: Nicola Gennaioli, Andrei Shleifer, and Vishny; and Pedro Bordalo, Gennaioli, and Shleifer, emphasize the possibility that savers and investors neglect subtle risks, leading to the manufacture and sale of securities that load up on subtle, unappreciated risks, deliver the illusion of safety, and eventually undermine the stability of the financial system as previously neglected risks are revealed.⁵ Consistent with risk neglect, Jeffrey Wurgler and I; Rüdiger Fahlenbrach, Robert Prilmeier, and René Stulz; as well as Matthew Baron and Wei Xiong find that higher risk and less well-capitalized banks with faster loan growth earn lower average returns.⁶

Households also invest in risky securities. Here, the salience of past returns replaces apparent safety and

risk neglect. Bordalo, Gennaioli, and Shleifer⁷ develop a model built on Daniel Kahneman and Amos Tversky's⁸ representativeness heuristic to illustrate how investors extrapolate recent history. Itzhak Ben-David, Justin Birru, and Viktor Prokopenya,⁹ in retail foreign exchange markets, and Robin Greenwood and Shleifer,¹⁰ in investor expectations data, provide corroborating evidence. Investors increase risk-taking in response to their own past performance, despite the fact that past performance is not predictive: Surveys of investor expectations are both positively correlated with past returns and negatively correlated with future

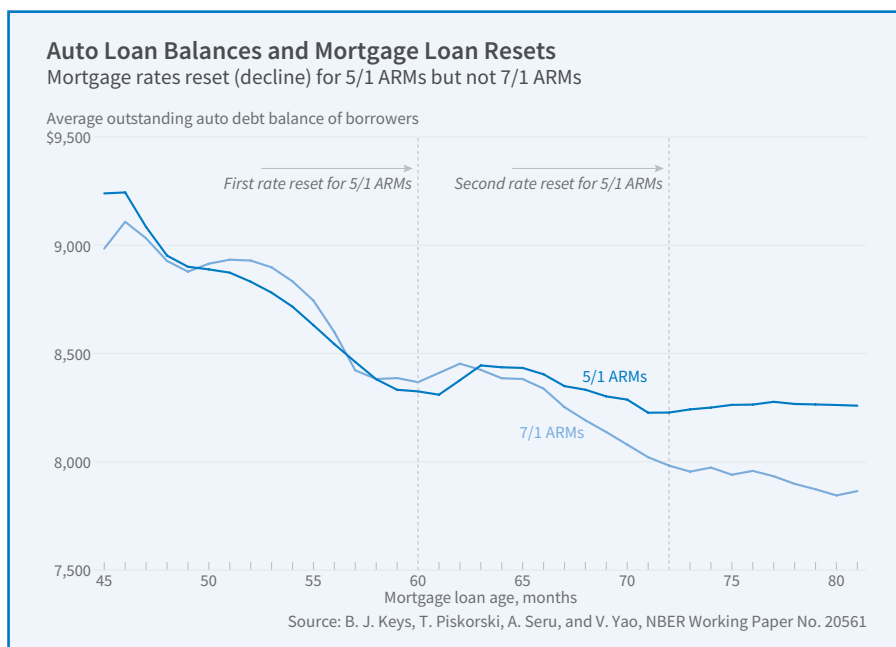


Figure 1

and Antoinette Schoar show how credit card companies use a combination of salient teaser interest rates and back-end fees located in the fine print to design solicitations to appeal to unsophisticated households.² *Ex ante* contract design of this type can have *ex post* consequences: Benjamin Keys, Tomasz Piskorski, Amit Seru, and Vincent Yao show how households respond to resets in adjustable mortgage rates, with the newfound liquidity lowering default, increasing new car consumption financed with auto debt, as shown in Figure 1, and, for credit-constrained households, reducing high-cost credit card debt.³ This suggests a channel

returns and *ex ante* proxies for future returns, such as the dividend-price ratio. Extrapolative expectations are a plausible driver of credit- and equity-market-driven business cycles.

In principle, financial advisers should help unsophisticated households navigate borrowing, saving, and investing decisions. However, Sendhil Mullainathan, Markus Noeth, and Schoar show that advisers tend not to de-bias their clients; instead they endorse return-chasing behavior and steer clients toward funds with high fees.¹¹ Mark Egan, Gregor Matvos, and Seru go further, documenting a high rate of misconduct among financial advisers.¹² Even when fired from their institutions, sanctioned advisers are reemployed at high rates by firms that disproportionately serve unsophisticated retail clients.

The lack of sound professional advice points to the potential importance of financial literacy education; decision support with mandated presentation of relevant facts and figures; libertarian paternalism with carefully chosen defaults; and direct regulatory intervention through consumer financial protection.

The benefits of literacy training have been hard to show empirically. Bruce Carlin and David Robinson emphasize the complementary importance of decision support and literacy in experimental data.¹³ Relatedly, Sumit Agarwal, Souphala Chomsisengphet, Neale Mahoney, and Johannes Stroebel show positive effects of displaying the cumulative interest savings of early payment of credit card balances.¹⁴ The four researchers show that the Credit Card Accountability, Responsibility, and Disclosure (CARD) Act reduced borrowing costs by placing regulatory limits on credit card fees. In spite of concerns that lower fees would be offset by higher interest expenses or reduced access to credit, the regulation appears to have had no observable downside, consistent with low fee salience and limited competition in the market for credit card services.

The data on corporate managers' micro decisions is often less rich. In principle, managers should have more training, experience, and feedback to bring to

bear in corporate finance and investment. On the one hand, a household makes comparatively few decisions to finance a home or apply for a credit card. On the other hand, the promotion of successful managers may itself select for biases like overconfidence. Ben-David, John Graham, and Campbell Harvey compute a direct measure of manager overconfidence from survey data: Realized market returns fall within managers' forecast confidence intervals far too infrequently to be consistent with correct *ex ante* calibration.¹⁵ Beyond the surveys, we can infer potential bias from corporate behavior. Greenwood and Samuel Hanson provide evidence of extrapolation in shipbuilding, where prices and procurement vary too strongly with current earnings, given their historical rates of mean reversion and the high degree of competition in the transport sector.¹⁶ Kelly Shue and Richard Townsend find anchoring in the number of options granted.¹⁷ Yihui Pan, Tracy Wang, and Michael Weisbach find that new CEOs shed poorly performing assets on arrival, showing their predecessors' aversion to realizing losses.¹⁸ Misbehavior appears to be contagious in work by Christopher Parsons, Johan Sulaeman, and Sheridan Titman, showing that rates of financial misconduct rise with the misconduct rates of nearby peers.¹⁹ Overconfidence, extrapolation, loss aversion, peer effects, norms, and anchoring suggest managerial microfoundations for macroeconomic fluctuations and trends in CEO pay.

Manager personality and experience also loom large. For example, Paul Gompers, William Gornall, Steven Kaplan, and Ilya Strebulaev find that venture capitalists weigh a firm's management team quality more heavily than its product and technology.²⁰ Perhaps this is because CEO personality, as measured in structured surveys, predicts operating performance, as shown by Ian Gow, Kaplan, David Lareker, and Anastasia Zakolyukina.²¹ There are also apparent links between military service and corporate finance,²² with a connection to conservative policies, lower investment, lower fraud, and performance in down-

turns.²³ Schoar and Luo Zuo also emphasize the formative effects of macroeconomic conditions when CEOs enter the labor market.²⁴

Whether these traits are optimally matched to corporate circumstances is harder to prove. Boards that chose CEOs with military experience, for example, may have needs for which this experience is particularly valuable. Carola Frydman and Dirk Jenter provide a contemporary survey paper on the question of whether the assignment of managers to assets comes from organizational power or an efficient and competitive market for CEO labor.²⁵ It is hard for traditional corporate finance to keep up with the standards for the identification of causality made possible by vast databases on household financial decision making.

Institutions

Leaving aside the individuals involved, corporate finance is concerned with the sources and uses of funds. This suggests a natural delineation: Banks or firms raise money, accounting for the components of fundraising on the right side of their balance sheets, and invest the proceeds, accounting for the components of investment on the left side. The 2008 financial crisis has concentrated research efforts of the Corporate Finance program on banks and the less regulated, but functionally similar, shadow banking system. Banks are special because their defining source of funds is ultrasafe deposits and because their defining uses of funds are, for practical and regulatory reasons, much safer than the investments of industrial firms. They specialize in maximally diversified portfolios of loans, which are expected to produce a stable cash flow and are often collateralized by specific and transferable assets that can be quickly converted into cash in the event of default. As an illustration of the power of collateral and the bank lending channel, Thomas Chaney, David Sraer, and David Thesmar show a high propensity of firms to invest following the price appreciation of their real estate holdings, a traditional form of collateral for lenders.²⁶

On the right or funding side of the balance sheet, Gary Gorton argues that financial history is marked by the continual search for truly safe assets, which are prized for their ability to avoid adverse selection, eliminate costly information production, and hence provide a means for the exchange of goods and services.²⁷ Thus, any risk in banks' assets is optimally opaque, avoiding mark-to-market pricing; to work as money, short-term bank liabilities must trade at par. The essential feature of banks in this view is their transforming risky assets into safer, more useful ones. Gorton, Stefan Lewellen, and Andrew Metrick find that the percentage of all assets that is safe has remained stable, suggesting limits on their overall production.²⁸ The creation of safe assets has shifted, though, toward the shadow banking system, suggesting a functional view of risk transformation and the substitution of money market mutual funds for deposit-taking banks. Meanwhile, Harry DeAngelo and Stulz emphasize banks' central role in liquidity production as a driver of high leverage ratios; they conclude that stringent capital requirements for regulated banks have fueled the growth of the shadow banking system.²⁹

By this logic, the essential *positive* feature of deposits and other ultrasafe assets is that they require no monitoring. This makes things simple for depositors. A behavioral version developed by Gennaioli, Shleifer, and Vishny says that investors, for the most part, consider assets that pay in most states of the world to be ultrasafe, neglecting tail risks and obviating monitoring.³⁰ This helps banks. Hanson, Shleifer, Jeremy Stein, and Vishny argue that banks are able to invest more patiently in fixed income assets because the stability of their deposit funding helps them endure transitory price volatility.³¹

At the same time, the essential *negative* feature of deposits and other ultrasafe assets is that they elicit no private monitoring. Securities deemed ultrasafe are by their nature a low-cost source of finance, and invite *ex post* risk-shifting. Oliver Hart and Luigi Zingales argue that regulation is needed to limit private

sector creation of safe assets that are close substitutes for money.³² Zhiguo He and Asaf Manela³³ analyze limited information and rumors about bank solvency, while Gorton and Guillermo Ordoñez³⁴ and Viral Acharya, Douglas Gale, and Tanju Yorulmazer³⁵ argue that private parties will underinvest in information production, leading to credit booms, crises, freezes, and fragility that comes from runs. Deposit insurance and regulation help, but they lead non-core liabilities to be indicators of vulnerability, according to Joon-Ho Hahm, Hyun Song Shin, and Kwanho Shin.³⁶ In light of excessive private incentives to create ultrasafe deposits and securities, Stein argues for monetary policy as a tool to limit their negative externalities. In this sense, the bank lending channel is an alternative to traditional models of monetary policy, which emphasize sticky prices.³⁷

With a distinctive access to low-cost deposits and short-term funding, banks and shadow banks view equity as the more costly form of finance, pushing bank leverage ratios to much higher levels than those of industrial firms. For example, Acharya, Philipp Schnabl, and Gustavo Suarez show how banks used conduits to skirt capital requirements, moving assets off their balance sheets without a complete transfer of risk.³⁸ Ivo Welch³⁹ and Mathias Hoeyer, Wurgler, and I⁴⁰ emphasize a complementary channel of high-cost bank equity that comes from the mispricing of safe, low-leverage, and bond-like firms in the equity market. These private incentives again provide a rationale for regulation, this time of bank capital. However, Agarwal, David Lucca, Seru, and Francesco Trebbi show how the capture of state regulators, whose revenues depend on the size of the banks they regulate, abetted reductions in risk-weighted capital ratios.⁴¹

On the left or investing side of the balance sheet, demand deposits and concomitant fragility mean that banks must hold some portion of their assets in ultraliquid securities. By analogy, Sergey Chernenko and Aditya Sunderam show how open-end equity mutual funds, like banks, use cash management to accom-

modate liquidity demands even when the underlying securities are illiquid.⁴² But, private incentives are once again limited. Douglas Diamond and Anil Kashyap argue that because their depositors have imperfect information, banks, left to their own devices, do not hold enough liquid assets to survive runs.⁴³

While the creation of ultrasafe liabilities is the key function on the liability side of the banking system's balance sheet, screening and monitoring a diverse pool of risky borrowers is the key function on the asset side. Konstantin Milbradt and Martin Oehmke point to an interdependence between financing and investing horizons, suggesting that banks might hold short-duration loan portfolios, even when their highest return investments are long-term, as a result of financial frictions that grow with loan maturity.⁴⁴ A critical question is whether banks price loans appropriately, given a borrower's risk and the bank's ability to absorb losses without resorting to government intervention and support. In traditional banks, Antonio Falato and David Scharfstein show that pressure coming from public equity markets to increase current stock price through short-term earnings causes banks to increase risk.⁴⁵ In shadow banks, Marcin Kacperczyk and Schnabl find that risk-taking by money market funds is higher when the fund sponsor does not provide an implicit guarantee.⁴⁶ Agarwal and Ben-David find that when bankers are encouraged to generate revenue through loan prospecting versus screening, risk also rises.⁴⁷ Even with new communications technology, banking deregulation, and consolidation, banking often remains local. Distance matters in Scharfstein and Sunderam, where concentrated local banking markets do not fully pass on reductions in yields on mortgage-backed securities to their customers.⁴⁸ Itamar Drechsler, Alexi Savov, and Schnabl examine the macroeconomic implications of concentration in banking for monetary policy: Interest rate spreads increase as interest rates rise, reflecting bank market power and shifting deposits into higher yielding instruments.⁴⁹

Markets

The banking system has always been somewhat transactional, preserving high-cost equity capital by originating loans and underwriting securities of various types, with the goal of transferring ownership to non-bank market participants through securitization, syndication, and public offerings. The ability to sell assets insulates the broader economy from the health of the banking system. For example, Tobias Adrian, Paolo Colla, and Shin show that bonds made up much of the shortfall in bank lending during the 2008 financial crisis.⁵⁰ But bond and equity markets can themselves be sources of fluctuations, and the process of transferring assets from banks is fragile. Asset fire sales were a source of contagion in the crisis.⁵¹ Natural and informed buyers were also stressed and unable to absorb the sales of bank assets, creating a downward spiral in prices and bank capital when measured at fire sale prices. This is the source of bank vulnerability in Greenwood, Augustin Landier, and Thesmar.⁵²

Along with a shift in focus from industrial firms to banks, researchers have turned their attention from equity to credit markets. A variety of factors appears to capture credit mar-

ket sentiment: the share of low-quality issuers;⁵³ the ratio of bank loans to bonds in corporate capital structure;⁵⁴ intermediary leverage;⁵⁵ growth in credit that is delinked from productivity;⁵⁶ and insurance companies reaching for yield, holding the highest yielding issuers within

decline in economic activity with a lag, suggesting that policy makers might use these measures of asset prices alongside the traditional objectives of price stability and employment in dictating monetary policy.⁵⁸

There has been less focus on equity

markets, which were not the epicenter of the 2008 crisis. One area of emphasis has been corporate governance and investor activism. In some sense the successful private equity model described in Steven Davis, John Haltiwanger, Ron Jarmin, Josh Lerner, and Javier

Miranda⁵⁹ and Robert Harris, Tim Jenkinson, and Kaplan,⁶⁰ for example, has been imported into public equity markets, in a reprise of the 1980s. Lucian Bebchuk, Alon Brav, and Wei Jiang⁶¹ and Brav, Jiang, Song Ma, and Xuan Tian⁶² find analogous long-run benefits of activism in public markets, while Craig Doidge, Andrew Karolyi, and Stulz⁶³ show that a new wave of acquisitions has thinned the ranks of publicly

listed firms. Even without activism, Philip Bond, Alex Edmans, and Itay Goldstein point to positive feedback effects from equity markets: Movements in stock price

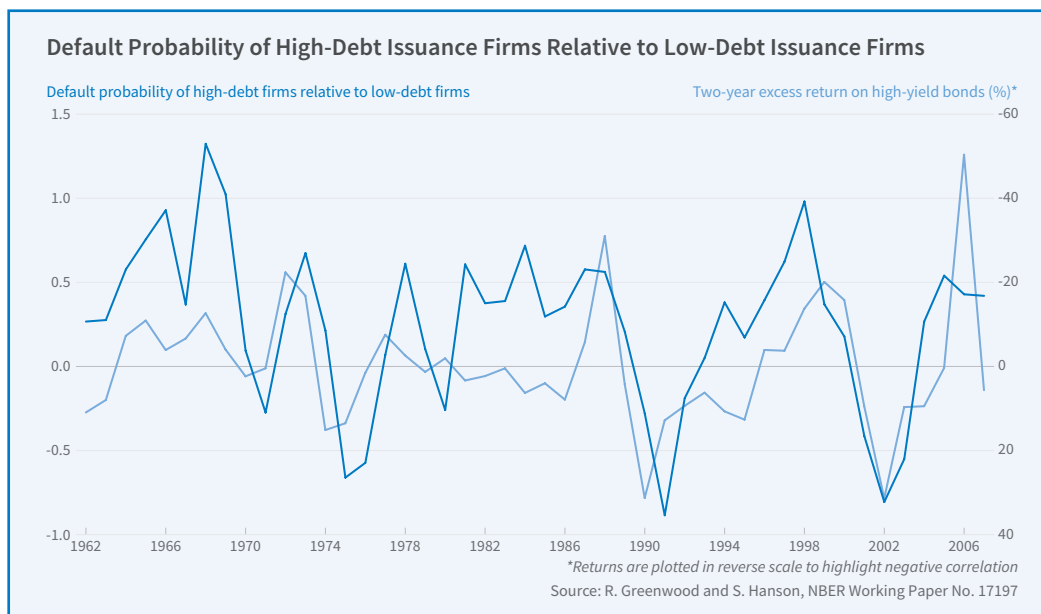


Figure 2a

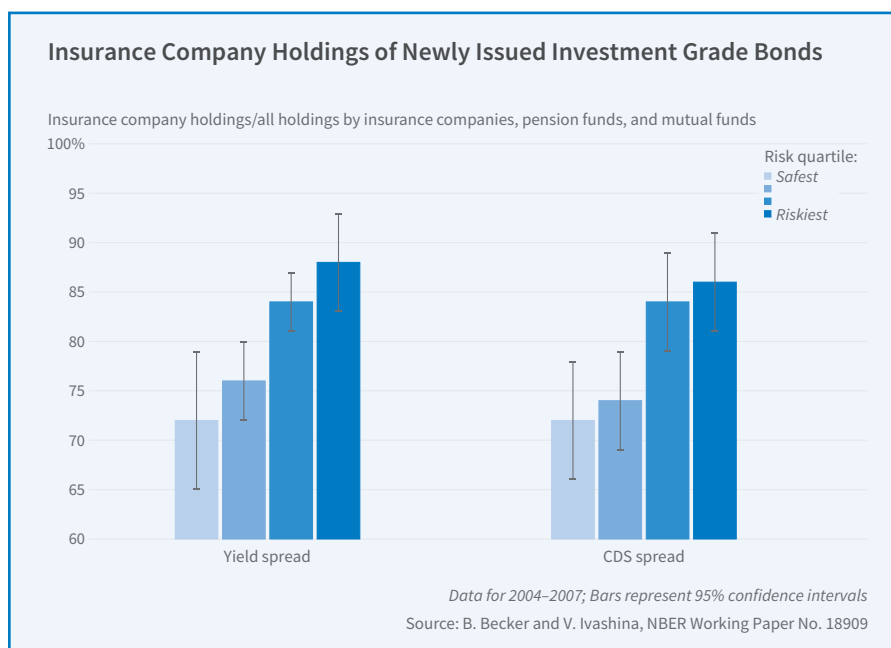


Figure 2b

any credit rating category.⁵⁷ Figures 2a and 2b show two examples. David López-Salido, Stein, and Egon Zakrajšek argue that credit market sentiment predicts a

inform real decision making, and are in part self-fulfilling.⁶⁴

The Macroeconomy

The program has become both more focused on individuals, as described above, and more macroeconomic. Papers routinely consider the general equilibrium conclusions of their microempirical estimates. For examples, see: Xavier Giroud and Joshua Rauh⁶⁵ for the effect of state-level taxation; Agarwal, Gene Amromin, Chomsisengphet, Piskorski, Seru, and Yao⁶⁶ for the effect of mandated loan modification; and Giroud and Holger Mueller⁶⁷ for the effect of firm balance sheets on aggregate employment. Broadly speaking, research has emphasized two related amplifying mechanisms for the 2008 crisis: the effect of household balance sheets on consumption, and the bank-lending channel.

Household balance sheets were arguably the ground zero of the crisis. Mian and Sufi have suggested that the effect of the housing boom and bust on household balance sheets was responsible for the sharp rise and fall in consumption surrounding the financial crisis.⁶⁸ Prior to the crisis, lower-income ZIP codes responded aggressively to increases in house prices and the decoupling of credit and income growth, converting price changes to spending through borrowing. In these areas, the gap between income growth reported on mortgage applications and ZIP code income growth points to the loosening of credit standards as causal. The low-income areas that experienced more loan growth fared worse during the crisis, especially in nontradeable goods and services. Specific household

amplifiers include the impact of mortgage finance through the conforming limit⁶⁹ and the impact of auto lending as a result of the collapse of securitization.⁷⁰

The labor market suffered in tandem with consumption. Corporate Finance researchers have increasingly considered employment as an outcome variable, alongside corporate finance and investment. For example, Jennifer Brown and

Severino⁷⁵ point to the large contemporaneous growth in bad loans made to higher income and traditionally credit-worthy households. Rather than suggesting loose credit for lower income households as the critical mechanism, these papers point to a widespread loan-demand narrative as equally plausible.

As household solvency deteriorated, so too did the solvency of banks that lent to them, with consequences for the bank-lending channel and their client corporations. Small firms were hit harder than larger firms. Efraim Benmelech, Nittai Bergman, Anna Milanez, and Vladimir Mukharlyamov emphasize local contagion in firm bankruptcies, using data on retail centers.⁷⁶ International trade was hit harder than domestic consumption. Implicitly then, bank finance plays a disproportionate role in these locations. For example, collateral is especially important for smaller

firms;⁷⁷ trade credit is easily stressed in cross-border transactions.⁷⁸ Shocks can also propagate through the bank branch network as shown in Erik Gilje, Elena Loutskina, and Philip Strahan.⁷⁹ Patrick Bolton, Xavier Freixas, Leonardo Gambacorta, and Paolo Emilio Mistrulli argue that relationship banking played a mitigating role for larger firms.⁸⁰ Relationship banks may charge a premium in good times but they extended credit at favorable terms during the downturn. Murillo Campello, Erasmo Giambona, Graham, and Harvey⁸¹ point to credit lines and Michael Roberts⁸² points to renegotiation in allowing firms and banks to weather the crisis.

Future Directions

Recent history shows both the usefulness and adaptability of the empirical and theoretical toolkits of corporate

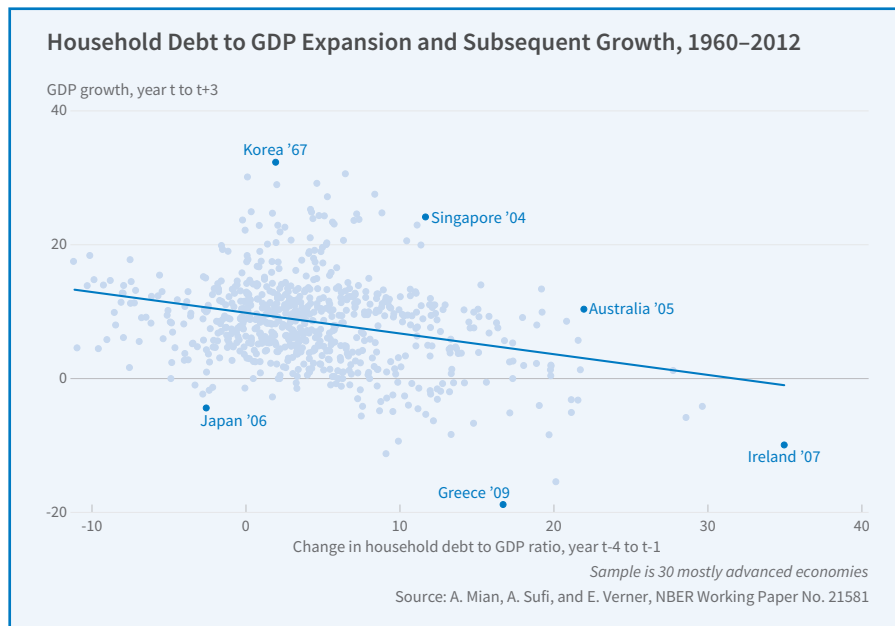


Figure 3

David Matsa find that depressed housing markets lower household mobility and job-search activity.⁷¹ Relatedly, Kyle Herkenhoff, Gordon Phillips, and Ethan Cohen-Cole find an inefficient reallocation of labor in tight credit markets.⁷² Together, these papers suggest weak household balance sheets can be a driver of business cycles. Mian, Sufi, and Emil Verner show a broader link in the time series and across countries between the ratio of household debt to GDP and subsequent reductions in growth and employment, as shown in Figure 3.⁷³

Cumulatively, this highly influential research, which documents a causal link from credit cycles to household balance sheets to consumption and employment, has made corporate finance central to macroeconomics. Taking issue with this pure supply-side narrative, Christopher Foote, Lara Loewenstein, and Paul Willen⁷⁴ and Manuel Adelino, Schoar, and Felipe

finance. Undoubtedly, the bank-lending channel will continue to be an area of focus because of the availability of rich data on households, the quasi-experimental nature of government interventions in the financial system, and the salience and size of the macroeconomic effects of the financial crisis. However, the imperatives may soon shift with events, and may well move back to core topics such as the financing and governance of industrial firms; innovation, entrepreneurial finance, and productivity; and international trade, finance, and comparative financial systems.

There will also surely be new areas of inquiry. Studies of the rising share of finance in the global economy and the disruptive forces of emerging financial technology firms, such as Thomas Philippon⁸³ and Jennie Bai, Philippon, and Savov⁸⁴ may be leading indicators of what lies ahead.

¹ R. Vishny, "Program Report: Corporate Finance," NBER Reporter, Winter, 1994–5, pp. 1–4, http://www.nber.org/reporter/reporter_archive/Winter%201994-95_1.pdf

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² H. Ru and A. Schoar, "Do Credit Card Companies Screen for Behavioral Biases?" NBER Working Paper No. 22360, June 2016.

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³ B. Keys, T. Piskorski, A. Seru, and V. Yao, "Mortgage Rates, Household Balance Sheets, and the Real Economy," NBER Working Paper No. 20561, October 2014.

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⁴ A. Rampini and S. Viswanathan, "Household Risk Management," NBER Working Paper No. 22293, May 2016.

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⁵ N. Gennaioli, A. Shleifer, and R. Vishny, "Neglected Risks, Financial Innovation, and Financial Fragility," NBER Working Paper No. 16068, June 2010, and *Journal of Financial Economics*, 104 (3), 2012, pp. 452–68; and P. Bordalo, N. Gennaioli, and A. Shleifer, "Salience Theory of Choice Under Risk," NBER Working Paper No. 16387,

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Behavioral Barriers to Education

Philip Oreopoulos

Research in the economics of education has devoted much attention to the role of external factors, such as teacher quality, class size, curriculum, peers, financial constraints, and parental investments in determining students' development. Students' own role in their development has received comparatively less attention. This is perhaps due to the assumption from the traditional human capital model that students always do the best they can when making decisions about how much to study or how hard to work. In this investment framework, students carefully weigh immediate costs against long-term uncertain benefits to maximize lifetime well-being.

Clearly this process does not adequately describe the behavior of a six-year-old, who must be delicately persuaded to go to school, practice violin, or try addition. An elementary-school student's brain is simply not yet sufficiently developed to execute plans for the future. But over time and with experience, a remarkable neural circuitry expansion and pruning process occurs that makes it possible to hold information in mind before deciding what to do with it. With age, children gradually come to think about the future more. Impulses, feelings, and distractions can be held in check before making a choice. This process can take 25 years to mature, though our tendency to focus on the present or what's salient never fully disappears.

The emerging field of behavioral economics attempts to integrate these tendencies and others identified by research from psychology and sociology in order to better understand individual decision making and consider economic implications. While classical economics often assumes that individuals always make correct short- and long-run trade-offs (*ex ante*), behavioral eco-

nomics does not. The field often explores consequences of myopia or lack of salience for decisions related to savings, finance, and health. Education represents a relatively new application of the field, one that seems particularly promising. Indeed, it is hard to imagine a group more challenged by short- and long-term trade-offs than children facing school-related decisions.

In a series of research studies, my co-authors and I have explored this topic using a range of methodologies. This research summary briefly describes our work and points to future possibilities. A more detailed introduction to the topic of behavioral barriers to education is provided in a review article I co-wrote with Adam Lavecchia and Heidi Liu last year.¹

Compulsory Schooling

Compulsory schooling policies that place constraints on when students may start or finish school are not easily justified from a human capital investment model in the absence of positive externalities. Instead they are usually motivated by the belief that children are too short-sighted.

Consider the attitude of former British Prime Minister David Cameron, speaking in 2003 on why he favored raising the school-leaving age to 18: "Think about it: with your children, would you dream of just leaving them to their own devices, not getting a job, not training, nothing? No—you'd nag and push and guide and do anything to get them on their way... and so must we."

Many studies have used legal constraints as instrumental variables to estimate returns to schooling. Some, though not all, find substantial improvements to annual income, health, and other measures of socioeconomic

success.² I have argued that even a 7 percent expected increase in lifetime wealth from an extra year of school would be hard to turn down under the human capital investment model. Present bias, combined with a strong distaste for school, seems a more plausible explanation of failure to undertake such investment.³

Compulsory schooling's effectiveness is not only from forcing students to stay in school. Closer examination reveals that these policies more often serve to drive expectations and adults' efforts to encourage youth to stay in class. Truant students are given more attention. They or their parents are often first contacted by teachers, principals, or caseworkers in an effort to reengage the students and address reasons behind their truancy.

Adding School Structure and Support

Lavecchia, Robert Brown, and I provide additional evidence that the approach of addressing students' immediate distaste for school by offering more structure and support can be effective.⁴ "Pathways to Education" is a comprehensive youth support program developed to improve academic outcomes among those entering high school from very poor socioeconomic backgrounds. The program includes proactive mentoring of each student, daily tutoring, group activities, career counseling, and college transition assistance, combined with immediate and long-term incentives to reinforce a minimum degree of mandatory participation. The program began in 2001 for students entering Grade 9 and living in Regent Park, the largest public housing project in Toronto. It expanded in 2007 to include two additional Toronto

housing projects. In all three locations, participation rates quickly rose, to more than 85 percent, even though parents and students were required to commit in writing to the conditions and high expectations of the program. High school graduation and post-secondary enrollment rates rose dramatically for Pathways students, in some cases by more than 50 percent, in comparisons with students from other housing projects before and after introduction of the program [Figure 1].

Offering Financial Incentives to Offset Immediate Costs

In experiments I conducted with Joshua Angrist, Daniel Lang, and Tyler Williams, we offered large short-term monetary rewards for academic performance in an attempt to offset families' immediate costs and make possible larger lifetime gains.⁵ Similar to other attempts to improve grades and retention, results were mixed and overall not

group, women who were offered both the scholarship and services performed better in both their first and second years, even though the program occurred only in the first year.

But we were not able to replicate this general result in the second experiment when we tried to improve results by making the monetary incentives stronger, linear (starting with grades of 70 percent and increasing), shorter-term (awarded at the end of each semester), and more focused, awarding them for each course (rather than overall GPA). Treatment effects were small and mostly insignificant. Thus far, offering immediate incentives to offset immediate costs appears to deliver at most modest increases in student performance, but considerable latitude exists in designing such programs. It is possible that alternative designs, with different incentives, different target populations, or focusing on specific inputs (like reading) instead of outputs (like grades) could prove worthwhile.

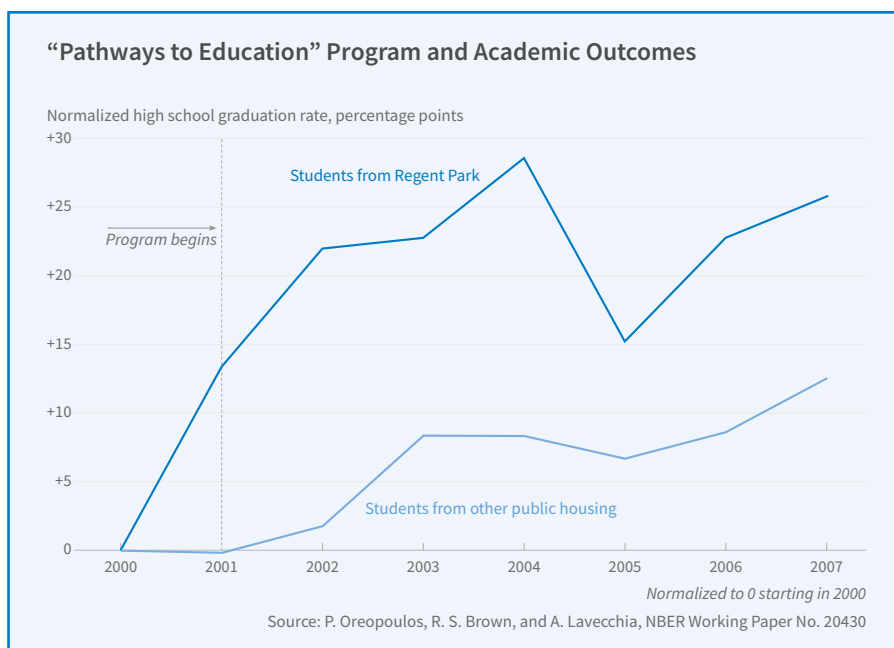


Figure 1

very promising.

In the first study, first-year college students were offered \$1,000 to \$5,000 for attaining solid, but not necessarily top, grades. Others were offered access to additional student services. A third group was offered both. Relative to the control

Helping Complete College Applications

The transition from high school to college involves many small steps: considering where and how to go, completing each program application and paying each fee, applying for financial aid, deciding what program and courses to take, and figuring out one's new daily routine. These costs are often perceived as "too small to matter" in the traditional investment

model. From a behavioral perspective, application processes can often get in the way of take-up and realization of benefits. Actions that require taking time out of our routine, that are complex and without social support, and whose benefits are very long-term and uncertain are tempt-

ing to put off.

Eric Bettinger, Bridget Long, Lisa Sanbonmatsu, and I partnered with H&R Block to provide assistance completing the Free Application for Federal Student Aid (FAFSA) to low-income parents visiting H&R Block who had children in their senior year in high school.⁶ Much of the information called for in the application is collected in the process of completing the annual tax form. Guiding parents through the remaining questions needed to complete the FAFSA took only about 10 minutes. The children of parents who were randomly offered this service were 16 percentage points more likely to apply to college and 8 percentage points more likely to attend and stay enrolled for at least two years. The intervention is among the most cost-effective ever tested for increasing college enrollment of children from low-income families.

The FAFSA study's intervention, however, only helped with one component of the transition to college. Applicants still had to determine which colleges and programs to apply to. They still had to pay program application fees and register for courses, and only children of parents visiting H&R Block were affected. To explore a more scalable program which offered assistance for both financial aid and program applications as part of high school seniors' curriculum, Reuben Ford and I created a program called LifeAfterHighSchool.⁷ The program provided all seniors at low-transition high schools with in-class assistance over three 50-minute workshops. The first workshop encouraged students to consider local post-secondary programs that they could get into based on their high school grades and pro-

vided a simple financial aid calculator to demonstrate how they could afford to attend. The second had students apply for real to colleges or universities, with the application fees covered from cutting and pasting the application number to the LifeAfterHighSchool website. The third workshop helped students open and get started on the Ontario Student Assistance

more continuous actions, such as studying. Can we apply insights from this literature to encourage better habits or influence social identity? To begin to explore these issues, I created the Student Achievement Lab (SAL) at the University of Toronto. All students taking first-year economics courses are asked to take an online warm-up exercise for a small grade requirement. After registering an account and taking a short survey, they are randomized into groups; some are asked to think about potential obstacles likely to be encountered during the school year and given advice in how to cope, while others are invited to receive follow-up, either in person or by text. The setup and large representative sample offer a promising method for collecting detailed quantitative and qualitative data, trying various experiments, and iterating on those that

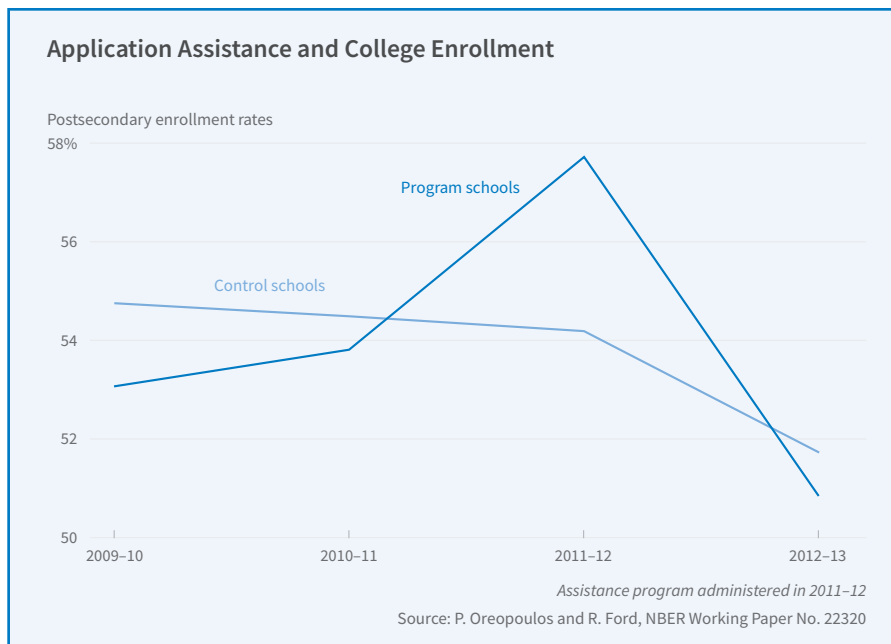


Figure 2

Program application and sent follow-up emails and letters to parents with instructions to complete the task. For students at low-transition schools that were randomly provided assistance through LifeAfterHighSchool, post-secondary application rates increased from 64 to 78 percent, while enrollment increased the following school year by 5 percentage points [Figure 2]. The greatest impact was for students who were not taking any university-track courses in their last year of high school: their enrollments increased 9 percentage points.

Leveraging Technology to Advise and Motivate Students

Simplification or salient reminders are often effective approaches to tackling behavioral biases that discourage one-time actions like completing an application. They are less effective for influencing

work best.

In one SAL experiment, Uros Petronijevic and I examine three specific interventions against a comparison group that is assigned a simple personality test instead.⁸ The treatment group receives: 1) A one-time, online exercise designed to affirm students' goals and purpose for attending university; 2) the online intervention plus text and email messaging throughout the full academic year (students can communicate back); and 3) the online intervention plus one-on-one engagement with upper-year undergraduate students who act as coaches and try to meet weekly.

Overall, we find large positive effects from the coaching program, amounting to approximately a 35 percent increase in average course grades. In contrast, we find no effects on academic outcomes from either the online exercise or the text messaging campaign, even after investigat-

ing potentially heterogeneous treatment effects across several student characteristics, including gender, age, incoming high school average, international-student status, and whether students live on campus.

Our results suggest that the benefits of coaching are not easily replicated without a personal touch. They do point to possible directions for future interventions. One of my current projects tries to customize advice provided to students based on their own perceptions of why “students like them” struggle. It also explores the potential for providing more personalized coaching through text, making it possible to reach out to a larger number of students compared to having to meet one-on-one.

Summary

My father used to quote Aristotle to me whenever I complained about homework, reminding me that “The roots of education are bitter, but the fruit is sweet.” This long-run and uncertain trade-off remains one of the biggest struggles when growing up. It is difficult to imagine, for example, how an extra evening’s worth of homework is really worth it against the much more tempting option of watching Netflix or going out. We all struggle with tendencies to procrastinate or focus on what is top of the mind.

The good news is that these behavioral barriers point to ways to help. Opportunities exist to simplify applications, provide more structure, remind students of educational opportunities, and

motivate them to want to learn. But context, population, timing, and details are also all crucial. We are far from understanding a student’s own role in her production of human capital; this research highlights reasons for trying.

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Enterprise and Incentives for Innovation

B. Zorina Khan

All societies have an interest in finding the appropriate incentives and institutions to promote enterprise, knowledge, and innovation. My empirical research in law and economic history sheds light on these sources of long-term development in Europe and the United States during early industrialization, 1750–1930. This was a period of enormous policy variation, which allows us to better identify the nature and consequences of specific measures.

Patents and Inventive Activity

My first book, *The Democratization of Invention*, empirically examined the genesis and consequences of intellectual property policy in the 19th century.¹ European institutions inhibited access owing to their assumption that elites engendered technological and economic progress. The U.S. delib-

erately departed from precedent to introduce the world's first modern patent system, which, along with effective legal enforcement, facilitated rapid technological progress.² The evidence indicates how responsive all inventors — women, ordinary artisans, scientists, even economists — were to expected returns and to enforceable property rights. This was the age of patented invention; Kenneth Sokoloff and I found that the propensity to patent was especially high among

the “great inventors.”³ The majority of productive inventors came from relatively undistinguished backgrounds, and even in Britain individuals with modest education, rather than scientific elites, created the important advances.⁴

The American Civil War was an exogenous shock that helps to identify the responsiveness of inventors and inventions at the most granular level.⁵ This conflict marked the advent of technology-intensive warfare, and key military participants as well as the U.S. president were patentees. I traced the lifetime patenting careers

undertook, in 1870, to continue to underwrite the costs of artificial limbs for veterans [Figure 1].

One of the fundamental features of the American patent system was its role in facilitating markets in technology and the mobilization of venture capital. Naomi Lamoreaux and Sokoloff showed how trade in patents promoted a specialization and division of labor among inventors, who were able to leverage their inventive ability to obtain funding.⁷ Endogenous trade in markets was favorably influenced by American patent rules, notably

the centralized examination system, which filtered applications for novelty and provided a signal of technical merit.⁸ U.S. knowledge markets were much more extensive relative to their international competitors, and the ability to trade secure inventive assets was especially significant for disadvantaged inventors who

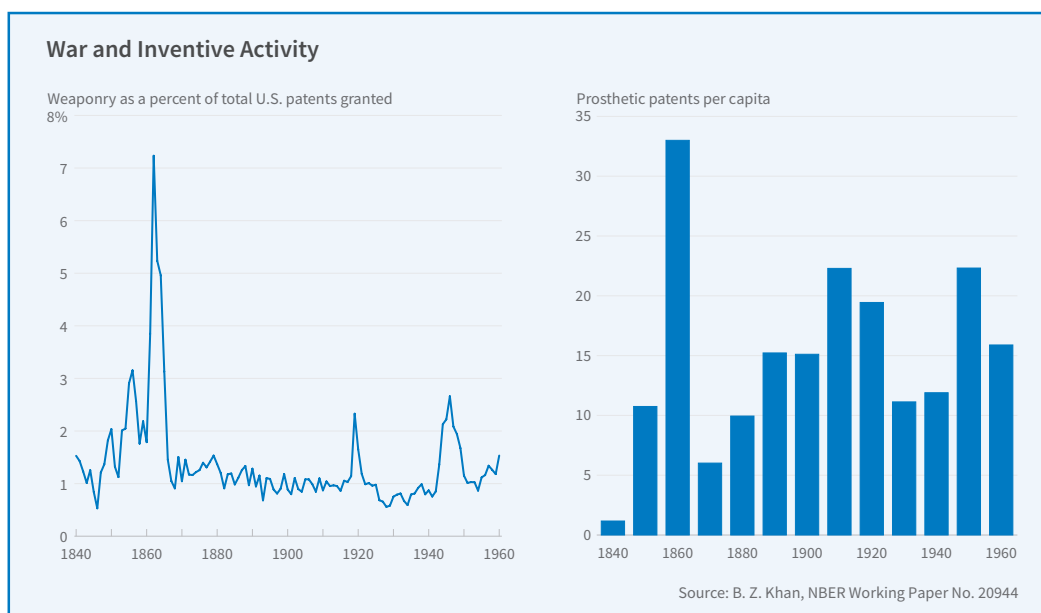


Figure 1

of a random sample of inventors, and estimated whether the creators of war-related technologies were first-time inventors, had previously created military inventions, or switched from unrelated inventions. The results indicated that both the rate and direction of inventiveness altered with war-time variation in expected benefits.⁶ For instance, improvements in prosthetics increased during the war and declined at its conclusion, then rebounded after Congress

did not possess the means or connections to appropriate returns from manufacturing enterprises.⁹

Innovation Prizes

Economists who model innovation incentives often reference historical “facts” like the prizes for longitude and the Daguerreotype “patent buyout.” However, examination of original archival

records reveals inaccuracies that undermine central claims of their theories.¹⁰ Daguerre, for instance, never obtained a French patent and, instead, lobbied for and gained government payouts in a classic example of rent-seeking. My research provides systematic empirical evidence regarding how innovation prizes work in practice, the political economy of these administered incentives, and potential deadweight losses from associated inefficiencies.

The most creative identification strategies are only as good as the underlying data and, as economic historians stress, effective economic inquiry requires meticulous attention to institutional details and context. To avoid biases associated with any one source, my analysis triangulates by employing extensive datasets with detailed information on inventors, inventions, and institutions from the United States and Europe.

The renowned Royal Society of Arts (RSA) in London provides a valuable opportunity to investigate the efficiency of *ex ante* inducement—prizes as incentives for invention.¹¹ The society initially was averse to patents and prohibited the award of prizes for patented inventions, so the two mechanisms were substitutes rather than complements. My dataset encompasses several thousand monetary and honorary prizes, patent records, and detailed archival information about the application and decision-making process. Committees were typically unable to identify or induce worthwhile inventions. Inventors of valuable discoveries secured patents and bypassed the prize system; they submitted minor contrivances to the RSA for consideration. Owing to such adverse selection, prizes were negatively related to the course of future important technologies. The RSA ultimately became disillusioned with the prize system. Officials acknowledged that the important British inventions had been associated with patenting, and their efforts had been “futile” because of the institution’s hostility to patents. As a result, the society switched from offering inducement prizes towards lobbying for reforms to strengthen the patent system.

Patent rights represent novel inventions that satisfy known rules, and econo-

mists have a thorough understanding of their advantages and shortcomings as a measure of inventive activity. International industrial exhibitions add to our knowledge but are rather more problematic as indices of invention.¹² World’s fairs were not necessarily representative of any country’s population of inventors, inventions, patents, or industry. For instance, the United States was at war during the 1862 Paris Universal Exhibition, so only 128 Americans participated among the total of over 26,000 exhibitors. At the Great Exhibition of 1851 in London’s Crystal Palace, the rules allowed displays by manufacturers and other noninventors. Exhibits often had nothing to do with inventions, and their date and place of creation were unknown.¹³ Decentralized juries, many with no technical expertise, bestowed medals for reasons ranging from workmanship to aesthetics, while relatively few awards recognized novel inventions.

Some of these drawbacks can be addressed by examining pooled cross-sections from the same event and city over time. My datasets include approximately 30,000 innovation prizes from the regularly occurring industrial exhibits of the American Institute of New York, the Massachusetts Mechanics Association, the Franklin Institute of Philadelphia, the Mechanics Association of Ohio, the St. Louis Agricultural and Mechanics Association, the Mechanics Institute of San Francisco, and others. In addition to the information on inventions and innovations, the data incorporate extensive details about exhibitors, judges, and the rationale for decisions.

What can we learn from such data? Industrial exhibitions, whether national or international, tell us little about the propensity to patent or the use of patent protection. A single exhibit of, say, a steam engine, could comprise numerous patented components. Patentees must be identified from the names of the exhibitors when researchers are making a match, but many participants in the exhibition were third-party agents, manufacturers and sellers, not actually inventors. As a result, only a small percentage of entries can be matched with patentees and their patents. Even if it



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While the recipient of the NBER’s biennial Griliches Fellowship for empirical scholarship, Khan completed *The Democratization of Invention: Patents and Copyrights in American Economic Development, 1790–1920*. The Economic History Association awarded this monograph the Alice Hanson Jones Biennial Prize for an outstanding book in American economic history.

Khan was recently a W. Glenn Campbell and Rita Ricardo-Campbell National Fellow, and an Arch W. Shaw Fellow, at the Hoover Institution. Other awards include the Leonardo da Vinci Fellowship, Adam Smith Medal, Kenan Fellowship, Porter Fellowship, and Senior Fellowship at the Lemelson Center for Invention and Innovation.

Like Marguerite Yourcenar, a favorite French author, Khan has lived in Maine for more than a decade. She and fellow DAE members have tracked down elusive data in remote archives ranging from Paris, France, to settlements in New South Wales, Australia, and even to Paris, Maine.

were possible to identify patentees with zero error, and a large fraction of exhibits were found to be unpatented, this does not imply that inventors were actively avoiding patents and the patent system. Instead, many exhibits were simply not eligible for a patent, because they lacked novelty or their subject matter was inherently unpatentable.

Industrial fairs do, however, offer valuable insights into the operation of prize systems, into creativity that does not qualify for patent protection, and into the commercialization of innovations.¹⁴ Americans were skeptical about prizes, highlighting their transactions costs and the potential for cognitive dissonance or corruption when juries and administrators, rather than markets, determined values and winners. Empirical analyses of the datasets consistently find that prize awards were largely idiosyncratic, and unrelated to proxies for productivity like inventive human capital or the value of the invention. Decisions often reflected the identity of the participants, both exhibitors and judges, rather than the nature of the discovery. In Britain, the probability of a prize being awarded to an inventor was unaffected by variables such as the inventor's qualifications and experience; the most significant determinant of an award was whether the individual had an elite background.¹⁵ Similarly, American prize winners typically belonged to more privileged classes than the general population of patentees, as gauged by their wealth and occupational status.¹⁶ As inducements for new inventions, prizes frequently failed to result in creations that were scalable or valuable in the marketplace. Prizes undoubtedly offered valuable advertisement for sponsors and winners but this benefit declined as professional marketing practices developed.

Welfare analysis of patents tends

to focus on the potential for monopoly, a longstanding concern of American common law even before the Sherman Act.¹⁷ However, patent rules also mandate disclosure so others can replicate the results or discover competitive substitutes. The creators of the American patent system specifically designed mechanisms to enable the diffusion of technical information. To estimate the role of patents and prizes in generating knowledge spillovers, I tested for spatial autocorrelation in patents and in prizes covering unpatented technical innovations.¹⁸ In keeping with the contract theory of patents, patented inventions were associated with statistically significant spatial autocorrelation, consistent with the prevalence of knowledge spillovers. By

patent and prize data offer an indispensable resource for gender studies. A sample of over 12,000 inventions and innovations by female patentees and participants in prize-granting institutions in Britain, France, and the United States enables the systematic assessment of women's creativity within the market and household.¹⁹ My dataset distinguishes between improvements in consumer final goods, changes in designs, and other forms of technological creativity. The results show that women, especially nonpatentees, were significantly more likely than men to produce these types of incremental consumer-oriented improvements. A general implication is that, by empirically missing such consumer innovations, economists continue to underestimate women's contributions to technological change and social welfare.

Legal records comprise another underused resource that can shed light on the link between markets and incentives for cooperative behavior and innovation.²⁰ Courts and legal institutions in the United States were not biased towards the wealthy, but enhanced access by all citizens.²¹ My book showed

that inventive activity was bolstered by a judiciary committed to enforcing property rights for all inventors. Rules and standards were not static, but effectively altered in response to technological innovations.²² From the perspective of a world where mail was delivered by stagecoach, the advent of the telegraph was far more transformative to communications than the change from a landline to a cellphone. A myopic focus on "explosions" in patent litigation fails to appreciate that litigation about all areas of law—patents,

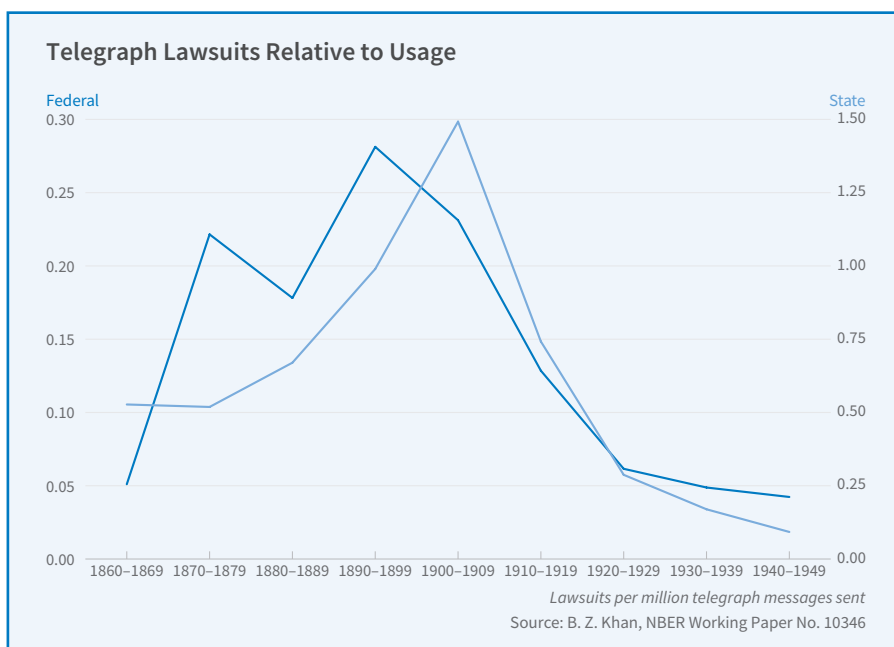


Figure 2

contrast, prize-winning innovations were not spatially dependent. Patenting further boosted prize innovations in adjacent counties, and such spatial effects were large and significant. In short, patents created spillovers for both patented inventions and unpatented innovations; whereas prizes were less effective in generating such externalities, perhaps owing to a lack of specific mechanisms to diffuse information.

Even today, women are poorly represented in the annals of technology, so

property, contracts and torts alike — was inevitably associated with the advent of any important innovation.²³ As Figure 2, on total civil litigation related to the telegraph, illustrates, productive institutional responses ultimately accommodated and resolved the transactions costs and conflicts associated with disruptive innovation.

Enterprise and Family Networks

Another theme of my research, the organization of firms, highlights the role of family networks in the mobilization of capital. Some scholars regard familial connections as inefficient, with potential both for corruption and for exploitation of unrelated shareholders. My results support a more positive interpretation of such personalized relationships in enterprise and innovation.

An empirical study of female entrepreneurs in 19th-century France reveals that their activities were enhanced by participation in family firms.²⁴ Women were constrained by discriminatory laws that inhibited their ability to hold property, write contracts, and retain separate earnings.²⁵ Family firms reduced such transaction costs and allowed women to engage successfully in market exchange. The French experience suggests that family-based enterprises can provide a means for integrating relatively disadvantaged groups into the market economy as managers and entrepreneurs.

Studies of family networks typically focus on insiders, such as directors and other corporate elites. By contrast, I have collated unique panel data encompassing all of the shareholders in an economy-wide sample of antebellum Maine corporations.²⁶ The dataset includes information on the age, occupation, and wealth of each investor as well as the voting rights, restrictions on directors, and legal liability rules of each firm. I find that “related investing” characterized the entire ownership structure, and personal ties were especially prevalent among women, less-wealthy shareholders, and small investors. Such networks facilitated capital mobilization, especially

for inexperienced investors, arguably by reducing the risk and transactions costs of new ventures. Ongoing research examines the links between related investing and corporate governance, age, and portfolio composition. Moreover, these data allow us to investigate the Bagehot Hypothesis, which suggests that unlimited liability rules have implications for the wealth composition of shareholders.

In sum, my research helps to explain overarching growth patterns: the universal prevalence of family networks in business, the early decline of innovation prizes, the success of American patent institutions that resulted in its global diffusion, and the rise of the United States as a leading industrial nation. The results highlight the central role of market-oriented incentives, in tandem with open-access economic and legal institutions, in promoting technological progress and social welfare.

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The Impact of Contracting Out on Medicare and Medicaid

Mark Duggan

More than 120 million Americans currently receive their health insurance through the Medicare or Medicaid programs. Total government spending on the two programs in 2016 is projected to exceed \$1.2 trillion.¹

Medicare is a federal program that covers approximately 48 million Americans aged 65 or older, as well as nine million younger adults receiving Social Security Disability Insurance (SSDI) benefits. Medicaid is a means-tested program that, in 2016, provided coverage to more than 74 million low-income individuals. It is financed jointly by the federal government and state governments. More than 10 million “dually eligible” individuals receive health insurance coverage from both programs. Both programs provide coverage for most health care services, with Medicare requiring enrollees to cover a greater share of their costs and Medicaid generally reimbursing health care providers less generously.

During the 1960s, 1970s, and for much of the 1980s, both programs tended to reimburse hospitals, physicians, and other health care providers directly for the cost of each service. One concern with this fee-for-service (FFS) method of reimbursement was that it could give care providers a financial incentive to perform unnecessary or low-value services. Similarly, providers had little incentive to coordinate with one another to optimize services. These concerns and rapid growth in spending for both programs led Medicare in the early 1980s and many state Medicaid programs soon thereafter to test alternative payment models known as managed care. These included health maintenance organi-

zations (HMOs) and others, with the managed care organization typically receiving a fixed amount per member per month to coordinate and finance health care for the enrollee.

In the years since, a large body of evidence has demonstrated that Medicare managed care recipients utilize significantly less health care than their counterparts in traditional FFS Medicare. However, it is unclear whether this reflects an effect of managed care or instead a difference in the characteristics of those choosing to enroll in Medicare managed care plans, which since 2003 have been referred to as Medicare Advantage (MA). This is especially true because all Medicare recipients have the option to enroll in MA plans, and thus MA enrollees may differ in unobserved ways from those in FFS Medicare. Medicare Advantage has become more important over time. Today, nearly one in three (31 percent) of the nation’s 57 million Medicare recipients is enrolled in a MA plan, compared with just one in eight (13 percent) in 2005 [Figure 1, next page.]

Jonathan Gruber, Boris Vabson, and I investigated the differences between MA enrollees and all other Medicare beneficiaries for the period 1998 through 2003 in the state of New York.² We focused on this time period and on a single state for two reasons: First, we were able to link individual-level hospital discharge data from New York with month-by-month Medicare enrollment data, allowing us to measure health care utilization for the same individual as he or she transitioned from FFS Medicare to MA or vice versa. Second, at the end of 2000, several counties experienced an abrupt



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Duggan’s research has been published in the *American Economic Review*, the *Journal of Political Economy*, and the *Quarterly Journal of Economics*, and has been featured in *The Economist*, the *New York Times*, and the *Wall Street Journal*. He was the 2010 recipient of the ASHEcon Medal, awarded every two years to the leading health economist in the U.S. under age 40, and his research has been funded by the National Science Foundation, the National Institutes of Health, the Alfred P. Sloan Foundation, the Robert Wood Johnson Foundation, and the Social Security Administration.

He has testified about his research to committees in both the U.S. Senate and U.S. House of Representatives and served from 2009 to 2010 as senior economist for health care policy on the White House Council of Economic Advisers. He teaches “Econ 1” at Stanford and advises dozens of undergraduate and graduate students.

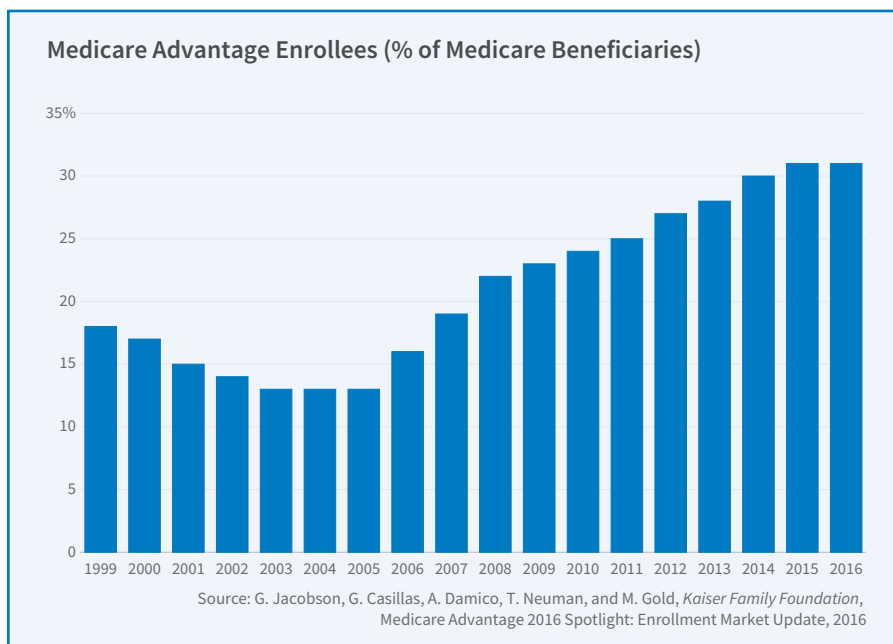


Figure 1

reduction in their MA enrollment as certain health insurers exited the MA market. These insurer exits caused MA enrollment to decline to nearly zero in affected counties.

Using longitudinal data, we explored how health care utilization, the quality of health care, and health outcomes changed in response to changes in enrollment status. This analysis had an important advantage over most previous “switcher” analyses, which compared utilization changes for individuals who voluntarily moved from FFS to MA or vice versa, as these changes might have been caused by a change in an individual’s demand for care. Our findings demonstrated very large increases in inpatient hospital care for Medicare recipients forced out of MA plans. Hospital utilization increased by an average of 60 percent when individuals switched into traditional FFS Medicare. Interestingly, this finding was almost identical to the analogous estimate of 65 percent from analyses of the RAND Health Insurance Experiment in the 1970s, which randomly assigned patients to managed care plans. The increases in utilization were especially pronounced for elective visits. Our results also showed that the average distance to the hospital fell as

enrollees moved into FFS Medicare. This result is explained by MA plans tending to have narrower provider networks than traditional Medicare. Despite the increase in utilization, we found little evidence of a change in the quality of care or in health outcomes. Taken together, the results suggest that MA plans are effective in reducing the utilization of low-value care while having little impact on observable measures of health.

One challenge for Medicare since the program’s introduction of managed care in the early 1980s has been to determine appropriate payments to insurers. Through the early 2000s, managed care plans typically were paid 5 percent less per patient than the average for someone with the same age, gender, and county of residence. The rationale for reimbursing less than traditional FFS Medicare was that insurers could control costs sufficiently to still earn a profit. However, insurers benefited from positive selection because low-utilization Medicare recipients opted into the plans. Partly because of evidence that Medicare was spending more for MA enrollees than if they had remained in FFS Medicare, beginning in 2004 the federal government moved to a risk-adjustment system that paid

plans more if they enrolled individuals with certain medical conditions. For example, an insurer would receive a certain increment to the plan payment if a Medicare recipient had diabetes. This shift to risk-adjustment was designed to increase insurers’ incentives to compete on price and quality rather than on the ability to “cream-skim” low-cost enrollees.

Jason Brown, Ilyana Kuziemko, William Woolston, and I investigated the effects of this shift to risk adjustment on MA enrollment and on Medicare expenditures.³ We developed a simple model which showed that, even with risk adjustment, plans have a strong financial incentive to select certain types of Medicare recipients. A Medicare recipient with a relatively mild case of diabetes would be more profitable than an otherwise identical recipient with a more serious case. Consistent with our model’s prediction, we found that MA plans enrolled Medicare recipients with more adverse health conditions after the shift to risk adjustment, with this reflected in a higher average risk score. However, conditional on this risk score, Medicare recipients enrolling in MA plans had lower costs than the average. Because of this, overpayments to MA plans did not fall after the shift to risk adjustment. The hoped-for Medicare savings had not materialized by the final year of the study period, 2006. Furthermore, we found no evidence of significant improvements in the average quality of care following this policy change.

These studies did not address how the quality of care in MA plans changes with the generosity of plan reimbursement. Amanda Starc, Vabson, and I explored this issue by leveraging a policy-induced increase in MA reimbursement in metropolitan areas with a population of 250,000 or more relative to areas below this threshold.⁴ More specifically, the policy reform that we studied introduced a floor on the benchmark for plan reimbursement in areas with relatively low per-capita FFS expenditures. Areas with populations

of 250,000 or more had their benchmark set 10.5 percent higher than areas with smaller populations. We focused on metropolitan areas with populations between 100,000 and 600,000 and compared the quality of MA coverage for those above the 250,000 threshold with those below.

Consistent with past research, we found MA enrollment to be very responsive to the generosity of plan reimbursement, with the 10.5 percent increase in reimbursement causing a 13 percentage point increase in MA enrollment. This enrollment increase was partially driven by the entry of new insurers to the market, with an average of two additional insurers entering in response to the additional reimbursement. Despite the increase in MA enrollment, our results suggested little improvement in the quality of care as measured by patient out-of-pocket costs, coverage for additional services, or satisfaction. We estimated that less than 20 percent of the additional reimbursement passed through to consumers in the form of more generous coverage; pass-through was highest in areas with the most competition among MA plans. This was broadly consistent with my previous research with Leemore Dafny and Subbu Ramanarayanan, which found that a reduction in competition leads to higher costs for consumers.⁵

While my recent studies point to some of the challenges in contracting with private insurers in the Medicare program, my previous research with Fiona Scott Morton on Medicare Part D suggested the possibility of very large benefits to such contracting.⁶ We explored the effect of Medicare Part

D, which relied on private insurers to provide and finance prescription drug treatments, on pharmaceutical prices. Our results revealed that contracting with private plans substantially lowered pharmaceutical prices for drugs sold differentially to Medicare recipients. The likely mechanism for this was the greater negotiating power that the plans had relative to individual Medicare recipients, many of whom were previously uninsured for prescrip-

ing Medicaid recipients from FFS into managed care plans has been to control costs. But, perhaps surprisingly, there is little empirical evidence suggesting that Medicaid managed care (MMC) does lower costs. To investigate this issue, Tamara Hayford and I used Centers for Medicare & Medicaid Services (CMS) data on each state's Medicaid spending by service category and year to explore the effect of MMC on state Medicaid expenditures.⁸ We also assembled data

on state and local MMC mandates to serve as a plausibly exogenous source of MMC enrollment. Our results demonstrated that the mandates significantly increased MMC enrollment, with an increase of four MMC recipients for every 10 Medicaid recipients "exposed" to an MMC mandate. This effect was not one-for-one because some Medicaid recipients were already voluntarily enrolled at the time of the mandates, while other Medicaid

recipients were exempt.

Using the MMC mandates as an instrument for MMC enrollment, we found little evidence to suggest that MMC contracting reduced Medicaid spending. However, the effect of the mandates appears to vary across states as a function of the generosity of provider reimbursement. According to data from a survey of health care providers conducted two years before the start of our study period, in some states Medicaid reimbursed physicians, hospitals, and other health care providers much less generously than did private insurers. Thus, even if a private insurer could significantly lower utilization, it is plausible that spending would increase due to the higher prices that they pay providers. However, some states actually had

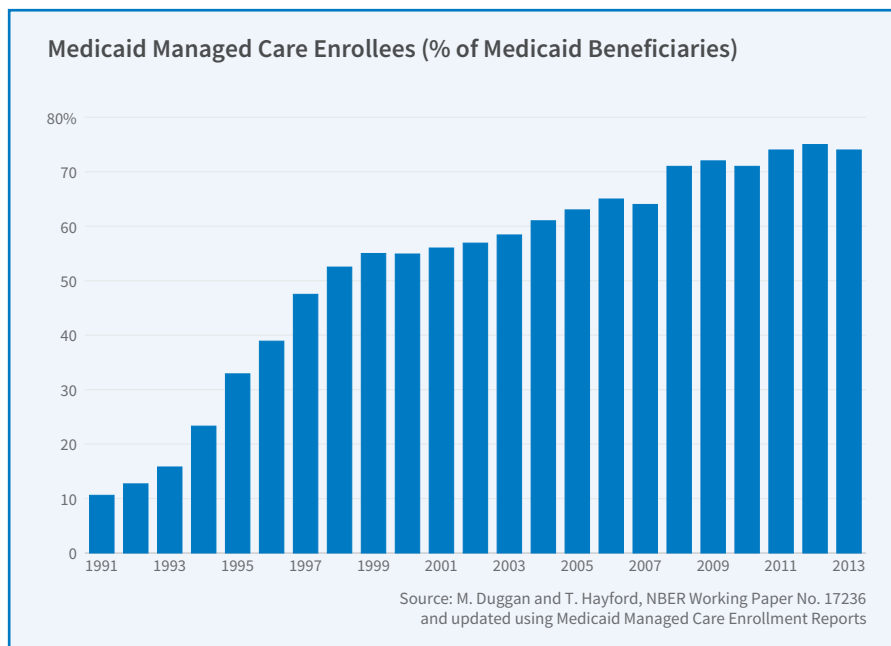


Figure 2

tion drug expenses.

While most of my research on private insurer contracting has focused on the Medicare program, in recent and ongoing work I am also estimating the effects for Medicaid. More than 70 percent of Medicaid recipients are currently enrolled in managed care plans, up dramatically from just 10 percent in the early 1990 [Figure 2]. In contrast to Medicare, where all recipients have the option to enroll in managed care plans, many states introduced mandates during the 1990s and 2000s that required some or all of their Medicaid recipients to enroll in managed care plans. These mandates were frequently rolled out county-by-county, as in California during the 1990s.⁷

A primary motivation for shift-

Medicaid reimbursement that was comparable to that paid by private insurers. In those states, a reduction in utilization could translate into a reduction in Medicaid spending. Consistent with this, our results suggest that Medicaid spending did fall in states that began our study period with relatively high rates of provider reimbursement. Taken together, our results demonstrate that the spending effects of MMC contracting vary across states as a function of their FFS program's parameters, with some states well-positioned to reap budget savings and others likely to see an increase in Medicaid spending.

¹ Centers for Medicare and Medicaid Services (CMS) Office of the Actuary, "Table 3. National Health Expenditures; Historical and Projections, 1960–2025," 2016.
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³ J. Brown, M. Duggan, I. Kuziemko, and W. Woolston, "How does Risk Selection Respond to Risk Adjustment? Evidence from the Medicare Advantage Program," NBER Working Paper No. [16977](#), April 2011, and American Economic Review, 104 (10), pp. 3335–64.

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⁴ M. Duggan, A. Starc, and B. Vabson "Who Benefits when the Government Pays More? Pass-Through in the Medicare Advantage Program," NBER Working Paper No. [19989](#), March 2014, and Journal of Public Economics, 141, 2016, pp. 50–67.

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⁵ L. Dafny, M. Duggan, and S. Ramanarayanan, "Paying a Premium on Your Premium? Consolidation in the U.S. Health Insurance Industry," NBER Working Paper No. [15434](#), October 2009, and American Economic

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⁸ M. Duggan and T. Hayford, "Has the Shift to Managed Care Reduced Medicaid Expenditures? Evidence from State and Local-Level Mandates," NBER Working Paper No. [17236](#), July 2011, and Journal of Policy Analysis and Management, 32 (3), 2013, pp. 505–35.

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Macroeconomic Policy in a Liquidity Trap

Gauti B. Eggertsson

The main focus of my research for nearly two decades has been macroeconomic policy during periods when the central bank has cut the short-term nominal interest rate to zero, periods that are often referred to as exhibiting a liquidity trap. In this summary, I describe my key conclusions.

The work can be divided quite neatly into four parts, roughly following the time line in which it was written. I highlight each phase of my research agenda and three generations of models which evolved along the way. While I focus primarily on my own research, I must acknowledge at the outset that many others have contributed to this research agenda.

First-Generation Models

My interest in the liquidity trap was triggered by events in Japan in the late 1990s. At that time, Japan suffered from subpar growth and deflation, and the short-term interest rate had collapsed to zero. If it could happen in Japan, it could happen here as well, and it seemed to me a first-order priority for those concerned with macroeconomic policy to understand those events.

My first published work on this topic was written with my adviser, Michael Woodford.¹ Central to it was the idea that once a central bank is constrained by the zero lower bound (ZLB), it can still have an impact on the economy by giving markets guidance about the evolution of future interest rates, rates that would prevail once the ZLB is no longer binding. For example, it could set explicit thresholds, saying that the interest rate will stay at zero until the price level or unemployment rate reaches a particular level, an idea we formalized in the paper. These results have received quite

a bit of attention over the years, perhaps due to the fact that during the Great Recession the Federal Reserve used the analysis, and closely related work by other authors, as part of the rationale for its “forward guidance” policy once the ZLB became a concern.² Several other central banks—including the Bank of Canada, the European Central Bank, the Bank of Japan, and the Bank of England—utilized this research for similar policy purposes.

Another important result was an “irrelevance” proposition, the idea that increasing the money supply at a zero interest rate has no effect on output or prices if it does not change expectations about future interest rates. Woodford and I further showed that it was irrelevant how this was done, that is, which assets the central bank bought in order to increase the money supply. This was a quite controversial proposition when reported, but one that has stood the test of time, with several central banks more than doubling the monetary base during the most recent crisis, using various purchasing schemes, with little or no apparent effect on prices.³ This was consistent with the empirical prediction of that paper. It was a direct violation, however, of the quantity theory of money, which was a reigning paradigm in the '90s.

A second major theme of my early work was how policies aimed at manipulating expectations, such as forward guidance, could be made credible. Specifically, I wanted to know what could be done by the government to back up an announcement of future intervention by the appropriate use of fiscal policy, exchange rate policy, or various forms of quantitative easing. This was the main focus of the paper, “The Deflation Bias and Committing to Being Irresponsible,” the title of which played



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He has worked at research departments of the International Monetary Fund and the Federal Reserve Bank of New York. He has also been a visiting faculty member at Princeton, Yale University, and Columbia University, where he taught international finance and macroeconomics at graduate and undergraduate levels.

Eggertsson has published in a variety of professional journals, including the *American Economic Review* and the *Quarterly Journal of Economics*. The main focus of his work is the analysis of monetary and fiscal policy over the business cycle, both from a modern and a historical perspective.

on Paul Krugman’s proposal that the Bank of Japan needed to “commit to being irresponsible.”⁴ It was a theme I would return to repeatedly in work on the Great Depression in order to interpret various government policy actions in the 1930s, an agenda I took up after leaving graduate school at the urging of one of my advisers, Ben Bernanke, and many others.

The Great Depression and the Liquidity Trap

My work on the Great Depression yielded three major conclusions. First, it gave a somewhat novel interpretation of the U.S. recovery that started in 1933, when Franklin Delano Roosevelt took office. It heavily emphasized the role of expectations about future policy and the price level, something that was largely missing from the existing literature, which focused more on static movements in the money supply or government spending as explanatory variables.⁵ One of the main goals of my work on the regime change in 1933 was to model it in the context of an infinitely repeated game; then, one could interpret many of the actions of the government as having directly affected expectations, something I spent considerable time arguing did indeed happen. A second and somewhat more provocative conclusion was that some of the most controversial elements of the New Deal, such as the National Industrial Recovery Act, were expansionary, rather than contractionary, as the conventional wisdom held at the time, but the act included temporary but highly controversial policies like allowing firms to cartelize to prop up prices, in violation of reigning antitrust laws.⁶ This was due to the positive effect these policies had on inflation expectations, as higher inflation expectations are expansionary at the ZLB since they reduce the real rate of interest, thereby stimulating demand. These policies were, in other words, part of FDR's commitment to "reflate" the economy. Third, this research provided a novel interpretation of the 1937 recession, which I termed "The Mistake of 1937." I argued that the mistake was due to the administration's abandonment of the commitment to inflate the price level back to pre-Depression levels.⁷

"The Mistake of 1937" is one of my favorite papers. I

was invited to give the paper as a part of the Bank of Japan's Annual Conference in 2006. This meeting was attended by a large part of the governing board at the bank, and in a youthful fit of over-confidence, I felt that perhaps warning that they were about to repeat the mistake of 1937 would make a difference. The talk, of course, had no apparent effect at the time. The bank raised the short-term nominal rate a few weeks later—precisely what I warned could lead to a recession. The phrase "The Mistake of 1937" caught on, and is used routinely by policy makers and pundits talking about this period. This was probably driven by the fact that Krugman devoted a *New York Times* column to the paper and used the title for his column when warning the Fed about raising rates prematurely.

The 2008 Crisis: Second-Generation ZLB Models

The work described above was done prior to the economic crisis of 2008, which led me to abandon further work on economic history. The 2008 crisis looked a lot like the type of economic crises that I already had analyzed in previous work and I decided to pursue two main lines of research in response. The first was tightly

linked to my earlier theoretical dissertation work, while the second aimed at building a second generation of New Keynesian models to understand what happened, going deeper into the origin of the 2008 crisis and the Great Depression.

Within the first line, I examined how fiscal policy tools could be used instead of, or in addition to, monetary policy in responding to the crisis. Perhaps the most important result was that the "multiplier of government spending"—the increase in output as a consequence of an increase in government spending—was theoretically much greater at the ZLB than under normal circumstances.⁸ I proved that it had to be above unity in a standard New Keynesian model. This implied that existing empirical estimates of government spending multipliers were not useful. Those estimations depended upon data generated under regular circumstances when the short-term nominal interest rate was positive. This had strong policy implications, as the Obama administration was designing the largest fiscal stimulus program seen since the end of World War II. While this result was anticipated in some of my earlier work, I now showed it explicitly with a series of analytical propositions. Since then a considerable literature has emerged on this question and I have continued to work on it.⁹

I wrote two other papers studying the policy response to the Great Recession, built to some extent on the theoretical framework I had developed prior to the crisis. The first provides theoretical foundations for some aspect of the Federal Reserve's policy during the crisis, namely the quantitative easing (QE) program in which the Fed bought long-term government bonds [Figure 1].¹⁰ One motivation for that paper was that Bernanke has famously quipped "QE works in practice but not in theory." In other words, there was and remains a perception that QE had an important economic

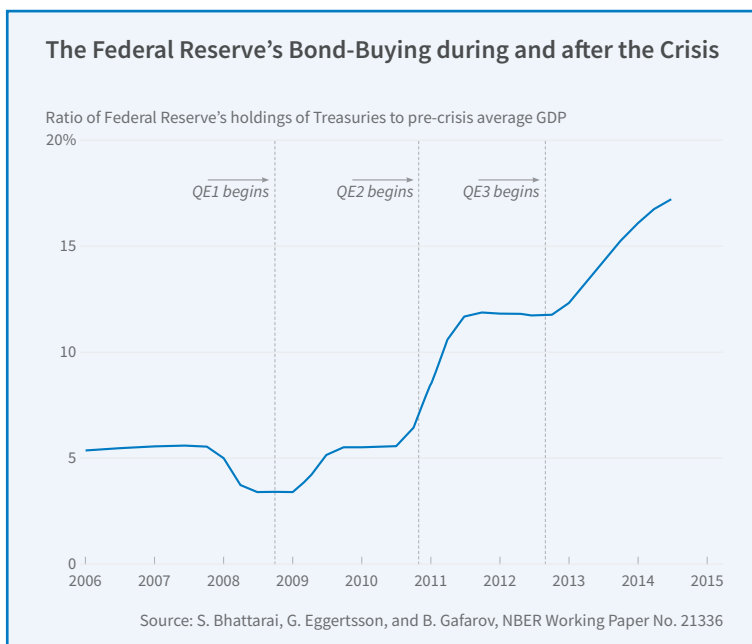


Figure 1

effect, yet proper theoretical explanations have been elusive, in part due to the “irrelevance result” I proposed with Woodford in 2003. This paper suggests a particular way in which QE affected expectations about future interest rate policy.

The second paper in this vein, written with Andrea Ferrero and Andrea Raffo, was motivated by the deep recession in the southern periphery of Europe following the 2008 crisis.¹¹ The periphery countries were unable to fight the slump by devaluing their own currency on account of the euro, and they could not engage in an aggressive fiscal expansion due to high levels of public debt. As a result, many policy makers turned to “structural reforms” as a panacea. The paper showed that while structural reforms, defined as policies that increase the potential output of the economy, are expansionary in the long run, they are contractionary in the short run due to their deflationary effects if the central bank is constrained by the ZLB. The key insight, as in the case of the article on the New Deal, was built on what I had earlier termed as the “paradox of toil,” according to which the usual rules of macroeconomics can be stood on their head at the ZLB.¹²

The second line of research I pursued in response to the crisis sought deeper theoretical foundations for the source of ZLB episodes. The first generation of models I had written assumed that the shocks that triggered the crisis were a reduced form of “preference shock.” Krugman and I modeled the origin of the crisis in a more fundamental way based on the idea of a “Minsky moment.”¹³ This refers to the work of Hyman Minsky, and suggests that the 2008 crisis came about due to debtors realizing in the “Minsky moment” that they had overextended themselves by taking on too much debt, after which there was a rapid contraction of spending (“deleveraging”) by borrowers. To make up for this drop in spending, some other economic agents had to step in and start spending more. The way this happened in our theory was

via reduction in short-term real interest rates that induced savers to spend. The key point was that the required reduction in the real interest rate resulting from a “Minsky moment” might easily bring the economy to the ZLB, which would then lead to the type of macroeconomic challenges that had been such a strong focus of my earlier work.

This debt deleveraging theory of the crisis had readily testable implications, including the idea that regions in the U.S. in which consumers had taken on larger amounts of debt should have suffered more during the crisis than other areas. A considerable literature has emerged that supports predictions of this kind using micro-data, the best-known of which are a series of papers by Atif Mian and Amir Sufi summarized in their book, *House of Debt*.¹⁴ I continued this line of research in a recent paper with Pierpaolo Benigno and Federica Romei.¹⁵ We take the debt deleveraging idea and incorporate it into what has become known as the standard New Keynesian model, a consensus model formed prior to the crisis. We show how the standard model can be nested in a more general setting, which includes the forces associated with debt deleveraging and banking crisis, and argue that this new framework should become the post-crisis benchmark model in the New Keynesian literature. We also illustrate several important policy implications of the proposed new benchmark model and how the policy conclusion changes relative to the earlier benchmark model.

This second line of research also includes a joint paper with Marco Del Negro, Ferrero, and Nobuhiro Kiyotaki.¹⁶ While much of the focus of the paper is on the effect of various Fed policies during the crisis, at its heart is once again an attempt to model in more detail the origin of the economic crisis of 2008. This turns out to be necessary to rationalize various types of policy interventions the Federal Reserve implemented in the early part of the crisis involving emergency loans. The paper proposes that

an important element of the crisis is the reduction in liquidity that occurred because several asset classes became harder to sell. It argues that the emergency assistance of the Federal Reserve via various liquidity facilities may have prevented the second coming of the Great Depression.

Post Crisis: Third-Generation Models of Secular Stagnation

My most recent work has grappled with the fact that existing models have a difficult time explaining the long duration of the Great Recession and the fact that the U.S. nominal interest rate is still close to zero almost a decade after the shocks that led to the recession occurred. The second-generation models predicted a temporary debt deleveraging cycle which should have led to a recession that was more short-lived. Similarly, the first-generation models plainly assumed that the shocks giving rise to the crisis were temporary. Moreover, those models “blow up” in the presence of very long-lasting shocks: They do not permit well-defined, bounded solutions in such cases. I have referred to these conditions as “deflationary black holes” in some of my work.

With interest rates still close to zero around the world, and inflation low but not approaching any explosive negative numbers, many started suggesting that we need to consider models in which a low interest rate can persist for an arbitrarily long time. The proposition that we could be in for a very long slump—without any natural pushback to normalcy—is the secular stagnation hypothesis. It was posited by Alvin Hansen in 1938 in his presidential address to the American Economic Association, shortly after “the Mistake of 1937,” when the future of the American economy looked grim indeed.¹⁷ This hypothesis was recently resurrected by Lawrence Summers in a speech at the International Monetary Fund.¹⁸

Neil Mehrotra and I formalize the secular stagnation hypothesis in a theo-

Global Trends in Interest Rates

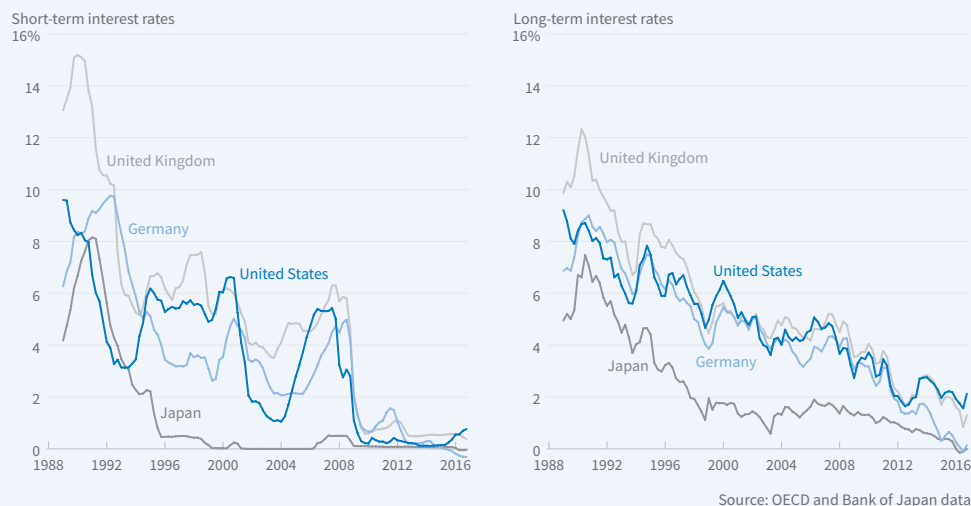


Figure 2

retical model which I consider to be a key contribution to “third generation” modeling of the ZLB.¹⁹ Our model provides a much stronger rationale for aggressive fiscal policy relative to monetary policy in the optimal policy mix. At the heart of this work is the idea that something more than financial collapse may have been behind the crisis of 2008. The drop in real interest rates we have seen in recent years appears to be the result of a broader worldwide trend that dates back well before the recent financial turbulence [Figure 2].²⁰ Accordingly, in this model, we focus not only on financial shocks — which still remain very important — but also on slower moving trends such as increasing inequality, population dynamics, and a fall in the relative price of investment over time as well as the observed slowdown in productivity. All these forces can put downward pressures on the real interest rate and, unlike financial shocks, they are unlikely to return to where they were quickly, if at all. Moreover, this new generation of models has some fundamentally new implications for policy relative to the first two generations. In particular, monetary policy becomes much more challenging as a solution to insufficient demand.

Following up on the first paper with Mehrotra, he and I started joint work

with Summers on secular stagnation, some of which is coauthored by Sanjay Singh.²¹ One of the key insights of this work is that while under regular circumstances a current account deficit transmits lower interest rates from the surplus country to the deficit country, which is expansionary, when the ZLB is binding, the trade deficit will instead transmit a recession. This provides a theoretical foundation for the prospect of trade and currency war in low-interest environments. Overall, this highlights an increased value of cross-country policy coordination in these circumstances.

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Janet Yellen’s 2009 speech “U.S. Monetary Policy Objectives in the Short and Long Run,” <http://www.frbsf.org/our-district/press/presidents-speeches/yellen-speeches/2009/january/yellen-us-monetary-policy-objectives/>; or Ben Bernanke for an early reference in “Some Thoughts on Monetary Policy in Japan,” 2003, <http://www.federalreserve.gov/BOARDDOCS/SPEECHES/2003/20030531/default.htm>

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¹³ G. Eggertsson and P. Krugman, “Debt, Deleveraging, and the Liquidity Trap: A Fisher-Minsky-Koo Approach,” *The Quarterly Journal of Economics*, 127 (3), 2012, pp. 1469–513.

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²¹ G. Eggertsson, N. Mehrotra, and L. Summers, “Secular Stagnation in the Open Economy,” NBER Working Paper No. 22172, April 2016, and *American Economic Review*, 106 (5), pp. 503–7; and G. Eggertsson, N. Mehrotra, S. Singh, and L. Summers, “A Contagious Malady? Open Economy Dimensions of Secular Stagnation,” NBER Working Paper No. 22299, June 2016, and forthcoming in the *IMF Economic Review*.

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Awards 2016

John Abowd received the Julius Shiskin Memorial Award for Economic Statistics. The award, presented by the Washington Statistical Society, the National Association for Business Economics, and the American Statistical Association, recognizes original and important contributions to the development of economic statistics.

Kenneth Ahern won second place in the Jensen Prize competition for the Best Paper in the *Journal of Financial Economics*. He was honored for his paper “Lost in Translation? The Effect of Cultural Values on Mergers Around the World,” with Daniele Daminelli and Cesare Fracassi.

Susan Athey was elected a Corresponding Fellow of the British Academy and received the Jean-Jacques Laffont Prize.

Orazio Attanasio received the Carlos Diaz-Alejandro Prize from the Latin American and Caribbean Economic Association (LACEA) and the Klaus J. Jacobs Research Prize.

Javier Bianchi received the Excellence Award in Global Economic Affairs from the Kiel Institute for the World Economy.

Olivier Blanchard received an honorary doctorate from London Business School, was named an Officier de la Légion d’Honneur in France, and was elected President of the American Economic Association.

Francine D. Blau received the 2017 Judge William B. Groat Alumni Award, presented each year by the Industrial and Labor Relations School at Cornell University to a graduate in recognition of outstanding professional accomplishments and commitment to the school.

Eric Budish, Heidi Williams, and Benjamin N. Roin received the 24th Arrow Award for the best paper

in health economics for the paper, “Do Firms Underinvest in Long-Term Research? Evidence from Cancer Clinical Trials.”

Leonardo Bursztyn received an Alfred P. Sloan Research Fellowship in Economics.

John Y. Campbell delivered the Richard T. Ely Lecture at the American Economic Association meetings in January 2016.

John Cawley became the U.S. Department of State’s Fulbright Specialist in Economics to Ireland.

Stephen G. Cecchetti was awarded an honorary doctorate from the faculty of business and economics at the University of Basel.

Janet Currie received an honorary doctorate from l’Université Jean Moulin Lyon III and the Carolyn Shaw Bell Award for furthering the role of women in economics from the Committee on the Status of Women in the Economics Profession.

Angus Deaton was named Knight Bachelor in the Queen’s Birthday Honours List, Doctor of Humane Letters from Brown University, Honorary Fellow and Royal Medal Recipient from the Royal Society of Edinburgh, Honorary Fellow of the University of Bristol, and recipient of the Franklin Founder Award.

Peter DeMarzo became President-Elect of the American Finance Association, and received the Charles River Associates Award for Best Paper on Corporate Finance for “The Leverage Ratchet Effect,” with Anat Admati, Martin Hellwig, and Paul Pfleiderer, and the Best Paper Prize at the Utah Winter Finance Conference for “Relative Pay for Non-Relative Performance: Keeping Up with the Joneses with Optimal Contracts,” with Ron Kaniel.

Marco Di Maggio received the NASDAQ Prize at the Financial Management Association conference for his paper “The Value of Trading Relations in Turbulent Times,” coauthored with Amir Kermani and Zhaogang Song.

Martin Gaynor received the Best Paper Award from the *American Economic Journal: Economic Policy* for “Death by Market Power: Reform, Competition, and Patient Outcomes in the National Health Service,” with Rodrigo Moreno-Serra and Carol Propper, and was elected to the Academy of Medicine of the National Academies of Sciences, Engineering, and Medicine.

Matthew Gentzkow received the 2016 Calvó-Armengol International Prize in Economics.

Claudia Goldin received the 2016 IZA Prize in Labor Economics for her career-long work on the economic history of women in education and the labor market.

Robert J. Gordon’s book *The Rise and Fall of American Growth* won the PROSE Award of the Association of American Publishers for the best book of the year in U.S. history, and was included in the *Wall Street Journal’s* list of the ten best nonfiction books of 2016.

Gautam Gowrisankaran received the 2016 Best Paper Award for the Workshop on HealthIT and Economics (WHITE) for “Does Hospital EMR Adoption Lead to Upcoding or More Accurate Coding?” coauthored with Keith Joiner and Jianjing Lin. He, **Aviv Nevo**, and **Robert Town** were awarded the 2016 Antitrust Writing Award for the best academic paper on mergers for their paper “Mergers When Prices are Negotiated: Evidence from the Hospital Industry.”

John Graham, Michael R. Roberts, and Mark Leary were awarded the Jensen Prize for the best corporate finance paper published in the *Journal of Financial Economics* for "A Century of Capital Structure: The Leveraging of Corporate America." Graham also received the AAA Notable Contribution to Accounting Literature Award for his *Journal of Accounting and Economics* paper "Earnings Quality: Evidence from the Field," with Ilia Dichev, **Campbell R. Harvey**, and Shiva Rajgopal.

Shane Greenstein's book, *How the Internet Became Commercial: Innovation, Privatization, and the Birth of a New Network*, won the Schumpeter Prize for recent scholarly contributions that are related to Schumpeter's work.

Gene M. Grossman was awarded an honorary doctorate by the University of Minho in Braga, Portugal and delivered The World Economy Annual Lecture at the University of Nottingham.

Daniel S. Hamermesh was named Network Director of the IZA and Editor-in-Chief of the IZA *World of Labor*.

Oliver Hart and **Bengt Holmstrom** shared the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel. Holmstrom was also named the 2016 Distinguished Fellow at CESifo in Munich.

Yael V. Hochberg was awarded the Ewing Marion Kauffman Prize Medal for Distinguished Research in Entrepreneurship.

Sebnem Kalemli-Ozcan was selected as the Council on Foreign Relations' first International Affairs Fellow in International Economics.

Steven N. Kaplan received the Harry M. Markowitz Award for the best paper published in the *Journal of Investment Management* for his paper with Robert Harris and Tim Jenkinson on "How Do Private Equity Investments Perform Compared to Public Equity?"

Loukas Karabarounis received

an Alfred P. Sloan Research Fellowship in Economics.

Samuel Kortum was elected a Fellow of the American Academy of Arts and Sciences.

Amanda E. Kowalski, Martin B. Hackmann, and Jonathan T. Kolstad received the National Institute for Health Care Management (NIHCM) Research Award for their paper on "Adverse Selection and an Individual Mandate: When Theory Meets Practice."

Ronald Lee received the 2016 Laureate Award from the International Union for Scientific Study of Population for outstanding contributions to demography.

Christian Leuz was awarded the 2016 Distinguished Contribution to the Accounting Literature Award for his paper "Mandatory IFRS Reporting Around the World: Early Evidence on the Economic Consequences," with Holger Daske, Luzi Hail, and Rodrigo Verdi. He also received the 2016 Best Paper Award from the Financial Accounting and Reporting Section of the American Accounting Association for "Adopting a Label: Heterogeneity in the Economic Consequences around IAS/IFRS Adoptions," with the same three co-authors, and the 2016 Best Dissertation Supervision Award from the same organization.

Brigitte Madrian received the 2016 Brigham Young University Distinguished Alumni Achievement Award.

Thomas McGuire received the article of the year award at the *International Journal of the Economics of Business* for his paper on "Do Reverse Payment Settlements Constitute an Anticompetitive Pay-for-Delay?" coauthored with Keith Drake and Martha Starr.

Alan C. Monheit received the New Jersey Health Foundation's Excellence in Research Award.

Enrico Moretti was elected a Fellow of the Econometric Society.

Stewart C. Myers received the

Morgan Stanley American Finance Association Award for Excellence in Finance, recognizing "outstanding thought leadership in the field of financial economics."

Ariel Pakes gave the inaugural Griliches Lecture of the Econometric Society on "Moment Inequalities and Their Use in Industrial Organization."

Alessandro Rebucci received the E-House Best Paper Award at the Global Chinese Real Estate Congress for "Does Easing Monetary Policy Increase Financial Stability?" jointly with Ambrogio Cesa-Bianchi.

Dani Rodrik was awarded an honorary doctorate by the University of Southern Denmark.

Judith Scott-Clayton received the 2016 American Educational Research Association Division L (Education Policy and Politics) Early Career Award, as well as the National Association of Student Financial Aid Administrators (NASFAA) Robert P. Huff Golden Quill Award for her research on student financial aid.

Kent Smetters and Felix Reichling received the 2016 TIAA Paul A. Samuelson Award for their paper "Optimal Annuitization with Stochastic Mortality and Correlated Medical Costs."

Robert N. Stavins was awarded the Edmund G. "Pat" Brown Award for advancing environmental policy in California.

Erdal Tekin was appointed Honorary Professor at Deakin University, Australia.

Daniel Trefler received the Killam Prize in the Social Sciences and the Bank of Canada Fellowship Award for academic excellence.

Stijn Van Nieuwerburgh was awarded the Germán Bernácer Prize for the best European economist under 40 working in macroeconomics or finance.

John Van Reenen was named an OBE (Officer of the Order of the British Empire) "for services to economics and public policy making."

Conferences

18th Annual Neemrana Conference

The NBER, India's National Council for Applied Economic Research (NCAER), and the Indian Council for Research on International Economic Relations (ICRIER) sponsored a meeting in Neemrana, India, on December 16–18, 2016, that included NBER researchers and economists from Indian universities, research institutions, and government departments.

NBER participants were **David Atkin**, **Abhijit Banerjee**, **Esther Duflo**, and **James Poterba**, all of MIT; **Emily Breza**, **Shawn Cole**, and **Gita Gopinath**, of Harvard University; **Meredith Fowlie** and **Pierre-Olivier Gourinchas**, from the University of California, Berkeley; **Douglas Irwin** of Dartmouth College; **Peter Klenow** from Stanford University; **Anne O. Krueger** of Johns Hopkins University; **Rajnish Mehra** of Arizona State University; **Karthik Muralidharan** of the University of California, San Diego; and **Romain Wacziarg** of the University of California, Los Angeles. A wide range of topics was discussed, including the prospects for India and the global economy after Brexit and the U.S. presidential election; new perspectives on skill development, education, economic growth and productivity; currency reform in India and its consequences; business investment, financial markets, and trade in India and the U.S.; and the economics of pollution abatement and climate change.

Economics of Digitization

"Economics of Digitization," an NBER conference supported by the Alfred P. Sloan Foundation, took place at Stanford on March 3. Research Associates Shane Greenstein and Josh Lerner of Harvard University and Scott Stern of MIT organized the meeting. These researchers' papers were presented and discussed:

- **Barbara Biasi**, Stanford University, and **Petra Moser**, New York University and NBER, "Effects of Copyrights on Science: Evidence from the WWII Book Republication Program"
- **Joan Calzada**, University of Barcelona, and **Ricard Gil**, Johns Hopkins University, "What Do News Aggregators Do? Evidence from Google News in Spain and Germany"
- **Thomas Blake**, eBay Research Labs; **Sarah Moshary**, University of Pennsylvania; **Kane Sweeney**, Uber; and **Steven Tadelis**, University of California, Berkeley, and NBER, "Price Salience and Product Choice"
- **Erik Brynjolfsson**, MIT and NBER; **Felix Eggers**, University of Groningen (Netherlands); and **Avinash Gannamaneni**, MIT, "Using Massive Online Choice Experiments to Measure Changes in Well-Being"
- **Ben Shiller**, Brandeis University; **Joel Waldfogel**, University of Minnesota and NBER; and **Johnny Ryan**, PageFair Limited, "Will Ad Blocking Break the Internet?" (NBER Working Paper No. [23058](#))
- **Shawn Cole**, Harvard University and NBER, and **A. Nilesh Fernando**, University of Notre Dame, "'Mobile'izing Agricultural Advice: Technology Adoption, Diffusion, and Sustainability"
- **Susan F. Lu**, Purdue University, and **Huaxia Rui** and **Abraham Seidmann**, University of Rochester, "Does Technology Substitute for Nurses? Staffing Decisions in Nursing Homes"

Summaries of these papers are at: <http://www.nber.org/confer/2017/EoDs17/summary.html>

Economics of National Security

“Economics of National Security,” an NBER conference organized by NBER President-emeritus Martin Feldstein of Harvard University and Research Associate Eli Berman of the University of California, San Diego, took place in Cambridge on March 5–6. These researchers’ papers were presented and discussed:

- **Giorgio Chiovelli** and **Elias Papaioannou**, London Business School, and **Stelios Michalopoulos**, Brown University and NBER, “Land Mines and Spatial Development”
- **Esteban Klor**, Hebrew University of Jerusalem; **Sebastian M. Saiegh**, University of California, San Diego; and **Shanker Satyanath**, New York University, “The Logic of Cronyism in State Violence: Evidence from Labor Repression During Argentina’s Last Dictatorship”
- **Suleiman Abu Bader**, Ben-Gurion University of the Negev (Israel), and **Elena I. Ianchovichina**, World Bank, “Polarization, Foreign Military Interventions, and Civil Conflicts”
- **Kerwin Kofi Charles**, University of Chicago and NBER; **Konstantin Kunze**, University of California, Davis; **Hani Mansour** and **Daniel I. Rees**, University of Colorado Denver; and **Bryson Rintala**, U.S. Air Force Academy, “Taste-Based Discrimination and the Labor Market Outcomes of Arab and Muslim Men in the United States”
- **Benjamin Crost**, University of Illinois at Urbana-Champaign, and **Joseph Felter**, Stanford University, “Export Crops and Civil Conflict”
- **Samuel A. Bazzi** and **Matthew Gudgeon**, Boston University; **Robert Blair**, Brown University; **Christopher Blattman** and **Oeindrila Dube**, University of Chicago and NBER; and **Richard Peck**, Northwestern University, “What Can Prediction Teach Us About Violence? Machine Learning Applications in Indonesia and Colombia”
- **Madeline Zimmerman**, Harvard University, “The Effect of U.S. Drone Strikes on Terrorism in Pakistan and Yemen”
- **Luke N. Condra**, University of Pittsburgh; **James D. Long**, University of Washington; **Andrew C. Shaver**, Princeton University; and **Austin L. Wright**, University of Chicago, “The Logic of Insurgent Electoral Violence”

Summaries of these papers are at: <http://www.nber.org/confer/2017/ENSs17/summary.html>

Program and Working Group Meetings

Industrial Organization

The NBER's Program on Industrial Organization met at Stanford on January 27–28. Research Associate Matthew Gentzkow of Stanford University and Faculty Research Fellow Robin S. Lee of Harvard University organized the meeting. These researchers' papers were presented and discussed:

- **Ali Hortaçsu**, University of Chicago and NBER; **Fernando Luco** and **Dongni Zhu**, Texas A&M University; and **Steven L. Puller**, Texas A&M University and NBER, “Does Strategic Ability Affect Efficiency? Evidence from Electricity Markets”
- **Avi Goldfarb**, University of Toronto and NBER, and **Mo Xiao**, University of Arizona, “Transitory Shocks, Limited Attention, and a Firm's Decision to Exit”
- **David Atkin**, MIT and NBER, and **Dave Donaldson**, Stanford University and NBER, “Who's Getting Globalized? The Size and Implications of Intra-National Trade Costs” (NBER Working Paper No. [21439](#))
- **Bruce Blonigen**, University of Oregon and NBER, and **Justin R. Pierce**, Federal Reserve Board, “Evidence for the Effects of Mergers on Market Power and Efficiency” (NBER Working Paper No. [22750](#))
- **Takuo Sugaya**, Stanford University, and **Alexander Wolitzky**, MIT, “Maintaining Privacy in Cartels”
- **Adam Kapor**, Columbia University; **Christopher Neilson**, Princeton University and NBER; and **Seth Zimmerman**, University of Chicago and NBER, “Heterogeneous Beliefs and School Choice Mechanisms”
- **Pietro Tebaldi**, University of Chicago, “Estimating Equilibrium in Health Insurance Exchanges: Price Competition and Subsidy Design under the ACA”

Summaries of these papers are at: <http://www.nber.org/confer/2017/IOs17/summary.html>

Economic Fluctuations and Growth

The NBER's Program on Economic Fluctuations and Growth met in New York City on February 24. Research Associates Laura Veldkamp of New York University and Jon Steinsson of Columbia University organized the meeting. These researchers' papers were presented and discussed:

- **Matthias Kehrig**, Duke University, and **Nicolas Vincent**, HEC Montréal, “Do Firms Mitigate or Magnify Capital Misallocation? Evidence from Plant-Level Data”
- **Daniel Garcia-Macia**, International Monetary Fund; **Chang-Tai Hsieh**, University of Chicago and NBER; and **Peter Klenow**, Stanford University and NBER, “How Destructive is Innovation?” (NBER Working Paper No. [22953](#))

- **George-Marios Angeletos**, MIT and NBER, and **Chen Lian**, MIT, “Forward Guidance without Common Knowledge” (NBER Working Paper No. [22785](#))
- **Barney Hartman-Glaser**, University of California, Los Angeles; **Hanno Lustig**, Stanford University and NBER; and **Mindy Zhang**, University of Texas at Austin, “Capital Share Dynamics When Firms Insure Managers” (NBER Working Paper No. [22651](#))
- **Sang Yoon Lee**, Toulouse School of Economics, and **Yongseok Shin**, Washington University in St. Louis and NBER, “Horizontal and Vertical Polarization: Task-Specific Technological Change in a Multi-Sector Economy”
- **Michael Gelman**, University of Michigan; **Yuriy Gorodnichenko** and **Steven Tadelis**, University of California, Berkeley, and NBER; **Shachar Kariv** and **Dmitri Koustas**, University of California, Berkeley; **Matthew Shapiro**, University of Michigan and NBER; and **Dan Silverman**, Arizona State University and NBER, “The Response of Consumer Spending to Changes in Gasoline Prices” (NBER Working Paper No. [22969](#))

Summaries of these papers are at: <http://www.nber.org/confer/2017/EFGw17/summary.html>

Labor Studies

The NBER’s Program on Labor Studies met in San Francisco on February 24. Program Director David Card of the University of California, Berkeley, organized the meeting. These researchers’ papers were presented and discussed:

- **Raj Chetty**, Stanford University and NBER; **David Grusky** and **Maximilian Hell**, Stanford University; **Nathaniel Hendren**, Harvard University and NBER; **Robert Manduca**, Harvard University; and **Jimmy Narang**, University of California, Berkeley, “The Fading American Dream: Trends in Absolute Income Mobility Since 1940” (NBER Working Paper No. [22910](#))
- **Seth D. Zimmerman**, University of Chicago and NBER, “Making the One Percent: The Role of Elite Universities and Elite Peers” (NBER Working Paper No. [22900](#))
- **Lars Lefgren**, **David Sims**, and **Olga B. Stoddard**, Brigham Young University, “The Other 1%: Class Leavening, Contamination and Voting for Redistribution”
- **David Neumark**, University of California, Irvine, and NBER; **Ian Burn**, University of California, Irvine; and **Patrick Button**, Tulane University, “Is It Harder for Older Workers to Find Jobs? New and Improved Evidence from a Field Experiment” (NBER Working Paper No. [21669](#))
- **George Bulman**, University of California, Santa Cruz; **Robert W. Fairlie**, University of California, Santa Cruz, and NBER; **Sarena Goodman**, Federal Reserve Board; and **Adam Isen**, Department of the Treasury, “Parental Resources and College Attendance: Evidence from Lottery Wins” (NBER Working Paper No. [22679](#))
- **Rachel B. Baker**, University of California, Irvine; **Eric Bettinger**, Stanford University and NBER; **Brian Jacob**, University of Michigan and NBER; and **Ioana Marinescu**, University of Chicago and NBER, “The Effect of Labor Market Information on Community College Students’ Major Choice”

Summaries of these papers are at: <http://www.nber.org/confer/2017/LSs17/summary.html>

Law and Economics

The NBER's Program on Law and Economics met in Cambridge on March 3. Program Director Christine Jolls of Yale University organized the meeting. These researchers' papers were presented and discussed:

- **David Arnold**, Princeton University; **Will S. Dobbie**, Princeton University and NBER; and **Crystal Yang**, Harvard University, "Racial Bias in Bail Decisions"
- **Mitchell Polinsky**, Stanford University and NBER, and **Paul N. Riskind**, Stanford University, "Deterrence and the Optimal Use of Prison, Parole, and Probation"
- **Saurabh Bhargava** and **George Loewenstein**, Carnegie Mellon University, and **Justin R. Sydnor**, University of Wisconsin-Madison and NBER, "Evaluating Health Insurance Decisions: Health Plan Choices from a Menu with Dominated Options"
- **Tal Gross**, Columbia University and NBER; **Matthew J. Notowidigdo**, Northwestern University and NBER; and **Jialan Wang**, University of Illinois at Urbana-Champaign, "The Marginal Propensity to Consume over the Business Cycle" (NBER Working Paper No. [22518](#))
- **Andrew Daughety** and **Jennifer Reinganum**, Vanderbilt University, "Information Suppression by Teams and Violations of the Brady Rule"
- **Albert Choi**, University of Virginia, and **Eric Talley**, Columbia University, "Appraising the 'Merger Price' Appraisal Rule"
- **Edward L. Glaeser** and **Andrei Shleifer**, Harvard University and NBER, and **Giacomo A.M. Ponzetto**, Pompeu Fabra University (Barcelona), "Securing Property Rights" (NBER Working Paper No. [22701](#))
- **Justin Marion**, University of California, Santa Cruz, "Affirmative Action Exemptions and Capacity Constrained Firms"

Summaries of these papers are at: <http://www.nber.org/confer/2017/LEs17/summary.html>

Monetary Economics

The NBER's Program on Monetary Economics met in Chicago on March 3. Research Associate Yuriy Gorodnichenko of the University of California, Berkeley, and Faculty Research Fellow Kinda Cheryl Hachem of the University of Chicago organized the meeting. These researchers' papers were presented and discussed:

- **Ernesto Pasten**, Central Bank of Chile; **Raphael Schoenle**, Brandeis University; and **Michael Weber**, University of Chicago and NBER, "Nominal Rigidities and the Granular Origins of Aggregate Fluctuations"
- **Andres Drenik**, Columbia University, and **Diego Perez**, New York University, "Price Setting under Uncertainty about Inflation"
- **Camila Casas**, Banco de la República (Colombia); **Federico Díez**, Federal Reserve Bank of Boston; **Gita Gopinath**, Harvard University and NBER; and **Pierre-Olivier Gourinchas**, University of California, Berkeley, and NBER, "Dominant Currency Paradigm" (NBER Working Paper No. [22943](#))

- **Juan Antolín-Díaz**, Fulcrum Asset Management, and **Juan Rubio Ramírez**, Emory University, “Narrative Sign Restrictions for SVARs”
- **Jeffrey W. Huther**, **Jane Ihrig**, and **Elizabeth Klee**, Federal Reserve Board, “The Federal Reserve’s Portfolio and its Effect on Interest Rates”

Summaries of these papers are at: <http://www.nber.org/confer/2017/MEs17/summary.html>

Environment and Energy Economics

The NBER’s Program on Environment and Energy Economics met in Cambridge on March 3–4. Research Associates Christopher R. Knittel of MIT and Paulina Oliva of the University of California, Irvine, organized the meeting. These researchers’ papers were presented and discussed:

- **Sharat Ganapati**, Yale University; **Joseph S. Shapiro**, Yale University and NBER; and **Reed Walker**, University of California, Berkeley, and NBER, “The Incidence of Carbon Taxes in U.S. Manufacturing: Lessons from Energy Cost Pass-Through” (NBER Working Paper No. [22281](#))
- **Joshua A. Lewis**, Université de Montréal, and **Edson R. Severnini**, Carnegie Mellon University, “Short- and Long-Run Impacts of Rural Electrification: Evidence from the Historical Rollout of the U.S. Power Grid”
- **T. Robert Fetter** and **Andrew L. Steck**, Duke University; **Christopher Timmins**, Duke University and NBER; and **Douglas Wrenn**, Pennsylvania State University, “Learning by Viewing? Social Learning, Regulatory Disclosure, and Firm Productivity in Shale Gas”
- **Frank A. Wolak**, Stanford University and NBER, “Assessing the Impact of the Diffusion of Shale Oil and Gas Technology on the Global Coal Market”
- **Nicholas Ryan**, Yale University and NBER, “Is There an Energy-Efficiency Gap? Experimental Evidence from Indian Manufacturing Plants”
- **James E. Archsmith** and **David Rapson**, University of California, Davis; **Kenneth Gillingham**, Yale University and NBER; and **Christopher R. Knittel**, “Household Diversification: The Vehicle Portfolio Effect”
- **Maximilian Auffhammer**, University of California, Berkeley, and NBER, “Climate Adaptive Response Estimation: Short and Long Run Impacts of Climate Change on Residential Electricity and Natural Gas Consumption Using Big Data”
- **Solomon M. Hsiang**, University of California, Berkeley, and NBER, “Estimating Economic Damage from Climate Change in the United States”
- **Achyuta Adhvaryu**, University of Michigan and NBER; **Prashant Bharadwaj**, University of California, San Diego, and NBER; **James E. Fenske**, University of Warwick (England); **Anant Nyshadham**, Boston College; and **Richard Stanley**, UNICEF, “Dust and Death: Evidence from the West African Harmattan”
- **Kelsey Jack**, Tufts University and NBER; **Seema Jayachandran**, Northwestern University and NBER; and **Sarojini V. Rao**, University of Chicago, “Environmental Externalities and Intrahousehold Inefficiencies”

- **Gustavo Bobonis** and **Leonardo Tovar**, University of Toronto, and **Mark Stabile**, INSEAD (Fontainebleau), “Bombs and Babies: U.S. Navy Bombing Activity and Infant Health in Vieques, Puerto Rico” (NBER Working Paper No. 22909)

Summaries of these papers are at: <http://www.nber.org/confer/2017/EEEs17/summary.html>

NBER Books

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Innovation Policy and the Economy, Volume 17

Edited by [Shane Greenstein](#), [Josh Lerner](#), and [Scott Stern](#)
The University of Chicago Press, 2017
\$60 (cloth)

The 17th volume of *Innovation Policy and the Economy* provides an accessible forum for bringing the work of leading academic researchers to an audience of policy makers and those interested in the interaction between public policy and innovation. In the first chapter, Joel Waldfogel discusses how reduced costs of production have resulted in a “Golden Age of Television,” arguing that this development has gone underappreciated. The second chapter, by Marc Rysman and Scott Schuh, discusses the prospects for innovation in payment systems, including mobile payments, faster payment systems, and digital currencies. In the third chapter, Catherine Tucker and Amalia Miller analyze the consequences

of patient data becoming virtually costless to store, share, and individualize, showing how data management and privacy issues have become important considerations in health policy. The fourth chapter, by Michael Luca, examines how online marketplaces have proliferated over the past decade, evolving far beyond pioneers such as eBay and Amazon. In the fifth chapter, Timothy Bresnahan and Pai-Ling Yin characterize information and communication technologies in the workplace, which have transformed production and shifted relative labor demand toward smart managers and professionals, and workers who are skilled at contributing to and interacting with other members of organizations.



Insights in the Economics of Aging

Edited by [David A. Wise](#)

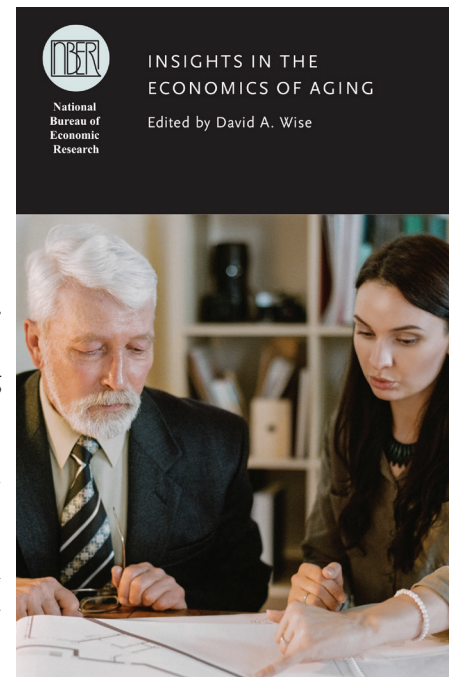
The University of Chicago Press, 2017

\$110.00 (cloth)

In many developed countries, the fraction of the population over age 65 is projected to rise in coming decades, in some cases sharply. This has generated growing interest in research on the health and economic circumstances of individuals as they age. Many individuals are retiring from paid work, and they are living longer than ever. Their well-being is shaped by past decisions, such as their saving behavior, as well as by current and future economic conditions, health status, medical innova-

tions, and a rapidly evolving landscape of policy incentives and supports.

The contributors to *Insights in the Economics of Aging* uncover how financial, physical, and emotional well-being are integrally related. The authors consider the interactions between financial circumstances in later life, such as household savings and home ownership, physical circumstances such as health and disability, and emotional well-being, including happiness and mental health.



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