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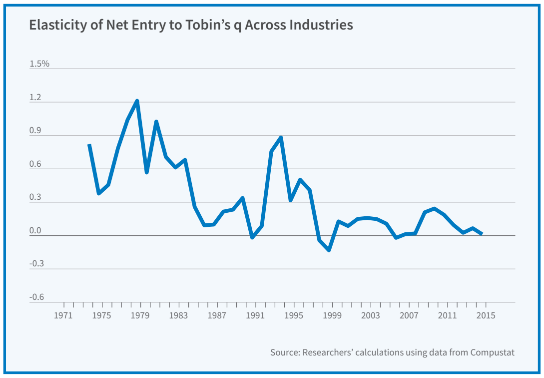
ALSO IN THIS ISSUE



Health Care

Jonathan Gruber*

The rise of the US health-care sector over the past several decades has been remarkable. As Figure 1 [page 3, top] shows, in 1970, the country devoted slightly more than 6 percent of GDP to health care, about 1 percent more than other nations. Today, the nation devotes almost 18 percent of GDP to health care, which is larger than spending on cars, clothing, food, furniture, housing, fuel, and recreation combined — and is a full 8 percent above the average in comparable countries.

Health outcomes haven't kept up, as shown in Figure 2 [page 2, bottom left]. US life expectancy was slightly below the average of comparable countries in 1980. Today it has fallen far below that of these other countries, with life expectancy actually declining for the first time in decades.

These striking facts have motivated a sharp increase in the quality and quantity of work in the NBER Health Care Program. From a handful of working papers in 1992, this program has grown to produce an average of more than 100 working papers a year in the last three full years. These papers reflect the larger interest of the economics profession in health issues. In 1990, the *American Economic Review* published just two articles about health; now it publishes about five a year. In the *American Economic Journals* in *Economic Policy* and *Applied Economics*, major new general-interest journals that cover health topics, about one in eight articles published in 2017 focused on health. The Health Care Program has expanded and drawn in a new generation of health economists.

In this review, I cover developments in the NBER Health Care Program over the last seven years. This has been a period both of substantial upheaval in the health-care sector and of rapid growth of studies of that sec-

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tor, with 674 working papers posted in the program since 2012. These studies have covered a broad array of topics, and it is impossible to do them justice in this short review. Instead, I will highlight a few key areas of study by NBER researchers, with apologies to the large number of authors of studies that I am excluding.

The Affordable Care Act

The ACA is the most significant government intervention in the US health-care system since the introduction of Medicare and Medicaid. Moreover, it was introduced both in a data-rich environment in which many datasets can be used to analyze its impacts, and in a manner that generated quasi-experimental variation that can be used to convincingly estimate those impacts. In particular, the enormous expansion of the Medicaid program to all those whose income is less than 133 percent of the poverty line, which occurred only in a subset of states and over time in those states, provides a natural case study for understanding the impact of expanded insurance coverage. This has provided a wonderful environment for economic research.

Health Care Program affiliates' research on the ACA has covered a wide variety of areas, but has focused primarily on the impacts of the ACA on insurance coverage, health-care utilization, and health, as reviewed by Benjamin Sommers and me.[1] Studies show that the ACA clearly has expanded coverage [Figure 3] through provisions such as extending coverage of dependents up to age 26,[2,3] expanding Medicaid,[4] and subsidizing premiums in the new exchange.[5] Notable is the finding of that last paper that much of the increase in Medicaid enrollment was not from those who were newly eligible, but from those previously eligible who had now enrolled in the program.

There has also been a clear increase in health-care utilization in response to broadened insurance coverage.[6] Early studies have generally found positive impacts of the ACA on population health, but more work is needed to assess the long-term impacts on health.[7]

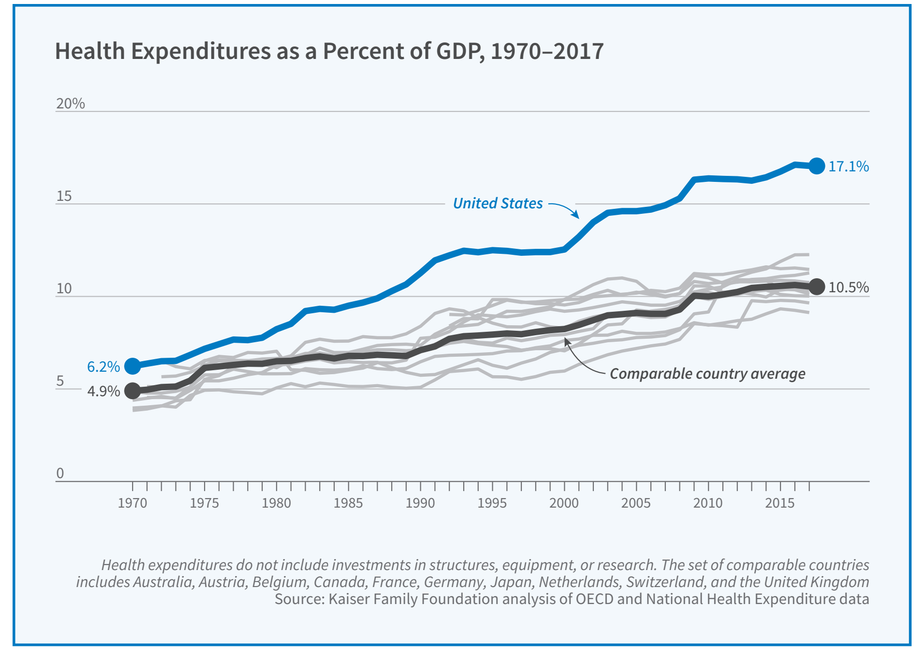


Figure 1

A particularly notable area of research on the ACA has been focused on the impact of the law's provisions on labor market behavior, with mixed results. Research on a large restriction on health insurance coverage in Tennessee before the ACA showed an associated significant rise in labor force participation, suggesting that expansions under the ACA might reduce the supply of labor.[8] But studies of both the expansion of insurance to young adults [9] and the overall effects of the ACA exchanges and Medicaid exchanges[10] do not find significant impacts on labor supply.

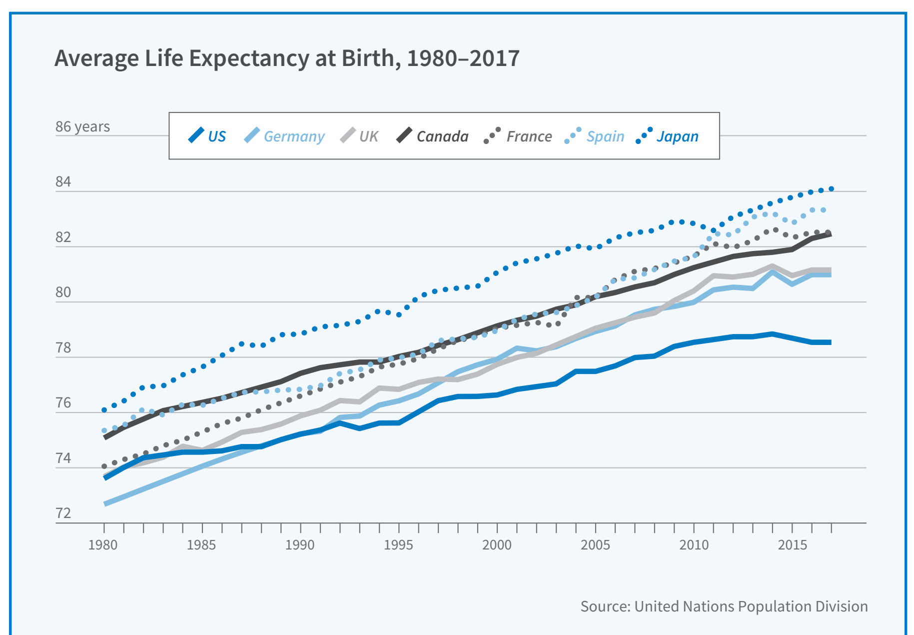


Figure 2

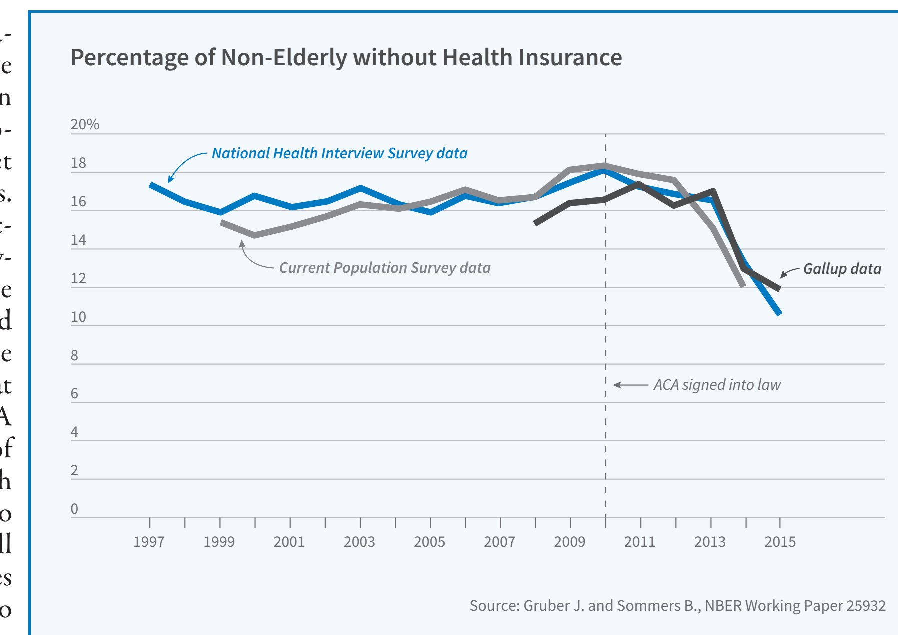


Figure 3

Physician Behavior

A common refrain in health economics is that the most expensive piece of medical technology is the physician's pen, yet there is relatively little understanding of the physician behaviors that drive medical spending. A set of recent papers has made enormous progress in helping us understand physician decision-making and its implications for the health-care system.

One of the enduring mysteries in health care is the enormous variation among physicians in treatment styles. These differences emerge in physician training.[11] David Cutler, Jonathan Skinner, Ariel Dora Stern, and David Wennberg use surveys of physicians to show that much of the variation reflects physician beliefs unsupported by clinical evidence.[12] There is mixed evidence on the welfare implications of physician treatment variation. Gautam Gowrisankaran, Keith Joiner, and Pierre-Thomas Léger find that physicians randomly assigned to different emergency department doctors who are more skilled see higher resource use, but not necessarily better outcomes.[13] In contrast, Janet Currie, W. Bentley MacLeod, and Jessica Van Parys find that for heart attack patients, there is large variation in treatment intensity across providers, and those who treat more intensively deliver better outcomes.[14]

A related question is whether more information provided to patients can improve outcomes and performance. Jonathan Kolstad finds that when "report cards" were introduced on surgeon outcomes in Pennsylvania, surgeons responded strongly to poor performance relative to their peers, suggesting a strong role for "intrinsic motivation."[15] At the same time, Erin Johnson and M. Marit Rehavi,[16] and in another study, Michael Frakes, Anupam Jena, and I find that when physicians are themselves patients, they receive a quality of care similar to that of comparable non-physician patients.[17]

One recent development in health economics is an ongoing integration with the field of industrial organization, allowing for new lessons about physician (and other provider) market behavior. For example, Kate Ho and Ariel Pakes find that when physicians are more highly "capitated" (paid a fixed amount per patient, rather than receiving cost-based reimbursement), they are more likely to refer to lower-cost hospitals.[18] Lawrence Baker, M. Kate Bundorf, and Daniel Kessler study the rapidly growing phenomenon of vertical integration among physicians, whereby generalists and specialists merge their practices; the researchers find that such integration raises prices for both types of physicians, particularly in less-competitive markets.[19] Jeffrey Clemens and Joshua Gottlieb find that when private insurers set reimbursement rates for physicians, they closely follow the rates set by Medicare,[20] although Clemens, Gottlieb, and Tímea Laura Molnár find that private rates deviate most from Medicare when the Medicare rate differs strongly from the true marginal cost of the procedure.[21]

Hospitals

Hospitals remain the largest single source of health-care spending, and this area continues to be a focus of NBER researchers. A number of studies have attempted to measure and compare the efficiency of care delivery across hospitals. Joseph Doyle, John Graves, Samuel Kleiner, and I have studied relative hospital treatment of emergency patients who are quasi-randomly assigned by preferences of different ambulance companies.[22] Doyle, Graves, and I find that higher-cost hospitals deliver higher-quality care, that government measures of hospital quality are representative of true quality,[23] and that a major source of inefficiency in health-care spending is variations across hospitals in their associated post-discharge spending.[24] Paul Eliason, Paul Grieco, Ryan McDevitt, and James Roberts focus on the particular case of long-term acute care hospitals, showing that these hospitals strategically discharge patients when there is a large financial bonus for doing so, leading to worse patient outcomes.[25] Liran Einav, Amy Finkelstein, and Neale Mahoney document that care received at these hospitals would have counterfactually been delivered at a much lower cost in other facilities, so that Medicare could save almost $5 billion per year by not allowing discharges to these providers.[26]

Another emerging topic of study is the role of hospital market structure. Motivating interest in this area is the widely cited study by Zack Cooper, Stuart Craig, Martin Gaynor, and John Van Reenen that used newly available data to document the enormous variation in prices among hospitals for very similar procedures; they also find that prices are higher in less competitive markets.[27] [Figure 4]

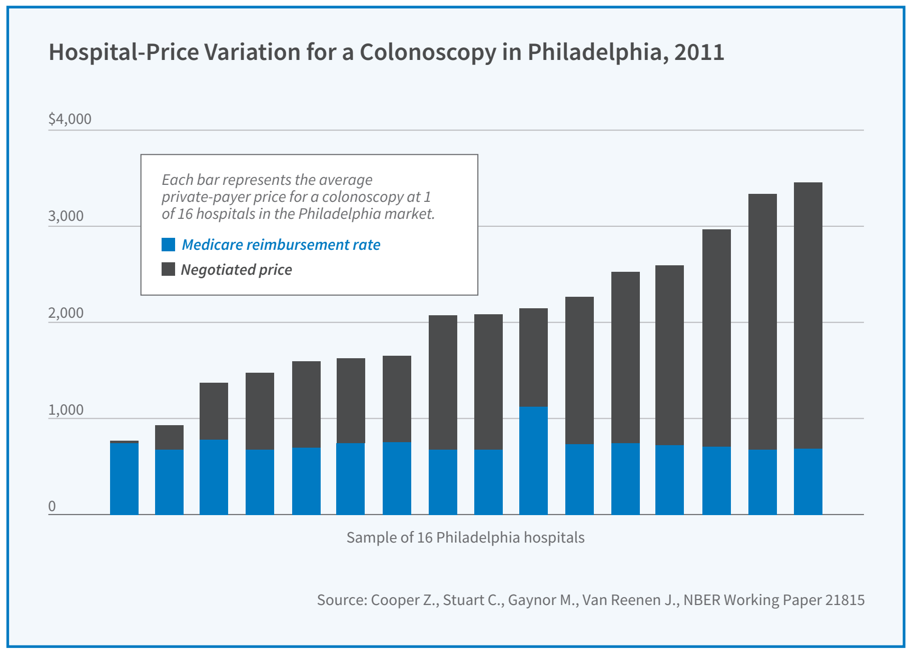


Figure 4

Jill Horwitz, Charleen Hsuan, and Austin Nichols find that hospitals respond to a competitor's adoption of intensive cardiac services by adopting the same services, leading to duplication and higher costs.[28] On the other hand, Gowrisankaran, Aviv Nevo, and Robert Town find that hospitals' market power is greatly constrained by their negotiations with managed care insurers,[29] and Craig, Matthew Grennan, and Ashley Swanson find that mergers between hospitals lead to lower input acquisition prices through better negotiating power.[30] Investigating another important aspect of hospital market structure, Cory Capps, Dennis Carlton, and Guy David find no evidence that nonprofit hospitals are more likely than for-profit hospitals to use the extra resources from market consolidation to deliver charity care to uninsured people.[31]

Pharmaceutical Economics

Prescription drug spending has become a larger share of health-care spending over the past few decades, growing from 5 percent of spending in 1980 to 10 percent today. This is partly due to the high cost of drug development, estimated at $2 billion or more annually. The enormous risk and returns associated with drug development have led to significant research on the determinants and outcomes of pharmaceutical R&D, and on the role of patent protection and generic competition in determining the long-run returns to these R&D investments.

Recent studies document that the financial resources available to pharmaceutical manufacturers determine the pace and nature of innovation, with somewhat differing conclusions. David Dranove, Craig Garthwaite, and Manuel Hermosilla find that the introduction of drug insurance for elderly people under Medicare Part D led to the development of more drugs targeted to the elderly — but mostly for diseases that already had multiple treatments.[32] On the other hand, Joshua Krieger, Danielle Li, and Dimitris Papanikolaou find that financial shocks to pharmaceutical manufacturers lead to the development of drugs that are more novel, in the sense that they differ more from previous discoveries.[33] In either case, the returns to R&D are quite high. Pierre Azoulay, Joshua Graff Zivin, Li, and Bhaven Sampat use idiosyncratic rigidities in the rules governing National Institutes of Health peer review to show that NIH funding spurs the development of private-sector patents: a $10 million boost in NIH funding leads to a net increase of 2.3 patents.[34]

Heidi Williams and her coauthors have studied the incentives put in place by the US patent system. Sampat and Williams find that gene sequences that are patented are more valuable than those that are not, and that, controlling for this selection effect, on average, gene patents have no effect on follow-on innovation.[35] At the same time, Eric Budish, Benjamin Roin, and Williams document that innovations with a long development period are less likely to be privately financed, since the patent protection provided when the drug is finally developed is very short-lived.[36] [Figure 5]

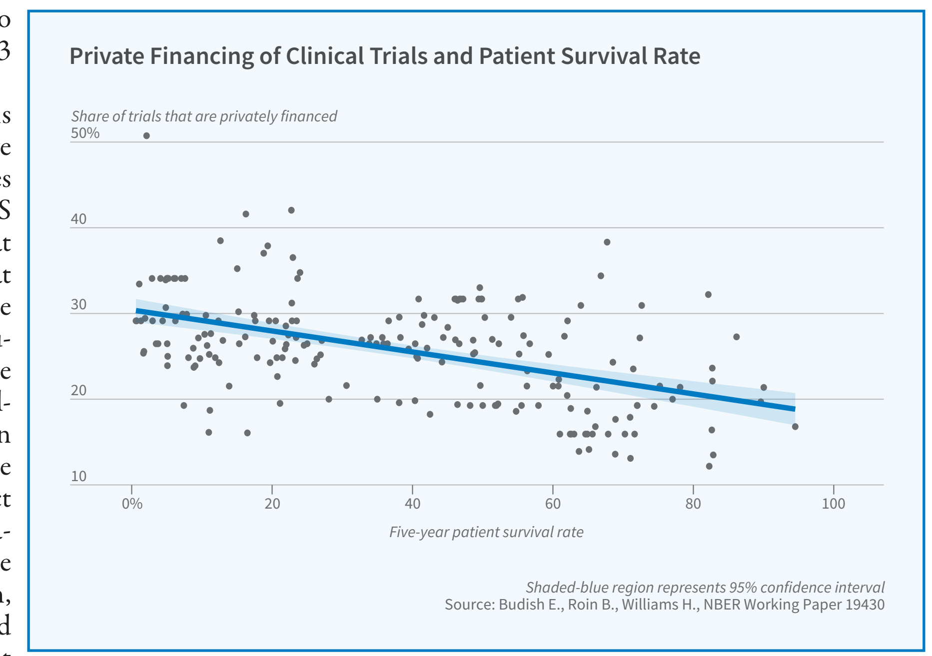


Figure 5

Other studies have examined the generic drug market that results from the expiration of patent coverage — a market that has attracted much recent news coverage due to enormous price increases for some off-patent drugs. Consistent with these headlines, Ernst Berndt, Rena Conti, and Stephen Murphy survey the market for generic drugs and find a limited number of competitors for many generics, decreasing the price reduction that can be expected after patent expiration.[37] At the same time, both they and Richard Frank, Andrew Hicks, and Berndt find that overall generic drug prices are falling substantially over time.[38] In one particularly important market segment, Conti and Berndt find that the prices of specialty drugs fell significantly after a generic entered the market.[39]

Health Insurance Markets

A particularly notable feature of US health-care markets is the relatively unregulated multi-payer system for financing care, and more than 100 working papers in the last six years focused on the health insurance market. In particular, the wide variety of health insurance choices facing consumers and firms raises at least two important questions.

The first is how well do consumers do in choosing their health insurance plan, given the complicated nature of this decision. Jason Abaluck and I document that individuals appear to make highly inconsistent choices of health insurance plans, that these choices don't get better with more experience,[40] and that limiting choice sets can lead to improved choice outcomes.[41] Saurabh Bhargava, George Loewenstein, and Justin Sydnor[42] and Chenyuan Liu and Sydnor deliver particularly compelling evidence for choice inconsistencies by showing the pervasive nature of "dominated" choices in health insurance markets.[43] Richard Domurat, Isaac Menashe, and Wesley Yin run a field experiment randomly providing reminders about insurance deadlines to consumers; they find that such reminders are particularly effective among the healthiest consumers.[44]

The second major issue with health insurance choice is the potential for adverse selection and the need for risk adjusters to offset this market failure. Several studies have documented how concerns over adverse selection drive insurer behavior, leading, for example, to higher premiums for small firms with sicker employees,[45] or to lower plan generosity when Medicare enrollees could more easily move from plan to plan.[46] A series of studies by Thomas McGuire and his coauthors explored the theoretical and empirical determinants of optimal risk adjustment, raising issues such as the combination of different forms of reinsurance and risk adjustment.[47] A key issue that must be evaluated with these systems is insurer responses. For example, Michael Geruso and Timothy Layton show how insurers "upcode" their enrollees to qualify for higher-risk adjustment payments.[48] Finally, Benjamin Handel, Kolstad, and Johannes Spinnewijn highlight the trade-off between choice inconsistencies and adverse selection, and the implications for insurance design.[49]

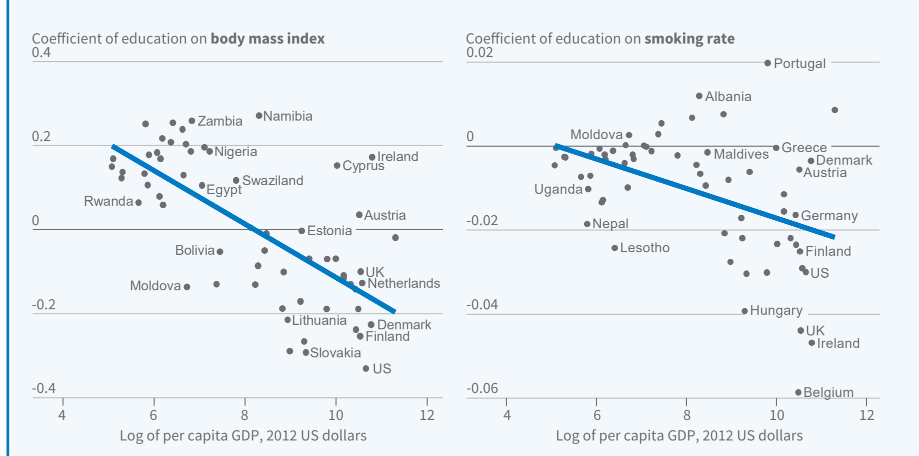
International Comparisons

There is a long-standing recognition that the United States is an outlier in terms of health-care spending relative to GDP. This suggests that our nation has much to learn from other countries, and an array of studies has brought key lessons to the fore.

A number have focused explicitly on comparing the US to other nations. Cutler and Adriana Lleras-Muney review the evidence from around the world on how education improves health outcomes.[50] Alice Chen, Emily Oster, and Williams provide evidence that the steep gradient in infant outcomes with respect to US income is largely driven by post-delivery differences in care, particularly care delivered in the home.[51] Michael Baker, Currie, and Hannes Schwandt,[52] and, in another study, Currie, Schwandt and Josellin Thuilliez compare mortality inequality in the US with that in Canada, where the inequality of health outcomes has declined, and France, where inequality remains pervasive.[53] Jillian Chown, Dranove, Garthwaite, and Jordan Keener compare health care prices between the US and Canada, finding that while the US pays much more for drugs, our physicians do not appear to earn more relative to the general skill differential in pay in the US versus Canada.[54]

Other papers investigate policy interventions in other developed nations that may contain lessons for the US. Thomas Hoe, George Stoye, and I investigate a UK policy that imposes strict penalties on emergency rooms for long waiting times.[55] We find that these incentives lead not only to shorter waiting times, with more use of the hospital and higher medical spending, but also to better health outcomes. [Figure 6] Hitoshi Shigeoka finds that reduced cost-sharing for elderly people in Japan leads to more use of both inpatient and outpatient care, with little impact on health but large reductions in out-of-pocket expenditures.[56] Stephen Pichler and Nicholas Ziebarth use data from Germany and the US to document the importance of "presenteeism," whereby sick employees coming to work leads to more lost time for others, suggesting the value of providing sick leave to workers.[57]

A notable recent development is the rapid growth of work by Health Care Program affiliates on developing countries, likely motivated by synergies with NBER's Development Economics Program. Topics vary from the benefits of universal health care provision in Turkey,[58] to investigations of adult mortality after a tsunami in the Indian Ocean,[59] to experimental evidence on the promotion of iron-fortified salt in rural India,[60] to audit studies illustrating the poor quality of primary health care in India,[61] to the impact of a tobacco control campaign in Uruguay.



The Effect of Education on Health Outcomes, by Country GDP

In countries with more negative coefficient values, there is a stronger negative relationship in the population between an individual's education and his or her body mass index and likelihood of smoking.

Source: Cutler D., Lleras-Muney A., NBER Working Paper 17738

Figure 6

Where to Next?

The studies summarized here only begin to describe the enormous scope of work that has been undertaken by affiliates of the NBER's Health Care Program over the past seven years. These researchers are pushing the boundaries of knowledge in a wide variety of directions, and their efforts are likely to continue in the coming years. The ongoing implementation of the ACA provides a fruitful laboratory for studies of the role of insurance, while the continual threat of unaffordable increases in health-care costs will inspire new work on drivers of spending. The introduction of innovative new genetic therapies will motivate ongoing work on R&D and the financing of novel treatments. The increasing depth and diversity of new data sources, in the US and around the world, makes ever more exciting research feasible.

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Research Summaries

The Economics and Politics of Market Concentration

Thomas Philippon

Business concentration and profit margins have increased across most industries in the United States over the past 20 years. Figure 1 illustrates these trends together with the declines of the labor share and private investment. The ratio of after-tax corporate profits to value added has risen from an average of 7 percent from 1970 through 2002 to an average of 10 percent in the period since 2002. Firms used to reinvest about 30 cents of each dollar of profit. Now they only invest 20 cents on the dollar.

Good versus Bad Concentration

A crucial research question is whether these trends reflect market power and rent seeking or more benign factors, such as a shift toward intangible assets with returns-to-scale effects. The main difficulty is that the relationship between concentration and competition is ambiguous.

Concentration and competition are positively related when shocks to ex post competition play a dominant role in the data. For example, lower search costs make it hard for inefficient producers to survive, force them to merge or exit, and lead to higher concentration. Increasing productivity differences among firms — often embedded in intangible assets — can play a similar role. If these explanations are correct, the remaining firms in the market should be the most productive and concentration should go hand in hand with strong productivity growth and intangible investment.

Concentration and competition are negatively related when shocks to entry costs play a dominant role in the data. This can result from changes in antitrust enforcement, barriers to entry, or the threat of predatory behavior by incumbents. If these explanations are correct, concentration should be negatively related to productivity and investment.

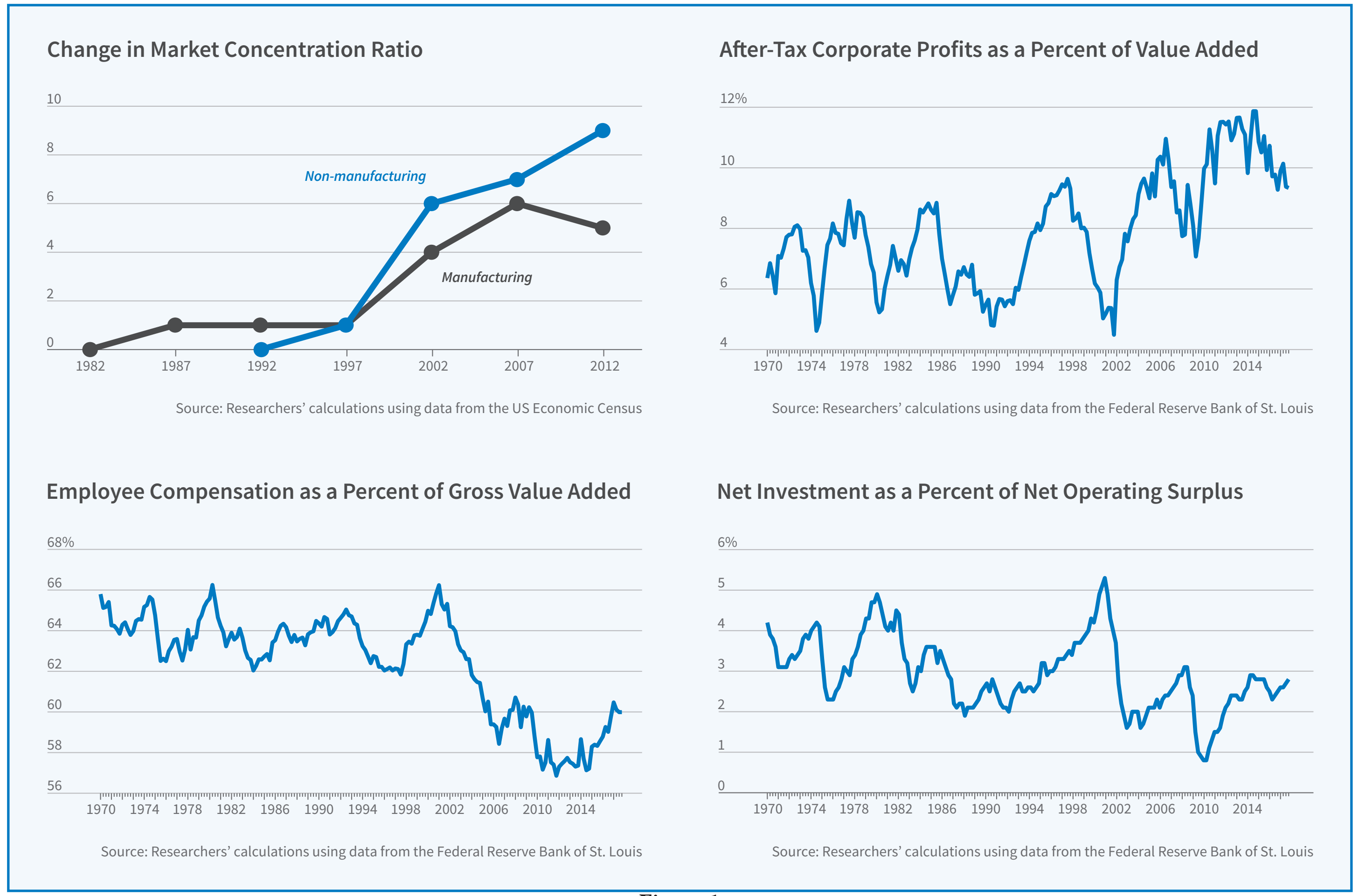

Figure 1

Some industries fit the efficient concentration hypothesis, while others fit the rent-seeking one. Ali Hortaçsu and Chad Syverson argue that the rise of superstores and e-commerce reflects efficiency gains in the retail industry.[1] The wholesale trade sector also seems to fit this pattern. The telecom industry, on the other hand, fits the rent-seeking pattern rather well. It has become increasingly concentrated, and Germán Gutiérrez and I show that US consumers today pay twice as much for cell phone and broadband internet services as citizens in nearly all other developed countries.[2] Some high-tech sectors combine features of the two types of concentration. One reason, as Nicolas Crouzet and Janice Eberly argue, is that intangible capital generates high returns and high rents at the same time.[3]

Over the past 20 years, however, negative concentration has become relatively more prevalent in the United States.[4] Recent increases in concentration have been associated with weak productivity growth and declining investment rates. Firms in concentrating industries engage in more profitable mergers and acquisitions and spend more on lobbying.[5] Excess profits are no longer competed away by free entry and the turnover of industry leaders has declined.[6]

The Political Economy of Concentration

If "bad" concentration has become prevalent, we need to understand why. What are the barriers to entry? What is the role of policy versus technology? It is difficult to obtain a convincing answer by looking only at the United States, but the comparison with other regions — Europe in particular — is quite illuminating. Until the 1990s, US markets were more competitive than European markets. Today, however, many European markets have lower excess profits and lower regulatory barriers to entry. Two US industries in particular exemplify the evolution of concentration and markups over time: telecoms and airlines.

Twenty years ago, access to the internet was cheaper in the US than in Europe. In 2018, however, the average monthly cost of fixed broadband in the US was twice as high as in France or Germany. Air transportation is another industry in which the US has fallen behind. The rise in concentration and profits aligns closely with a controversial merger wave that included the merging of Delta and Northwest in 2008, United and Continental in 2010, Southwest and AirTran in 2011, and American and US Airways in 2014. In Europe, over the same period, the growth of low-cost carriers has driven competition up and prices down.

European industries did not become cheaper and more competitive by chance. In all the cases that I have studied, there was a significant policy action, such as the removal of a barrier to entry or an antitrust action. The French telecom industry, for instance, was an oligopoly with three legacy carriers that lobbied hard to prevent entry. The oligopoly lost in 2011, a fourth operator obtained a license, and prices decreased by 50 percent within two years.

These results are surprising. Europe, with its tradition of protecting national champions, is not the place where we would have expected competition to thrive. The United States, with its tradition of free markets, is not the place where we would have expected competition to stall. How then can we explain these evolutions?

The theoretical explanation for Europe is actually relatively simple. When the institutions of the EU's Single Market were designed in the early 1990s, there was significant suspicion among member states that each would try to impose its domestic agenda on the common regulators. Gutiérrez and I show that the Nash equilibrium of the regulatory-design game plays out differently at the national and EU levels.[7] At the national level, politicians enjoy being able to influence regulators. At the EU level, however, they are mostly worried about influences from other countries. As a result, the member states jointly decided to make EU institutions more fiercely independent than they would have done at the national level. This is how Europe ended up with the most independent central bank as well as the most independent antitrust agency in the world. Over the following 20 years, the logic of the single market has slowly pushed Europe toward freer and more competitive markets.

Understanding how US markets became less competitive is more complicated. There are many possible explanations. Some concentration has been driven at least in part by increasing returns to intangible assets, as Crouzet and Eberly explain.[8] The crucial test lies in the relationship between productivity growth and concentration. Matias Covarrubias, Gutiérrez, and I find a positive correlation between changes in concentration and productivity growth in the 1990s. This suggests that concentration was either benign or that it was the price to pay to achieve greater efficiency. The correlation became negative in the 2000s, however, suggesting a higher prevalence of rent seek-

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Philippon has studied various topics in macroeconomics and finance: systemic risk, crisis resolution mechanisms, the dynamics of corporate investment and household debt, and the size of the finance industry. His recent work has focused on the Eurozone crisis, financial regulation, and the market power of large firms. He is affiliated with the NBER programs in Economic Fluctuations and Growth, Asset Pricing, and Corporate Finance

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ing. Unfortunately, this is where the lack of data on firm-level prices and difficulties in making adjustments for labor quality create empirical challenges. There are also tricky econometric issues when we use granular data to test this relationship. A fair assessment is that we do not know for sure.

Two trends that are specific to the US in the 2000s help us to shed light on the issue. One is what Gutiérrez and I call the failure of free entry.[9] When profits increase in an industry, new firms should enter. When profits shrink, existing firms should exit or consolidate. Economic theory predicts higher entry in industries with higher market-to-book values, also known as Tobin's q. Intuitively, Tobin's q measures expected profits (valued by the market) per unit of entry costs (book values). We study whether the number of firms increases in industries where Tobin's q is high and decreases in industries where it is low.

Figure 2 shows that free entry was alive and well from the 1960s to the late 1990s. The positive elasticity implies that, when the industry-median Tobin's q increased, more firms would enter the industry. Specifically, an increase in Tobin's q of one unit, as from 1 to 2, coincided with an increase in the number of firms in the industry of about 10 percent over the next two years. Consistent with free entry, firms used to enter into high q industries and exit from low q ones.

But this is no longer the case. The elasticity has been close to zero since 2000. A fundamental rebalancing mechanism that was at the heart of the Chicago School argument for not worrying about market dominance by a few large firms seems to have broken down. If free entry fails, the laissez-faire argument fails.

The other striking trend in the US during the 2000s is the rise in business lobbying and campaign contributions. Lobbying and regulation can explain the failure of free entry if incumbents use them to alter the playing field. Incumbents may, for example, influence antitrust and merger enforcement as well as regulations, ranging from the length and scope of patents and copyright protection to financial regulation, non-compete agreements, occupational licensing, and tax loopholes. Consistent with these ideas, we find that the elasticity of firm entry to Tobin's q has decreased more in industries that have experienced larger increases in lobbying and regulations.

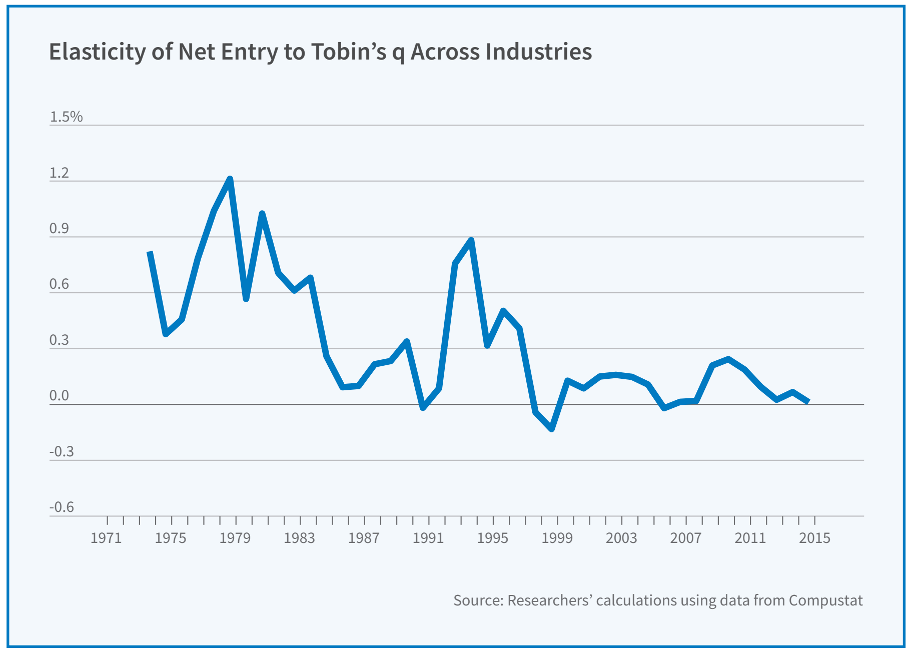

Figure 2

The failure of free entry has negative implications for productivity, equality, and welfare in general. If capital gets stuck in declining industries and does not move to promising ones, the economy suffers: productivity growth is weak, wages stagnate, and standards of living fail to improve.

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[8] "Rents and Intangibles: A Q+ Framework," Crouzet N, Eberly J. Kellogg School of Management, Working Paper, October 2019.
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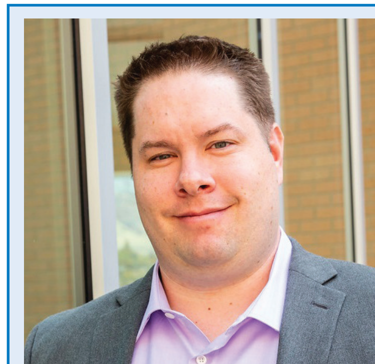
Interbank Network Risk, Regulation, and Financial Crises

Matthew S. Jaremski



Matthew S. Jaremski is a research associate in the NBER's Development of the American Economy Program and an associate professor in the Department of Economics and Finance of the Jon M. Huntsman School of Business at Utah State University. His research explores the intersection of financial economics and economic history. Topics include the effects of interbank networks on financial instability, the role of regulation in bank outcomes, the connection between financial development and economic growth, and the determinants and consequences of financial crises. A unifying theme is using unique historical variation to study dynamics that are obscured or hard to isolate in modern data.

Jaremski received a BA in economics, classical civilizations, and business administration from Austin College in 2006 and his PhD in economics from Vanderbilt University in 2010. Before joining Utah State, he was an associate professor at Colgate University and has held visiting positions at Yale University and the Office of Financial Research at the US Treasury.

He grew up in Dallas, Texas and currently lives in Logan, Utah, with his wife. They enjoy hiking and swimming during the summer, and board games and movies during the winter.

The financial crisis of 2008–09 intensified interest in how relationships within the financial system can amplify and transmit shocks. At a basic level, firms took advantage of rising real estate prices by scaling up lending and leverage, which fueled further increases in asset prices. When asset price growth slowed, problems at individual financial institutions suggested problems at other firms and triggered a reduced ability to borrow for many firms, whether or not they were contractually connected to the mortgage credit shock. For example, in September 2008, the inability of the Reserve Primary Fund to maintain a constant $1 per share price led to runs on other money market mutual funds, including many that had little or no direct exposure to Lehman Brothers or the Reserve Primary Fund. Moreover, as the interbank lending market collapsed, banks scrambled to hoard reserves as a means of self-insurance against prospective liquidity needs, further aggravating declines in asset prices and lending.

Despite the importance of modern financial markets, their complexity makes it hard to study the effects of asset price shocks or how they are transmitted and amplified across firms and markets. For instance, information about a bank's interconnections with other lenders — its "counter-party positions" — is often closely held and accessible to only a handful of researchers at regulatory agencies. Further, with many banks having international branches and engaged in a wide variety of off-balance-sheet activities, it is difficult to distinguish the effect of a single shock or policy from other concurrent factors.

My research uses the lens of history for insight into these dynamics. US financial history is advantageous for a variety of reasons. First, as most states prohibited or severely restricted interstate bank branching, the financial statements of individual banks reflect their lending to local customers. This creates a large sample of banks to study, each of which operates in a distinct economic environment. Moreover, historically, few banks engaged in significant off-balance-sheet activity. This structure facilitates the identification of the effects of shocks to individual banks from other simultaneous macroeconomic factors. Second, the financial statements of each bank were publicly available, and publications often listed each bank's specific interbank correspondent connections. The historical period, therefore, is the only time when a full picture of the nation's interbank network can be studied without confidential data. Third, there was a great deal of regulatory variation within the country's unified legal and monetary system. Each state had regulatory control over its state-chartered banks, while national banks chartered by the Comptroller of the Currency faced a common set of regulations throughout the country. This feature allows the study of banks that are in the same location and during the same year, but subject to different sets of regulations. As highlighted below, the historical environment sheds light not only on the factors that lead to financial panics, but also on how interbank dynamics play out during panics.

Commodity Shocks and Regulation

As in 2008–09, asset price booms and busts historically were often intertwined with lending booms and busts. Rising asset prices can stimulate lending and increased leverage, which in turn cause asset prices to rise further. Similarly, falling asset prices can force debt contraction and deleveraging that reinforce the decline in asset prices. The interrelationship between asset prices and lending booms thus raises important questions, including how various regulations and policies affect the vulnerability of the banking system to asset price shocks, and how bank lending and instability can exacerbate asset price movements. I have sought to use the unique variations in the historical environment to examine the roles that lending and regulation play in boom-bust events.

David Wheelock and I examine bank lending in the boom-bust cycle affecting US agricultural land prices during and after World

War I.[1] The wartime collapse of European agriculture drove commodity prices sharply higher and, for the United States, constituted an external demand shock that sparked a boom in farmland prices. However, European production bounced back quickly when the war ended, driving down US crop prices and initiating a wave of farm foreclosures and bank failures in the early 1920s. Using a county-specific measure of farm output prices, we show that rising crop prices encouraged entry of new banks and balance sheet expansion of new and previously established banks. The less-regulated, state-chartered banks, as well as those established during the war, were especially aggressive lenders and much more likely to close when the bust occurred. Moreover, deposit insurance amplified the deleterious effects of rising crop prices, whereas higher capital requirements dampened them. We also find that bank closures exacerbated the collapse of farmland values during 1920–25. Thus, our research provides new evidence of how banks can both be affected by and contribute to asset price booms and busts, and how banking policies can influence the feedback loop around such events.

Charles Calomiris and I closely examine the effects of deposit insurance.[2] Our findings not only corroborate prior literature on the moral-hazard consequences of deposit insurance, but also show how the introduction of deposit insurance created systemic risk. We find that deposit insurance caused risk to increase by removing the market discipline that had been constraining uninsured banks' decision-making. Depositors applied strict market discipline on uninsured national banks, but supplied funds to insured state banks without requiring those banks to maintain financially sound balance sheets. Figure 1 shows that the ratio of state bank deposits to national bank deposits grew after adoption of deposit insurance, even compared to nearby states. Insured banks as a result increased their loans as well as reduced their cash and capital buffers. Loans increased most strongly in insured banks located in counties where the World War I price rises had the biggest effect, suggesting that deposit insurance might have its most negative consequences when investment opportunities are plentiful.

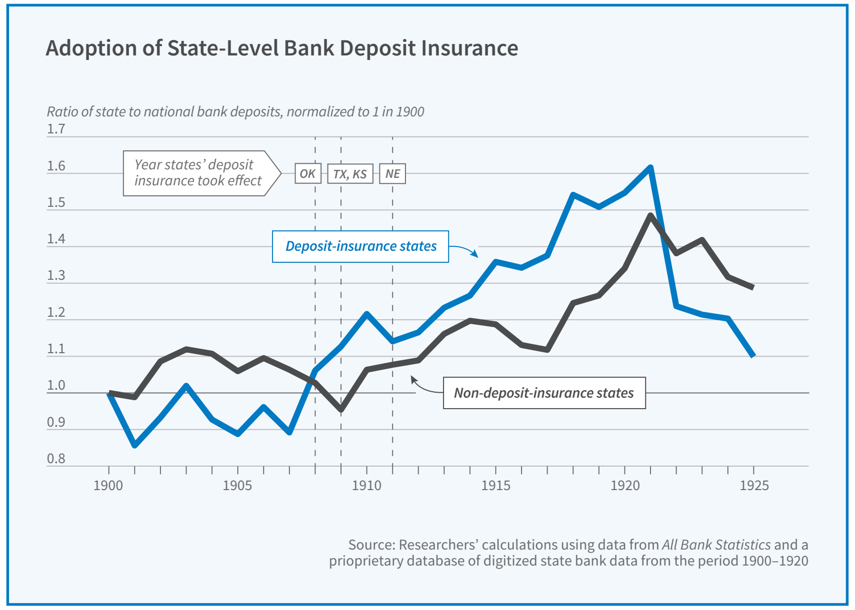


Figure 1

Interbank Structure and Risk

The interconnected nature of financial networks can propagate shocks, increase systemic risk, and magnify economic downturns. Insights from theoretical studies suggest that the tendency of interbank networks to amplify shocks reflects the relative size of network members, the extent of interconnections between them, and the magnitude of shocks hitting the system, whereas the systemic risk posed by individual institutions depends on heterogeneity in network structure and the concentration of counterparty exposures. Although studies suggest that network structure affects systemic risk, the lack of comprehensive interbank information has prevented much empirical work on how networks evolve and how banks handle interbank shocks. Using data on the entire US interbank network in the early 1900s, I have begun to study how the network evolved and functioned over an important period in US financial history.

My work with Wheelock finds that the network at the end of the 19th century was pyramidal in structure, with a small number of banks serving as correspondents for a high percentage of the nation's banks.[3] The network became less concentrated after the establishment of the Federal Reserve System in 1914, as banks shifted their interbank relationships away from New York City and toward banks in Fed cities within their local district. As seen in Figure 2, Federal Reserve Bank and branch cities generally had the largest increases in eigenvector centrality (the influence nodes have on networks) in 1910–19. Fitting with my previous study on New York with Calomiris, Haelim Anderson, and Gary Richardson, Fed member banks located in Fed cities across the country were especially favored as correspondents because of their unique access to the Fed's liquidity and payments services, which they were able to pass through to other banks.[4] Thus, the Fed's founding changed the relative attractiveness of correspondents in different locations. This reduced network concentration meant that the risk of contagion emanating from a crisis hitting a core city was lessened, but the system remained vulnerable to local and regional panics, and ultimately depended on the Fed to prevent them from spreading across the banking system.

While the Fed's establishment may have reduced the concentration of interbank relationships in certain areas, our follow-up work with Calomiris shows that it might also have led individual banks to become complacent about liquidity risk, and therefore more vulnerable to liquidity shocks.[5] Before the Fed was established, greater exposure to interbank deposits encouraged banks to increase their capital ratios. By contrast, the amount of interbank deposits had much less impact on risk-management decisions after the Fed's founding. In essence, the Fed provided a perception of liquidity risk insurance against the sorts of shocks associated with previous banking panics, and in so doing weakened the incentives for banks to guard against interbank liquidity risk.

Knowing that banks had reduced their buffers against interbank liquidity risk, we go on to investigate the role of interbank connections in transmitting shocks during the Great Depression. Specifically, we examine the effects of contagion through direct contractual obligations between individual banks. Controlling for balance sheet characteristics commonly associated with the probability of failure, a bank's probability of closing during the Depression was higher when a higher percentage of its connected banks closed. Closures in one area spread to other areas through interbank connections even when the specific connected bank did not ultimately close. Our results indicate, therefore, that contagion through network ties was a significant source of banking instability during the Great Depression.

Unwinding Quantitative Easing

While most studies have focused on the actions of the Fed during the most recent downturn, the Great Depression offers insight on how to unwind the substantial excess reserves that built up as a result of quantitative easing (QE). Just as in 2007–10, short-term interest rates quickly hit the zero lower bound in the early 1930s and nontraditional monetary policies were considered to stimulate the economy. The net inflows of gold to the United States between May 1934 and December 1941 were more than $14.5 billion, and while gold inflows were not directly controlled by the Fed, the decision not to sterilize gold inflows led to an enormous increase in the monetary base. While we have not yet seen the full unwinding of the current QE program, my work with Gabriel Mathy studies how the United States unwound the monetary expansion of the Great Depression.[6]

Our analysis indicates that the cessation of the largely exogenous gold inflows is the only factor that can explain the sudden decline in excess reserves in early 1941. Between the trough of the Great Depression in 1933 and the end of World War II, excess reserves fell in only two periods. The first and only temporary decline in early-to-mid 1937 occurred when gold inflows slowed after the gold bloc countries devalued and the Fed raised reserve requirements. Excess reserves quickly rebounded, however, during the recession of 1937–38. The second and more permanent decline in excess reserves started in early 1941 and corresponded to the cessation of gold flows from Europe during the war. Excess reserves were on track to have unwound fully, even without the issuance of war bonds or an increase in reserve requirements in late 1941. Therefore, policy tightening was unnecessary. Instead, by allowing funds to disperse naturally after the gold inflows had ceased, the Fed prevented any large spikes in markets and was able to slowly unwind its QE program.

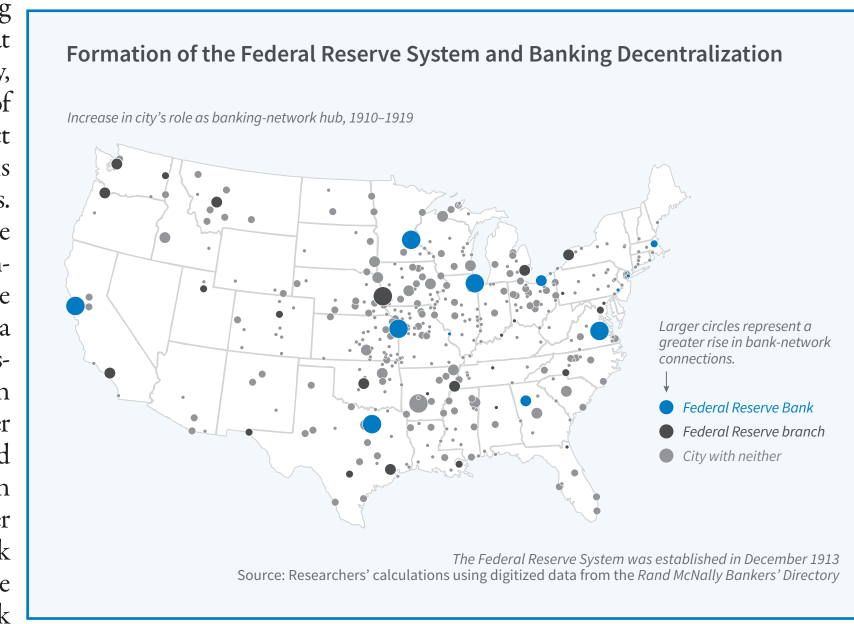


Figure 2

To conclude, history not only plays a key role in shaping the institutions and markets that exist today, but also enables the study of important dynamics that are sometimes obscured in modern data. Recent research, for instance, has highlighted the relationships between interbank networks, regulation, and financial crises. The literature shows that the concentration of interbank funds in a few institutions can lead to and exacerbate instability. However, the structure of the networks is often shaped by the regulatory and economic environment surrounding the banks. Insights from studies of the Great Depression and other stress episodes where interbank connections are known, therefore, can help in the design of better policies to contain the spillovers associated with counterparty exposures.

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Maclean is a co-editor at the *Journal of Policy Analysis and Management*. She completed her PhD at Cornell University in 2012 after earning Bachelor's and Master's degrees at Dalhousie University in Canada. She has published over 50 articles in peer-reviewed journals, including the *Journal of Health Economics*, the *Journal of Policy Analysis and Management*, *The Journal of Law & Economics*, *American Journal of Health Economics*, *Health Economics*, *Industrial and Labor Relations Review*, *Labour Economics*, *IZA Journal of Labor Policy*, *Industrial Relations*, *Health Affairs*, and others. Her work has been supported by the National Institutes of Health, the Food and Drug Administration, the American Cancer Society, and the Robert Wood Johnson Foundation.

Economics and Behavioral Health

Johanna Catherine Maclean

Behavioral health disorders include serious mental illness and substance use disorders. These conditions are costly both to affected individuals and to society. Individuals with behavioral health disorders experience interpersonal problems, employment difficulties, reduced overall health, and increased risk of death. Behavioral health disorders can complicate general health treatment. These conditions are costly to society because they place demands on the criminal justice, social service, and health-care systems, and because they reduce labor market productivity. Behavioral health conditions cost the US economy more than $1 trillion each year.[1,2] The causes of these disorders are complex, and likely include both genetic and environmental factors.

Behavioral health disorders are relatively common. The most recent government data suggest that, in 2017, 4.2 percent of all US adults — 11.2 million people — met diagnostic criteria for serious mental illness, and 7.2 percent — 19.2 million people — had substance abuse disorders. Approximately 1 percent — 3.1 million Americans — met criteria for both disorders.[3] A much larger share of the population engages in misuse of substances through activities such as binge drinking and recreational use of drugs, or experiences episodes of poor mental health such as mild depression or anxiety. The United States is in the midst of an unprecedented drug-use epidemic.

In 2017, 70,237 US residents are known to have died from a drug overdose. The drug-use epidemic has been largely attributable to opioids. There are 130 opioid-related overdose deaths each day, a rate that has increased more than sixfold since 1999.[4] The opioid epidemic is believed to have begun in the 1990s and 2000s through overprescription of opioids for the treatment of pain. It has evolved over time to involve heroin and synthetic opioids.[5] Abby Alpert, David Powell, and Rosalie Pacula, along with William Evans, Ethan Lieber, and Patrick Power, have documented that an unexpected, to consumers, reformulation of OxyContin in 2010, which limited the ability to abuse this then-most commonly used prescription opioid, led many users to transition to heroin and, more recently, to fentanyl and other synthetic opioids.[6] [7] Synthetic opioids are less expensive to manufacture but are more potent than heroin and prescription opioids. Figure 1 documents trends in annual overdoses associated with any opioid, heroin, and synthetic opioids (other than methadone, which is a medication used to treat opioid use disorder). The sharp uptick in the later period is ascribed to fentanyl in particular. Federal, state, and local governments have adopted a range of policies to address the opioid epidemic: prescription drug monitoring programs, shutdowns of "pill mills," a crackdown on doctor-shopping, syringe exchanges, and funds to support treatment.

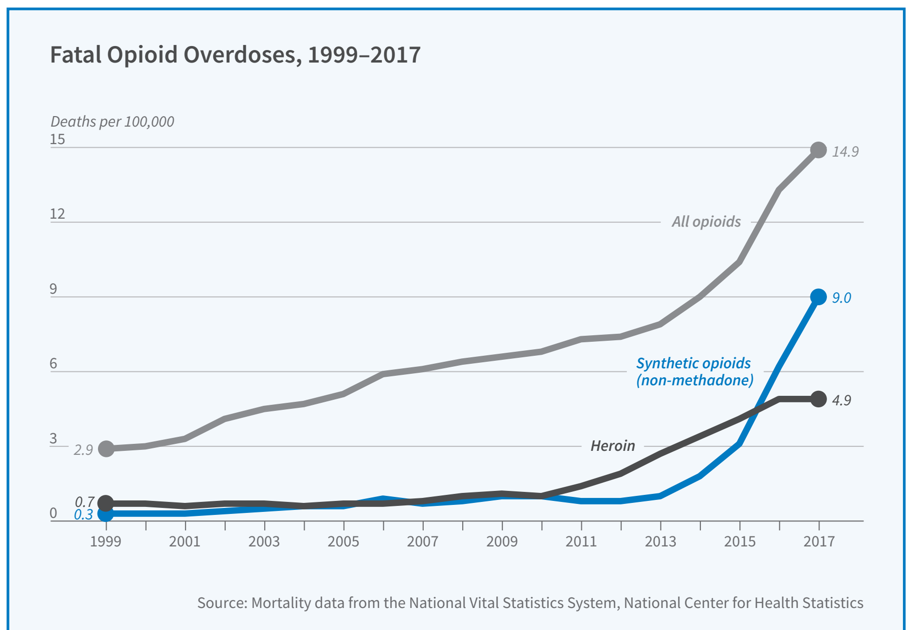

Figure 1

At the same time as the country is facing social costs from escalating drug misuse, government data suggest that suicide rates are also increasing. The overall rate and rates for men and women from 1999 through 2017 are shown in Figure 2.

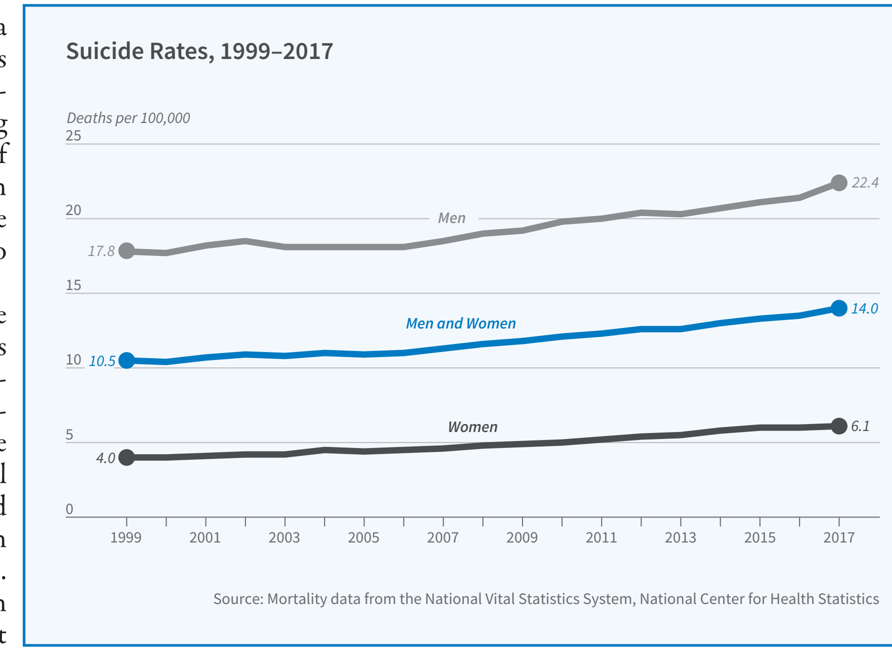

Figure 2

While behavioral health disorders generally cannot be cured, there is substantial medical evidence that these disorders can be managed. This confluence of factors creates an important potential role for public policy, which can provide insurance coverage that is sufficiently generous, in terms of covered benefits, to allow appropriate treatment. In a series of studies, my colleagues and I explore how insurance expansions can influence behavioral health-care service use and associated outcomes. To study these questions, we combine insight from health economics with clinical knowledge of behavioral health disorders. Both are important for studying these questions. We rely heavily on survey and administrative datasets maintained by the US government specifically to track behavioral health outcomes.

An important feature of the behavioral health-care delivery system, in particular the substance use disorder (SUD) system, is limited use of insurance payments. Many providers operate outside insurance payments, for example, accepting self-payments or relying on government grants and contracts to support treatment. Combining this feature with unique challenges faced by those with behavioral health disorders, such as stigma, makes the extent to which expanding insurance leads to changes in outcomes is an empirical question.

Evidence from Public Markets

Medicaid, which finances health-care services for low-income people, is the largest purchaser of US behavioral health care.[8] Brendan Saloner and I examine the effect of Affordable Care Act (ACA) Medicaid expansions on SUD treatment, specialty treatment, and medications obtained in non-specialty settings such as physicians' offices.[9] Medicaid-enrolled adults have elevated need for behavioral health-care treatment and are less likely to receive this modality of care than privately and Medicare-insured adults. The ACA reflects a major transformation of many areas of the health-care system. Pre-ACA, experts asserted that "no illness will be more affected than substance use disorders."[10] We find that ACA-Medicaid expansion increased Medicaid coverage among patients receiving specialty care, and use of Medicaid to pay for treatment. Given the limited use of insurance within the SUD treatment delivery system, this latter finding is important; ACA-Medicaid allowed low-income adults with SUDs to enroll in Medicaid, and providers were able to accept that insurance as a form of payment. Our effect sizes are quite large, suggesting that when new forms of financing are available, patients and providers are elastic in their responses. We do not observe changes in admissions; we hypothesize that capacity constraints within the SUD treatment delivery system may have stifled effects in the short run, as we examine the situation two years post-expansion. In continuing research, we are exploring the longer-run effects, using data from four years post-expansion, and we observe increases in admissions, which is in line with our hypothesis. When we consider prescriptions for medications financed by Medicaid used to treat SUDs in office-based settings, a setting generally preferred by patients, we observe large increases in treatment uptake.

In terms of serious mental illness, Michael Pesko, Benjamin Cook, Nicholas Carson, and I show that ACA-Medicaid expansions increase use of prescriptions used to treat mental illness in office-based settings.[11] Similarly, Elson Blunt, Ioana Popovici, Steven Marcus, and I use data on the universe of specialty mental health-care providers to study ACA-Medicaid effects.[12] We show that following ACA-Medicaid expansion specialty providers are more likely to accept Medicaid as a form of payment, suggesting that this expansion is making new treatment options available to lower-income adults.

Sebastian Tello-Trillo, Douglas Webber, and I examine the effect of losing public insurance on hospitalizations for behavioral health-care outcomes.[13] We exploit a large-scale and unexpected

Medicaid disenrollment that occurred in the state of Tennessee in 2005 (TennCare). This disenrollment led to 190,000 low-income adults losing coverage that had included a generous set of behavioral health-care services. We show that losing TennCare reduced the number of SUD-related hospitalizations, while the number of mental illness hospitalizations was unchanged. Patients with mental illness were able to replace Medicaid with private and Medicare coverage, while patients with SUDs were not able to fill in the Medicaid gap and instead had to self-finance hospitalizations after the disenrollment. We hypothesize that patients with SUDs face important social, economic, and cognitive challenges that limit their ability to find substitute coverage following an insurance loss. We also show that, post-disenrollment, behavioral health outcomes decline, plausibly through reduced treatment for SUDs and other changes, such as increased financial strain, as has been shown by Laura Argys et al.[14]

Evidence from Private Markets

State governments have attempted to increase coverage of behavioral health-care services in private insurance contracts. Beginning in the 1970s, states have required either that private insurers include a minimum set of SUD treatment benefits in contracts or that the insurer offer a beneficiary the ability to include SUD treatment services. Even after adoption of these early mandates, coverage was relatively sparse and insurers could impose cost-sharing and service limitations that were more restrictive than those applied to general health-care services. Not until the mid-1990s did states begin to implement legislation that required coverage of SUD treatment services in private insurance contracts and equality between SUD and general health care services (parity laws).

Popovici, Elisheva Stern, and I study the effects of parity laws on specialty SUD treatment provider behavior.[15] We show that following passage of a parity law, SUD treatment providers are more likely to accept private coverage and less likely to accept public coverage, and they increase the quantity of health care delivered. Provision of charity care declines post-parity law; we hypothesize that substitution effects — treating higher reimbursement-rate patients — crowds out care provided for free. Michael French, Popovici, and I consider the effects of parity law passage on a more distal outcome — substance-involved traffic fatalities. We show, using a range of administrative datasets, that following passage of a parity law, SUD treatment uptake increases, SUDs decline, and substance-involved traffic fatalities drop.[16]

An early provision of the ACA, the dependent coverage mandate (DCM) implemented in 2010, allowed many young adults to remain on their parents' private plan through age 26. The age limit previously was 19. Saloner, Cook, Yaa Akosa Antwi, and I examine the effect of the DCM on insurance coverage, payment forms, and admissions within the specialty sector.[17] We compare trends in these outcomes for adults aged 20 to 26 to slightly older adults unaffected by the DCM. Similar to ACA-Medicaid, we observe large increases in private coverage and use of this insurance to pay for treatment within the target group. Interestingly, we observe a decline in admissions post-DCM. We hypothesize that the DCM allows young adults to receive care in other, perhaps more desirable, settings such as physicians' offices, rather than in the specialty settings that we examine. This is potentially important, as patients are more likely to remain in treatment, and therefore better manage their chronic condition, in settings that they find acceptable.

The Massachusetts Experience

The Massachusetts health-care reform of 2006 is viewed by many policy experts as the blueprint for the ACA. Both reforms aimed to achieve universal insurance through expansions of public and private coverage. Saloner and I leverage the Massachusetts experience to study how a large-scale insurance expansion in both the public and private markets might influence specialty SUD treatment.[18] Massachusetts compelled private insurers to provide a relatively generous set of SUD treatment services, and Medicaid covered these services. We find no evidence that this reform led to changes in the number of admissions to treatment or in the types of payment that providers were willing to accept. Massachusetts is unique in that this state had one of the lowest uninsured rates in the country prior to its reform, thus our null findings may reflect ceiling effects.

Lessons Learned

Our findings are heterogeneous; there does not appear to be a "one size fits all" policy for addressing behavioral health issues. The effects of expanding coverage are much more nuanced and appear to depend on the affected population, treatment setting, and outcome. The mixed findings suggest that, while there is promise in using insurance policies to improve behavioral health, decision-makers must carefully assess the context in which a policy change is being considered.

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Household Expectations: From Neuroscience to Household Finance and Macroeconomics

Camelia M. Kuhnen

Camelia Kuhnen is a professor of finance at the Kenan-Flagler Business School at the University of North Carolina at Chapel Hill. She is an NBER research associate affiliated with the Asset Pricing Program, and an associate editor at *The Journal of Finance*, *The Review of Financial Studies*, *Management Science*, and *The Review of Corporate Finance Studies*. She is a past president of the Society for Neuroeconomics.

Kuhnen's research spans neuroeconomics, household finance, and empirical corporate finance, with an emphasis on labor and personnel issues. She has BS degrees in finance and in neuroscience from MIT and a PhD in finance from Stanford University. Prior to joining the University of North Carolina at Chapel Hill, she was an associate professor of finance at Northwestern University's Kellogg School of Management.

Recent work in neuroscience and neuroeconomics has provided valuable insights into the factors that drive individuals' formation of expectations. These insights can be used by economists to better understand individuals' beliefs and behaviors. Moreover, aggregate-level implications can be drawn from these micro-level findings.

Neuroscientist Brian Knutson and I documented an asymmetry in the brain in the processing of gain and loss information.[1] This discovery of asymmetric encoding of positive and negative outcomes led to a hypothesis that could be tested experimentally in the context of financial decision-making. In experiments conducted in three countries — the United States, Romania, and Germany — I have found that learning occurs differently depending on whether gain or loss has taken place. Specifically, negative outcomes induce overly pessimistic beliefs about investment payoffs.[2] This is because, in an environment characterized by negative payoffs, people put too much weight on each additional bit of bad news. This experimental finding suggests that, at the aggregate level, recessions could last longer and be more severe than predicted by standard models, in part because of undue pessimism among individuals.

Participants in my experiments were temporarily exposed to environments characterized by only positive or only negative payoffs; they exhibited a clear bias toward pessimism in learning in the loss domain. Outside of the laboratory, however, many people have encountered negative outcomes on a regular basis, experiencing significant adversity. Do they process information about economic outcomes differently than others in the same age cohort, with the same macroeconomic history? Neuroscience suggests that to be the case. Specifically, it has been shown that experiencing adversity shapes the way the brain learns, so that there is an increased neural sensitivity to loss information and a decreased neural sensitivity to gain information.[3] In recent research, Sreyoshi Das, Stefan Nagel, Andrei Miu, and I find in laboratory experiments as well as in large survey data that people who have encountered more adversity, measured by socioeconomic status (SES), form more pessimistic beliefs about financial investments and economic opportunities and avoid investing in stocks or real estate. Controlling for participants' prior beliefs and the information they possess regarding investment options, Miu and I find that lower-SES individuals update less from high asset payoffs than their higher-SES counterparts, and end up with more pessimistic beliefs about the quality of these assets. As a result, lower-SES individuals are less likely to invest in these assets, particularly at times when, objectively, the assets can be expected to have high payoffs.[4]

While lab experiments allow researchers to test hypotheses in controlled environments, there is always a question about the external validity of lab findings. To investigate whether it is generally true that those with lower incomes or lower education have overly pessimistic beliefs about financial investment opportunities, as well as about macroeconomic conditions in general, Das, Nagel, and I use data from the University of Michigan's Surveys of Consumers (MSC). We use monthly data over 38 years with about 180,000 person-month observations. The data include SES measures (i.e., income rank in the respondent's age bracket, as well as education), five macro-expectations measures, including beliefs about future stock market returns or the national unemployment rate, as well as self-reported household choices such as equity investments or the purchase of homes, durables, or cars. The large- scale evidence we find using the MSC is consistent with the experimental findings. Namely, we find that higher-SES individuals are more optimistic about the macro-economy relative to lower-SES individuals, but that in recessions, this expectations gap narrows dramatically.[5] [Figure 1 on the following page.]

While it has been known that SES measures like income and education matter for financial choices — for example, households earning higher incomes are more likely to participate in the stock market — using data from the MSC, we document that part of the link between SES and household choices can be attributed to the expectations channel. That is, about 20 to 30 percent of the effect of income or education on choices such as investing in equities or buying a home is driven by the fact that higher-SES individuals are more optimistic about macroeconomic conditions. The aggregate implication of this finding is that pessimistic macroeconomic expectations held by lower-SES individuals are part of the reason these individuals stay away from risky financial investments and as a result accumulate low levels of wealth, whereas higher-SES individuals hold optimistic beliefs and make investments with high expected returns. Over time, this may lead to an increase in wealth inequality. It remains to be seen whether the same patterns of differential expectations by SES level, as well as differential levels of investment because of these expectations, also affect investments in education or human capital, or the decision to engage in entrepreneurial pursuits.

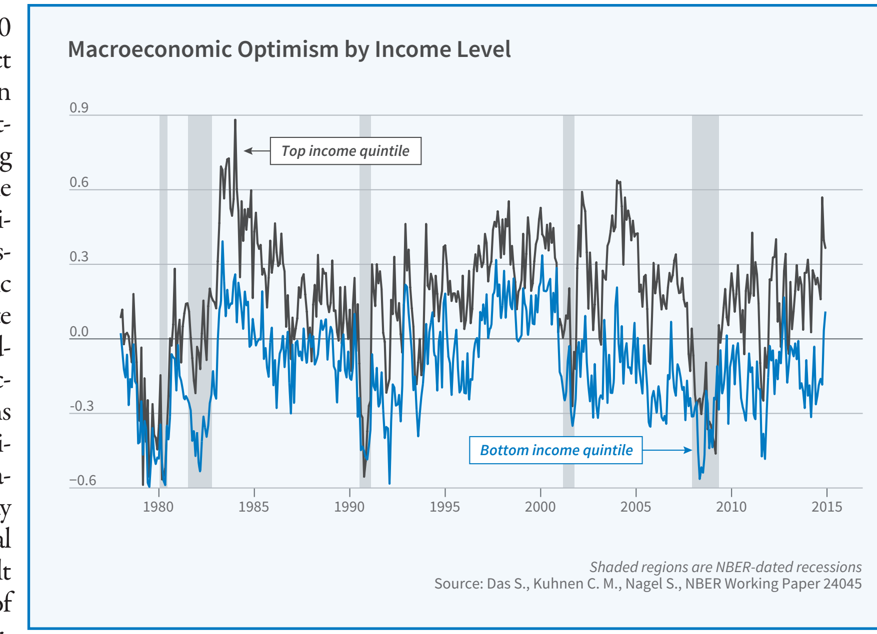


Figure 1

Adversity does not just impact the lens through which individuals view economic opportunities in a glass half-full versus glass half-empty manner. It also impacts perceived uncertainty about the economic environment. This idea comes from work in cognitive science and neuroscience that shows that life adversity, which is characterized by environmental instability, influences learning. Specifically, individuals faced with adversity perceive that the overall environment is volatile.[6]

In a recent study, Elyas Fermand, Geng Li, Itzhak Ben-David, and I find that lower-SES individuals are more uncertain in their micro- and macro-level economic expectations, and, all else being equal, more uncertain individuals engage in more cautious behaviors.[7] We use data from the Federal Reserve Bank of New York Survey of Consumer Expectations (SCE) covering more than 1,200 households each month, 2013 to 2017. Respondents report their expectations about three variables: their personal income growth, the national inflation rate, and the rate of growth of national home prices over the upcoming 12 months. The elicitation procedure captures information about the mean outcome that each respondent expects, as well as the uncertainty associated with that expectation. We find that individuals with lower income and education levels, facing more precarious financial conditions or living in counties with higher unemployment, report more uncertainty about their expectations.

Drawing on objective measures of uncertainty derived from the volatility of aggregate inflation and national home price growth, we find that lower-SES individuals report distributions of expectations that are more diffuse — "wider" — than the objective distributions. Furthermore, we find that if a person reports more uncertainty about one of the three economic variables in the survey, they are also more likely to report more uncertainty for the other two variables. This effect, the extrapolation of uncertainty across domains, is particularly strong among low-SES individuals. [See Figure 2.] We also find that uncertainty in economic expectations influences behavior in ways consistent with prior theories: All else equal, those with higher uncertainty regarding economic outcomes are more likely to engage in precautionary behaviors in terms of consumption, credit, and investment decisions, in that they plan to lower their consumption, seek additional lines of credit, and invest less in equities.

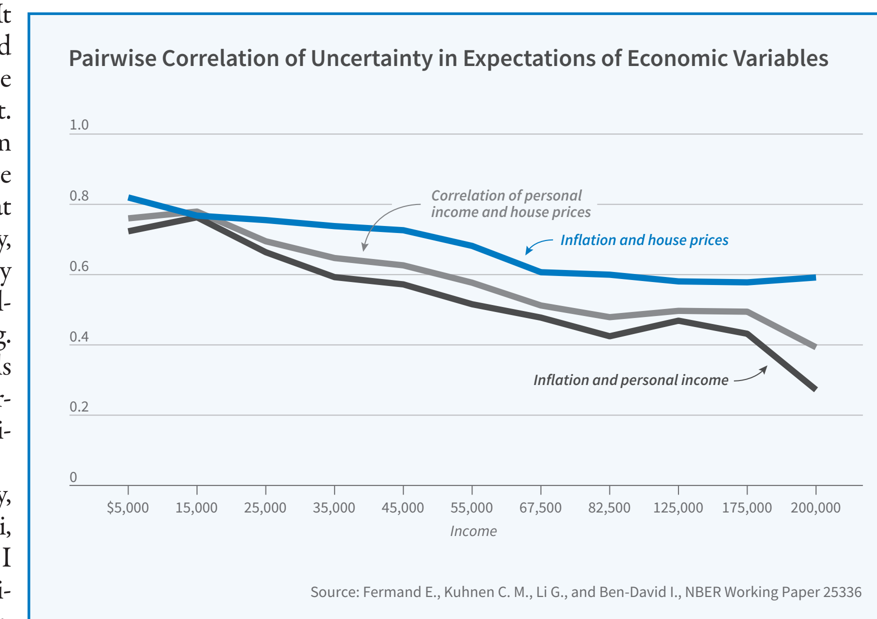


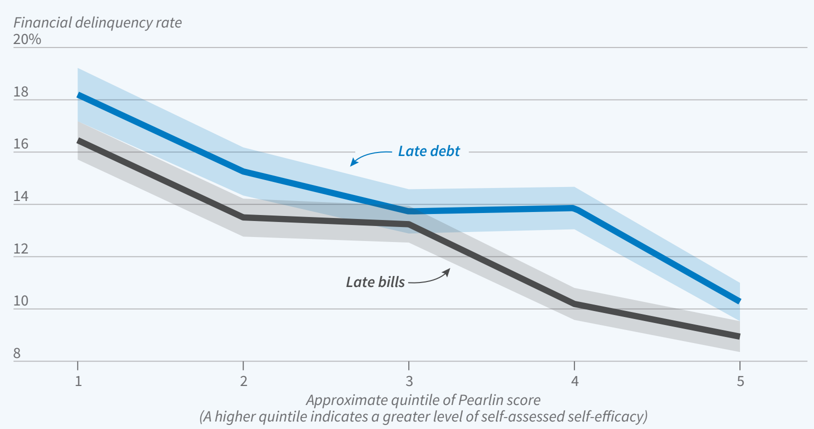
Figure 2

Our findings suggest that it is important to understand which households are more uncertain in their expectations, as this uncertainty can impact responses to policy changes targeting expectations and behavior. The fact that lower-SES individuals and those from communities with worse economic conditions are the most uncertain suggests that a reduction of uncertainty would have a higher impact on the decisions of these individuals than on the decisions of those who are better off.

Lastly, neuroscience work has documented heterogeneity regarding the brain's response to adversity. Specifically, self-efficacy modulates the ability to deal with negative shocks.[8] Self-efficacy is a personal characteristic that captures the strength of an individual's belief that his or her actions can influence the future. Using data from the National Longitudinal Survey of Youth Child and Young Adult sample (NLSY79CYA) of about 6,000 individuals tracked from their teens to adulthood, for whom we have detailed financial information in 2010, 2012, and 2014, as well as measures of self-efficacy earlier in life, Brian Melzer and I find that people who have high self-efficacy scores are more likely later on to avoid being financially delinquent, in the sense of missing debt payments or bill payments, especially when hit by shocks such as a health issue or the loss of a job.[9] [See Figure 3.] As a result, lower self-efficacy individuals are more likely to lose access to traditional credit markets and to lose assets through bankruptcy and foreclosures. Those with higher self-efficacy put in more effort to protect themselves against potential shocks, for example, through insurance or emergency savings, and when negative shocks occur, they have a lower chance of experiencing financial distress. We find that the beneficial effect of having high self-efficacy in terms of avoiding financial distress is triple in size for individuals who have faced economic adversity early in life, as measured by having a mother who was in the lowest third of the population in wealth, relative to the effect observed among those whose mothers' wealth was in the top third. The broad implication of these findings is that non-cognitive skills, including having positive expectations about one's ability to influence one's future, can shape the financial health of populations. Such expectations are particularly beneficial for individuals coming from lower-SES backgrounds, where traditional financial products or intrafamily insurance may not be available to cushion the effects of negative economic shocks.

We still have a lot to learn about why households differ in their expectations about economic variables that can influence their consumption or wealth down the road. The data we have so far indicate that these expectations are predictable to some degree, and that a lot of these predictions can be informed by work done in other academic disciplines, such as neuroscience and psychology. Household expectations affect many household economic decisions, and are critically important determinants of the impact of various public policies. Further investigation is needed to understand both their drivers and their consequences.

Self-Efficacy and Financial Delinquency



Pearlin scores are from the year before financial delinquency status is assessed. Shading represents 95% confidence intervals.
Source: Kuhnen, C. M., Melzer, B., NBER Working Paper 23028

Figure 3

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NBER News

Abhijit Banerjee, Esther Duflo, and Michael Kremer Awarded Nobel Prize

From left, Abhijit Banerjee, Esther Duflo, and Michael Kremer

Abhijit Banerjee and Esther Duflo of MIT and Michael Kremer of Harvard University, all of whom are long-time NBER research associates, were awarded the 2019 Nobel Prize in Economic Sciences. The prize recognizes their contributions to development economics and the study of global poverty. In particular, it cites their championing of randomized controlled trials and field experiments as methodologies for analyzing how a wide range of policy interventions — in health, education, credit markets, and local governance, among others — can contribute to poverty alleviation.

The laureates' work "has considerably improved our ability to fight global poverty. In just two decades, their new, experiment-based approach has transformed development economics," the Royal Swedish Academy of Sciences said in a statement announcing the award. A key element of the researchers' strategy is a focus on questions that concern specific contributors to poverty, such as lack of education or poor health. Their central methodological contribution is the recognition that these questions "are often best answered via carefully designed experiments among the people who are most affected."

The full announcement of the Nobel Prize award may be found here; the Royal Swedish Academy also provided a longer explanation of the scientific contributions that underlie this work.

On December 8, 2019, the laureates delivered lectures in Stockholm on the subject of their prize-winning work. Banerjee and Duflo each lectured on "Field Experiments and the Practice of Economics;" Kremer lectured on "Experimentation, Innovation, and Economics."

Banerjee's lecture | Duflo's lecture | Kremer's lecture

Banerjee is the Ford Foundation International Professor ofEconomics at MIT and a co-director of the Adbul Latif Jameel Poverty Action Lab (J-PAL). He is a research associate in the NBER programs on Development Economics and Economic Fluctuations and Growth.

NBER papers by Abhijit Banerjee

Duflo is the Abdul Latif Jameel Professor of Poverty Alleviation and Development Economics at MIT and a co-director of JPAL. She is a research associate in four NBER programs: Economics of Aging, Children, Development Economics, and Education.

NBER papers by Esther Duflo

Michael Kremer, the Gates Professor of Developing Societies at Harvard, is also a research associate in four NBER programs: Children, Development Economics, Economic Fluctuations and Growth, and Education.

NBER papers by Michael Kremer

With this year's awards, 32 current or past NBER research affiliates have received the Nobel Prize: William Nordhaus and Paul Romer, 2018; Richard Thaler, 2017; Oliver Hart and Bengt Holmström, 2016; Angus Deaton, 2015; Lars Hansen and Robert Shiller, 2013; Alvin Roth, 2012; Thomas Sargent and Christopher Sims, 2011; Peter Diamond, 2010; Paul Krugman, 2008; Edward C. Prescott and Finn Kydland, 2004; Robert F. Engle, 2003; Joseph E. Stiglitz, 2001; James J. Heckman and Daniel L. McFadden, 2000; Robert C. Merton and Myron S. Scholes, 1997; Robert E. Lucas, Jr., 1995; and the late Dale Mortensen, 2010; Robert W. Fogel, 1993; Gary S. Becker, 1992; George J. Stigler, 1982; Theodore W. Schultz, 1979; Milton Friedman, 1976; and Simon Kuznets, 1971.

In addition, six current or past members of the NBER Board of Directors have received the Nobel Prize: George Akerlof, 2001; Robert Solow, 1987; and the late William Vickrey, 1996; Douglass North, 1993; James Tobin, 1981; and Paul Samuelson, 1970.

New Research Associates and Faculty Research Fellows Named

The NBER Board of Directors appointed 41 new research associates at its September 2019 meeting. Research associates (RAs) must be tenured faculty members at North American colleges or universities; their appointments are recommended to the board by the directors of the NBER's 20 research programs, typically after consultation with a steering committee of leading scholars.

The new research associates are affiliated with 26 different colleges and universities; they received their graduate training at 24 different institutions. As of December 1, 2019, there were 1,256 research associates and 307 faculty research fellows. With the exception of one scholar who was previously a research associate, resigned while in public service, and was re-elected, all of the new research associates were previously faculty research fellows. Most were recently granted tenure at their home institutions and therefore became eligible for RA status.

Two new faculty research fellows (FRFs) were also appointed in July 2019. FRFs are appointed by the NBER president, also on the advice of program directors and steering committees and following a call for nominations in January. They must hold primary academic appointments in North America.

The names and affiliations of the newly promoted and newly appointed NBER affiliates, along with the names of the universities where they received Ph.Ds., are listed below. The entry in italics designates the RA who was reappointed.

Research Associates

Nikhil Agarwal, MIT (Industrial Organization)

Jennie Bai, Georgetown University (Asset Pricing)

Yan Bai, University of Rochester (International Finance and Macroeconomics)

Matilde Bombardini, University of British Columbia (Political Economy)

Jaroslav Borovička, New York University (Asset Pricing)

Laurent Bouton, Georgetown University (Political Economy)

Richard Burkhauser, Cornell University (Aging)

Leonardo Bursztyn, University of Chicago (Political Economy)

Rafael Dix-Carneiro, Duke University (International Trade and Investment)

Will Dobbie, Harvard University (Education)

Michael Ewens, Caltech (Productivity, Innovation, and Entrepreneurship)

Benjamin Faber, UC, Berkeley (International Trade and Investment)

Thibault Fally, UC, Berkeley (International Trade and Investment)

Xavier Giroud, Columbia University (Corporate Finance)

Joshua Goodman, Brandeis University (Education)

Koichiro Ito, University of Chicago (Environment and Energy)

Amir Kermani, UC, Berkeley (Monetary Economics)

Judd Kessler, University of Pennsylvania (Public Economics)

Carl Kitchens, Florida State University (Development of the American Economy)

Joanna Lahey, Texas A&M University (Aging)

Robin Lee, Harvard University (Industrial Organization)

Derek Lemoine, University of Arizona (Environment and Energy)

Shanjun Li, Cornell University (Environment and Energy)

Adrienne Lucas, University of Delaware (Children)

Rosalie Liccardo Pacula, University of Southern California (Health Economics)

Seth Richards-Shubik, Lehigh University (Health Economics)

Raffaella Sadun, Harvard University (Productivity, Innovation, and Entrepreneurship)

James Sallee, UC, Berkeley (Public Economics)

Alexi Savov, New York University (Asset Pricing)

Allison Shertzer, University of Pittsburgh (Development of the American Economy)

Juan Carlos Suárez Serrato, Duke University (Public Economics)

Tom Vogl, UC, San Diego (Children)

Christopher Walters, UC, Berkeley (Education)

Shing-Yi Wang, University of Pennsylvania (Development Economics)

Casey Warman, Dalhousie University (Health Economics)

Johannes Wieland, UC, San Diego (Monetary Economics)

Jing Cynthia Wu, University of Notre Dame (Monetary Economics)

Crystal Yang, Harvard University (Law and Economics)

Mao Ye, University of Illinois (Asset Pricing)

Haoxiang Zhu, MIT (Asset Pricing)

Nicolas L. Ziebarth, Auburn University (Development of the American Economy)

Faculty Research Fellows

Christina Patterson, University of Chicago (Monetary Economics)

Winnie van Dijk, University of Chicago (Public Economics)

Conferences

Tax Policy and the Economy

An NBER conference on Tax Policy and the Economy took place in Washington, DC, September 26. Research Associate Robert A. Moffitt of Johns Hopkins University organized the meeting, which was sponsored by the Harry and Lynde Bradley Foundation. These researchers' papers were presented and discussed:

- **Jonathan Meer**, Texas A&M University and NBER, and **Benjamin Priday**, Texas A&M University, "The Impact of Income, Wealth, and Tax Policy on Charitable Giving"
- **Katherine Baicker**, University of Chicago and NBER; **Mark Shepard**, Harvard University and NBER; and **Jonathan S. Skinner**, Dartmouth College and NBER, "One Medicare for All? The Economics of a Uniform Health Insurance Program" (NBER Working Paper 24037)
- **Casey B. Mulligan**, University of Chicago and NBER, "The Employer Penalty, Voluntary Compliance, and the Size Distribution of Firms: Evidence from a Survey of Small Businesses"
- **Robert J. Barro**, Harvard University and NBER, and **Brian Wheaton**, Harvard University, "Taxes, Incorporation, and Productivity" (NBER Working Paper 25508)
- **John Beshears** and **David Laibson**, Harvard University and NBER; **James J. Choi**, Yale University and NBER; **Mark Iwry**, The Brookings Institution; **David C. John**, AARP Public Policy Institute; and **Brigitte C. Madrian**, Brigham Young University and NBER, "Building Emergency Savings Through Employer-Sponsored Rainy Day Savings Accounts"

Summaries of these papers are at www.nber.org/conferences/2019/TPE19/summary.html

Economics of Artificial Intelligence

An NBER conference on Economics of Artificial Intelligence took place in Toronto September 26–27. Research Associates Ajay K. Agrawal, Joshua S. Gans, and Avi Goldfarb, all of the University of Toronto, and Catherine Tucker of MIT organized the meeting, which was sponsored by the Alfred P. Sloan Foundation and the Creative Destruction Lab. These researchers' papers were presented and discussed:

- **Julian Tszkin Chan**, Bates White Economic Consulting, and **Weifeng Zhong**, Mercatus Center at George Mason University, "Reading China: Predicting Policy Change with Machine Learning"
- **Joel M. Klinger**, **Juan C. Mateos-Garcia**, and **Konstantinos M. Stathoulopoulos**, Nesta, "Deep Learning, Deep Change? Mapping the Development of the Artificial Intelligence General Purpose Technology"
- **David Autor**, MIT and NBER, and **Anna M. Salomons**, Utrecht University, "New Frontiers: The Evolving Content and Geography of New Work in the 20th Century"
- **James Bessen**, Boston University; **Maarten Goos**, London School of Economics; **Anna M. Salomons**; and **Wiljan van den Berge**, CPB Netherlands Bureau for Economic Policy Analysis, "Automatic Reaction – What Happens to Workers at Firms that Automate?"

- **Mathieu Aubry**, École des Ponts ParisTech; **Roman Kräussl**, University of Luxembourg; **Gustavo Manso**, University of California, Berkeley; and **Christophe Spaenjers**, HEC Paris, "Machines and Masterpieces: Predicting Prices in the Art Auction Market"
- **Ajay K. Agrawal**; **John McHale**, National University of Ireland; and **Alexander Oettl**, Georgia Institute of Technology and NBER, "A Model of AI-Aided Scientific Discovery and Innovation"
- **Daniel Rock**, MIT, "Engineering Value: The Returns to Technological Talent and Investments in Artificial Intelligence"
- **Daniel Bjorkegren**, Brown University, and **Joshua Blumenstock**, University of California, Berkeley, "Manipulation-Proof Machine Learning"
- **Mariano-Florentino Cuéllar**, California Supreme Court and Stanford University; **Benjamin Larsen**, Copenhagen Business School; and **Yong Suk Lee** and **Michael Webb**, Stanford University, "Impact of Artificial Intelligence Regulation on Artificial Intelligence Adoption and Innovation"
- **Ansgar Walther** and **Tarun Ramadorai**, Imperial College London; **Paul Goldsmith-Pinkham**, Yale University; and **Andreas Fuster**, Swiss National Bank, "Predictably Unequal? The Effect of Machine Learning on Credit Markets"
- **Seth G. Benzell**, Boston University; **Laurence J. Kotlikoff**, Boston University and NBER; **Guillermo LaGarda**, Inter-American Development Bank; and **Jeffrey D. Sachs**, Columbia University and NBER, "Robots Are Us: Some Economics of Human Replacement"
- **Matthew Jackson**, Stanford University, and **Zafer Kanik**, MIT, "How Automation that Substitutes for Labor Affects Production Networks, Growth, and Income Inequality"
- **Marcus Dillender**, University of Illinois at Chicago, and **Eliza Forsythe**, University of Illinois, Urbana-Champaign, "Computerization of White Collar Jobs"
- **Edward L. Glaeser** and **Michael Luca**, Harvard University and NBER, and **Andrew Hillis**, **Hyunjin Kim**, and **Scott Duke Kominers**, Harvard University, "How Does Compliance Affect the Returns to Algorithms? Evidence from Boston's Restaurant Inspectors"
- **Jill Grennan**, Duke University, and **Roni Michaely**, Cornell Tech, "Artificial Intelligence and the Future of Work: Evidence from Analysts"
- **Gillian Hadfield**, University of Toronto, and **Jack A. Clark**, Import AI, "Regulatory Markets for AI Safety"
- **Bo Cowgill** and **Fabrizio Dell'Acqua**, Columbia University, "Biased Programmers? Or Biased Data? A Field Experiment about Algorithmic Bias"
- **Prasanna Tambe** and **Lorin Hitt**, University of Pennsylvania; **Erik Brynjolfsson**, MIT and NBER; and **Daniel Rock**, MIT, "AI and Intangible Capital"
- **Susan Athey**, Stanford University and NBER, "The Value of Data for Personalization in Retail"
- **Adair Morse**, University of California, Berkeley and NBER, and **Robert P. Bartlett III**, **Richard Stanton**, and **Nancy Wallace**, University of California, Berkeley, "Consumer Lending Discrimination in the Era of FinTech"
- **Benjamin R. Handel** and **Jonathan T. Kolstad**, University of California, Berkeley and NBER; and **Jonathan Gruber**, MIT and NBER, "Managing Intelligence: Skilled Experts and AI in Markets for Complex Products"

Summaries of these papers are at www.nber.org/conferences/2019/AIf19/summary.html

Taxation of Business Income

An NBER conference on Taxation of Business Income took place in Cambridge on October 2–3. Research Associates Joshua Rauh of Stanford University and Owen M. Zidar of Princeton University organized the meeting, which was sponsored by the Smith Richardson Foundation. These researchers' papers were presented and discussed:

- **Sebastian Bustos**, Harvard University; **Dina Pomeranz**, University of Zurich; **Juan Carlos Suárez Serrato**, Duke University and NBER; **José Vila-Belda**, University of Zurich, and **Gabriel Zucman**, University of California, Berkeley and NBER, "Monitoring Tax Compliance by Multinationals: Evidence from a Natural Experiment in Chile"
- **Sabrina T. Howell**, New York University and NBER, and **Filippo Mezzanotti**, Northwestern University, "Financing Entrepreneurship through the Tax Code: Angel Investor Tax Credits"
- **Jennifer Blouin**, University of Pennsylvania, and **Leslie Robinson**, Dartmouth College, "Double Trouble: How Much of US Multinationals' Profits Are Really in Tax Havens?"
- **Scott R. Baker**, Northwestern University and NBER; **Stephen Teng Sun**, Peking University; and **Constantine Yannelis**, University of Chicago and NBER, "Corporate Taxes and Retail Prices"
- **Audrey Guo**, Santa Clara University, "The Effects of Unemployment Insurance Taxation on Multi-Establishment Firms"
- **Chatib Basri**, University of Indonesia; **Mayara Felix**, MIT; **Rema Hanna**, Harvard University and NBER; and **Benjamin A. Olken**, MIT and NBER, "Tax Administration vs. Tax Rates: Evidence from Corporate Taxation in Indonesia" (NBER Working Paper 26150)
- **Cailin R. Slattery**, Columbia University, "Bidding for Firms: Subsidy Competition in the US"
- **Max Risch**, University of Michigan, "Does Taxing Business Owners Affect Their Employees? Evidence from a Change in the Top Marginal Tax Rate"
- **Christine L. Dobridge**, Federal Reserve Board; and **Paul Landefeld** and **Jake Mortenson**, Joint Committee on Taxation, "Corporate Taxes and the Wage Distribution: Effects of the Domestic Production Activities Deduction"
- **Enrico Moretti**, University of California, Berkeley and NBER, and **Daniel Wilson**, Federal Reserve Bank of San Francisco, "Taxing Billionaires: Estate Taxes and the Geographical Location of the Forbes 400"
- **Lucas Goodman**, **Katherine Lim**, and **Andrew Whitten**, US Department of the Treasury, and **Bruce Sacerdote**, Dartmouth College and NBER, "Impacts of the 199A Deduction for Pass-through Owners"
- **Cailin R. Slattery** and **Owen M. Zidar**, "Evaluating State and Local Business Tax Incentives"

Summaries of these papers are at www.nber.org/conferences/2019/TBIf19/summary.html

Cities, Labor Markets, and the Global Economy Conference

An NBER conference on Cities, Labor Markets, and the Global Economy took place in Cambridge on October 25–26. Research Associates Edward L. Glaeser of Harvard University and Stephen J. Redding of Princeton University organized the meeting, which was sponsored by the Smith Richardson Foundation. These researchers' papers were presented and discussed:

- **Eran Hoffmann**, Hebrew University, and **Monika Piazzesi** and **Martin Schneider**, Stanford University and NBER, "Jobs at Risk, Regional Growth, and Labor Market Flows"
- **Jan Eeckhout**, University College London; **Christoph Hedtrich**, Universitat Pompeu Fabra; and **Roberto Pinheiro**, Federal Reserve Bank of Cleveland, "Technology, Spatial Sorting, and Job Polarization"
- **Sharat Ganapati**, Georgetown University; **Woan Foong Wong**, University of Oregon; and **Oren Ziv**, Michigan State University, "Entrepot"
- **Cecile Gaubert**, **Patrick M. Kline**, and **Danny Yagan**, University of California, Berkeley and NBER, "Place-Based Redistribution"
- **Esteban Rossi-Hansberg**, Princeton University and NBER; and **Pierre-Daniel Sarte** and **Felipe Schwartzman**, Federal Reserve Bank of Richmond, "Cognitive Hubs and Spatial Redistribution" (NBER Working Paper 26267)
- **Fabian Eckert**, Princeton University, "Growing Apart: Tradable Services and the Fragmentation of the US Economy"
- **Nicholas Bloom**, Stanford University and NBER; **Kyle Handley**, University of Michigan and NBER; **André Kurmann**, Drexel University; and **Philip A. Luck**, University of Colorado Denver, "The Impact of Chinese Trade on US Employment: The Good, The Bad, and The Debatable"
- **Gabriel Kreindler**, Harvard University, and **Yuhei Miyauchi**, Boston University, "Measuring Commuting and Economic Activity inside Cities with Cell Phone Records"
- **Costas Arkolakis**, Yale University and NBER; **Rodrigo Adão**, University of Chicago and NBER; and **Federico Esposito**, Tufts University, "General Equilibrium Indirect Effects in Space: Theory and Measurement"
- **Victor Couture**, University of California, Berkeley; **Cecile Gaubert**, University of California, Berkeley and NBER; **Jessie Handbury**, University of Pennsylvania and NBER; and **Erik Hurst**, University of Chicago and NBER, "Income Growth and the Distributional Effects of Urban Spatial Sorting" (NBER Working Paper 26142)

Summaries of these papers are at www.nber.org/conferences/2019/CLMf19/summary.html

Health, Wellbeing, and Children's Outcomes for Native Americans and Other Indigenous Peoples

An NBER conference on Health, Wellbeing, and Children's Outcomes for Native Americans and Other Indigenous Peoples took place November 1 in Cambridge. Research Associate Randall Akee of the University of California, Los Angeles and Faculty Research Fellow Emilia Simeonova of Johns Hopkins University organized the meeting, which was sponsored by the National Institute on Aging through the NBER Center for Aging and Health Research. These researchers' papers were presented and discussed:

- **Richard H. Steckel**, Ohio State University and NBER, and **Kris Inwood**, University of Guelph, "Changes in the Well-Being of Native Americans Born in the Northwest, 1830–1900"
- **Stefanie Schurer**, University of Sydney; **Mary Alice Doyle**, Poverty Action; and **Sven Silburn**, Menzies School of Health Research, "Why did Australia's Major Welfare Reform Lead to Worse Birth Outcomes in Aboriginal Communities?"
- **Donna Feir**, Federal Reserve Bank of Minneapolis, and **Maggie Jones** and **David Scoones**, University of Victoria, "The Legacy of Indian Missions in the United States"
- **Maggie Jones**, "Student Aid and the Distribution of Educational Attainment"
- **Brooks A. Kaiser**, University of Southern Denmark, "Growth, Transition, and Decline in Resource Based Socio-Ecological Systems"
- **Dustin Frye**, Vassar College, and **Christian Dippel**, University of California, Los Angeles and NBER, "The Effect of Land Allotment on Native American Households during the Assimilation Era"

Summaries of these papers are at www.nber.org/conferences/2019/IPf19/summary.html

Macroeconomic Perspectives on the Value of Health

An NBER conference on Macroeconomic Perspectives on the Value of Health took place November 8 in Cambridge. Research Associate Chad Syverson of the University of Chicago organized the meeting, which was sponsored by the Robert Wood Johnson Foundation. These researchers' papers were presented and discussed:

- **David M. Cutler**, Harvard University and NBER, "A Satellite Account for Health in the United States"
- **Adriana Lleras-Muney**, University of California, Los Angeles and NBER, and **Flavien E. Moreau**, University of California, Los Angeles, "A Unified Law of Mortality for Economic Analysis"
- **Seidu Dauda**, World Bank Group; **Abe Dunn**, Bureau of Economic Analysis; and **Anne E. Hall**, Department of the Treasury, "Are Medical Prices Still Declining? A Systematic Examination of Quality-Adjusted Price Index Alternatives for Medical Care"
- **Mary O'Mahony** and **Lea Samek**, King's College London, "Health and Human Capital"
- **Anne E. Hall**, "Declines in Health and Widening Socioeconomic Inequalities among the Working-Age Population and Their Implications for Work-related Disability: Evidence from the National Health Interview Survey 1997–2018"
- **Colleen Carey**, Cornell University and NBER, and **David Molitor** and **Nolan H. Miller**, University of Illinois at Urbana-Champaign and NBER, "Why Does Disability Insurance Enrollment Increase during Recessions? Evidence from Medicare"
- **Charles I. Jones** and **Peter J. Klenow**, Stanford University and NBER, "The Economic Well-Being of the US Population, 1970–Present"

Summaries of these papers are at www.nber.org/conferences/2019/MPHf19/summary.html

Labor Demand and Older Workers

An NBER conference on Labor Demand and Older Workers took place November 15 in Cambridge. Research Associate Kevin S. Milligan of the University of British Columbia organized the meeting, which was sponsored by the Alfred P. Sloan Foundation. These researchers' papers were presented and discussed:

- **Johanna Catherine Maclean**, Temple University and NBER; **Stefan Pichler**, ETH Zurich; and **Nicolas R. Ziebarth**, Cornell University, "Mandated Sick Pay: Coverage, Utilization, and Welfare Effects"
- **Joseph Marchand**, University of Alberta, and **Kevin S. Milligan**, "Natural Resource Booms and Older Workers"
- **Marco Angrisani** and **Erik Meijer**, University of Southern California, and **Arie Kapteyn**, University of Southern California and NBER, "Sorting into Jobs and Labor Supply and Demand at Older Ages"
- **Daron Acemoglu**, MIT and NBER, and **Pascual Restrepo**, Boston University, "Demographics and Automation" (NBER Working Paper 24421)
- **Simon Jäger**, MIT and NBER, and **Benjamin Schoefer**, University of California, Berkeley, "Wages and the Value of Nonemployment" (NBER Working Paper 25230)

Summaries of these papers are at www.nber.org/conferences/2019/LDOWf19/summary.html

Economics of Infrastructure Investment

An NBER conference on Economics of Infrastructure Investment took place November 15–16 in Cambridge. Research Associates Edward L. Glaeser of Harvard University and James M. Poterba of MIT organized the meeting, which was sponsored by the Smith Richardson Foundation. These researchers' papers were presented and discussed:

- **Leah Brooks**, George Washington University, and **Zachary Liscow**, Yale University, "Is Infrastructure Spending Like Other Spending?"
- **Matthew Turner**, Brown University and NBER, and **Geetika Nagpal**, Brown University, "Transportation Infrastructure in the US"
- **Jennifer Bennett**, **Robert Kornfeld**, and **David Wasshausen**, Bureau of Economic Analysis, and **Daniel E. Sichel**, Wellesley College and NBER, "Measuring Infrastructure in BEA's National Economic Accounts"

- **Shane Greenstein**, Harvard University and NBER, “Digital Infrastructure”
- **Valerie A. Ramey**, University of California, San Diego and NBER, “Macroeconomic Consequences of Infrastructure Investment”
- **Dejan Makovsek**, International Transport Forum at the OECD, and **Adrian Bridge**, Queensland University of Technology, “Procurement Practices and Infrastructure Costs”
- **Eduardo Engel** and **Ronald Fischer**, Universidad de Chile, and **Alexander Galetovic**, Adolfo Ibáñez University, “International Experience with Public-Private Partnerships in Infrastructure”
- **Deborah J. Lucas**, MIT and NBER, and **Jorge Alberto Jimenez Montesinos**, MIT, “A Fair Value Approach to Valuing Public Infrastructure Projects and the Risk Transfer in Public Private Partnerships”

Summaries of these papers are at www.nber.org/conferences/2019/EIf19/summary.html

Innovation Information Initiative

The NBER’s Innovation Information Initiative convened December 6–7 in Cambridge. Research Associates Adam B. Jaffe of Brandeis University, Bronwyn H. Hall of University of California, Berkeley, and Bhaven N. Sampat of Columbia University were joined by Osmat Azzam Jefferson of Queensland University of Technology, Samuel J. Klein of MIT, and Matt Marx of Boston University in organizing the meeting, which was sponsored by the Alfred P. Sloan Foundation. The following researchers made presentations about existing or prospective data-creation projects and opportunities:

- **Gaétan de Rassenfosse**, Ecole polytechnique federale de Lausanne (EPFL), “Linking Products to Patents”
- **Jeffrey M. Kuhn**, University of North Carolina, “Applications of Textual Similarity to Measure Construction and Evaluation”
- **Deyun Yin**, World Intellectual Property Organization, “Challenges and Solutions in the Construction of Chinese Patent Database”
- **Ashish Arora** and **Sharon Belenzon**, Duke University and NBER, and **Lia Sheer**, Duke University, “The Role of Company Names and Ownership Changes in the Dynamic Reassignments of Patents”
- **Osmat Azzam Jefferson**, Queensland University of Technology, “Lenslab and the Lens public API”
- **Matt Marx**, Boston University, “Toward a Complete Set of Patent References to Science”
- **Lisa D. Cook**, Michigan State University and NBER, “Race, Ethnicity, and Patenting: USPTO’s New Data Collection Effort”
- **Samuel J. Klein**, “Prior Art”
- **Mitsuru Igami**, Yale University, “Mapping Firms’ Locations in Technological Space”
- **Dominique Guellec**, Observatoire des Sciences et Techniques, “Novelty and Impact”
- **Martina Iori**, Sant’Anna School of Advanced Studies, “The Complexity of Knowledge”

India in the Global Economy

The NBER, along with the Indian Council for Research on International Economic Relations (ICRIER) and the National Council for Applied Economic Research (NCAER), two research organizations based in New Delhi, India, sponsored a meeting in New Delhi and Neemrana, India, December 13–15. The meeting, which focused on “India in the Global Economy,” was the 21st gathering in this series of research exchanges. The meeting included NBER researchers as well as economists from Indian universities, research institutions, and government departments. NBER Research Associate **Abhijit Banerjee** of MIT organized the conference jointly with Rajat Kathuria of ICRIER. The meeting included remarks on current policy developments from Nirmala Sitharaman, the Honorable Union Minister of Finance and Corporate Affairs for India.

The NBER participants were: **Neeraj Kaushal**, Columbia University; **Edward Glaeser** and **Rema Hanna**, Harvard University; **Anne Krueger** and **John Lipsky**, Johns Hopkins University; **Parag Pathak** and **James Poterba**, MIT; **Stephen Redding,** Princeton University; **Alan Auerbach,** University of California, Berkeley; **Kathleen McGarry,** University of California, Los Angeles; **Karthik Muralidharan**, University of California, San Diego; **Marianne Bertrand** and **Raghuram Rajan,** University of Chicago; **Charles Engel,** University of Wisconsin; and **Michael Peters,** Yale University. Each delivered a research presentation and participated in discussion with Indian counterparts in related fields. Topics discussed included the economics of fiscal policy and tax design; urbanization; global economic growth and trade; the effects of aging populations on health status and economic performance; education, skills, and human capital acquisition; the challenge of job creation; and inequality and economic mobility.

Program and Working Group Meetings

Chinese Economy

Members of the NBER’s Chinese Economy Working Group met September 26–27 in Cambridge. Research Associates Nancy Qian of Northwestern University, Shang-Jin Wei of Columbia University, and Daniel Xu of Duke University organized the meeting. These researchers’ papers were presented and discussed:

- **Jing Cai**, University of Maryland and NBER, and **Adam Szeidl**, Central European University, “Direct and Indirect Effects of Financial Access on SMEs”
- **Li Feng** and **Haofei Wang**, Shanghai Jiao Tong University; **Jun Qian** and **Lei Zhu**, Fudan University, “Stock Pledged Loans, Capital Markets, and Firm Performance: the Good, the Bad and the Ugly”
- **Alain de Janvry** and **Elisabeth Sadoulet**, University of California, Berkeley; **Guojun He**, Hong Kong University of Science and Technology; **Shaoda Wang**, University of Chicago; and **Qiong Zhang**, Renmin University of China, “Influence Activities and Bureaucratic Performance: Evidence from a Large-Scale Field Experiment in China”
- **Daniel Berkowitz**, University of Pittsburgh; **Yi Lu**, National University of Singapore; and **Mingqin Wu**, South China Normal University, “What Makes Local Governments More Accoutable? Evidence from a Website Reform”
- **Hanming Fang**, University of Pennsylvania and NBER; **Linke Hou**, Shandong University; **Mingxing Liu** and **Pengfei Zhang**, Peking University; and **Lixin Colin Xu**, The World Bank, “Factions, Local Accountability, and Long-Term Development: Theory and Evidence”
- **Harald Hau** and **Difei Ouyang**, University of Geneva, “Capital Scarcity and Industrial Decline: Evidence from 172 Real Estate Booms in China”

- **John Ammer** and **John Rogers**, Federal Reserve Board, and **Gang Wang** and **Yang Yu**, Shanghai University of Finance and Economics, "The Value of Institutional Research: Fund Managers and Monetary Policy Expectations in China"

- **Bei Qin**, University of Hong Kong; **David Stromberg**, Stockholm University; and **Yanhui Wu**, University of Southern California, "Social Media, Information Networks, and Protests in China"

- **Panle Jia Barwick** and **Shanjun Li**, Cornell University and NBER; **Liguo Lin**, Shanghai University of Finance and Economics; and **Eric Zou**, Cornell University, "From Fog to Smog: The Value of Pollution Information"

- **Yi Huang**, The Graduate Institute, Geneva; **Chen Lin**, University of Hong Kong; **Sibo Liu**, Lingnan University; and **Heiwai Tang**, Johns Hopkins University, "Trade Networks and Firm Value: Evidence from the US-China Trade War"

Summaries of these papers are at www.nber.org/conference.nber.org/conferences/2019/CEf19/summary.html

Political Economy

Members of the NBER's Political Economy Program met October 11 in Cambridge. Research Associates Ernesto Dal Bó of the University of California, Berkeley and Francesco Trebbi of the University of British Columbia organized the meeting. These researchers' papers were presented and discussed:

- **Meera Mahadevan**, University of California, Santa Barbara, "The Price of Power: Costs of Political Corruption in Indian Electricity"

- **Avinash Dixit**, Princeton University, "'We haven't got but one more day' — The Cuban Missile Crisis as a Dynamic Chicken Game"

- **Michael Callen**, University of California, San Diego and NBER; **Saad Gulzar**, Stanford University; **Soledad A. Prillaman**, University of Oxford; and **Rohini Pande**, Yale University and NBER, "Does Revolution Work? Post-Revolutionary Evolution of Nepal's Political Classes"

- **Abhay Aneja**, Stanford University, and **Carlos Avenancio**, Indiana University, "The Effect of Political Power on Labor Market Inequality: Evidence from the 1965 Voting Rights Act"

- **Katherine Casey**, Stanford University and NBER; and **Abou Bakarr Kamara** and **Niccoló Meriggi**, International Growth Centre, "An Experiment in Candidate Selection" (NBER Working Paper 26160)

- **Camilo García-Jimeno**, Emory University and NBER, and **Alberto Ciancio**, Population Studies Center, "The Political Economy of Immigration Enforcement: Conflict and Cooperation under Federalism" (NBER Working Paper 25766)

Summaries of these papers are at www.nber.org/conferences/2019/POLf19/summary.html

Market Design

Members of the NBER's Market Design Working Group met October 18–19 in Cambridge. Research Associates Michael Ostrovsky of Stanford University and Parag A. Pathak of MIT organized the meeting. These researchers' papers were presented and discussed:

- **Liran Einav**, Stanford University and NBER; **Amy Finkelstein**, MIT and NBER; **Yunan Ji**, Harvard University; and **Neale Mahoney**, University of Chicago and NBER, "Voluntary Regulation: Evidence from Medicare Bundled Payments"

- **Amanda Y. Agan**, Rutgers University and NBER; **Bo Cowgill**, Columbia University; and **Laura K. Gee**, Tufts University, "Salary Disclosure and Hiring: Field Experimental Evidence from a Two-Sided Audit Study"

- **Nicole Immorlica** and **Brendan Lucier**, Microsoft Research; **Jacob D. Leshno**, University of Chicago; and **Irene Y. Lo**, Stanford University, "Information Acquisition Costs in Matching Markets"

- **Christina Aperjis**, Power Auctions LLC; **Lawrence Ausubel**, University of Maryland; and **Oleg V. Baranov**, University of Colorado Boulder, "Supply Reduction in the Broadcast Incentive Auction"

- **Yannai A. Gonczarowski**, Microsoft Research; **Lior Kovalio** and **Noam Nisan**, Hebrew University of Jerusalem; and **Assaf Romm**, Hebrew University of Jerusalem and Stanford University, "Matching for the Israeli 'Mechinot' Gap-Year Programs: Handling Rich Diversity Requirements"

- **Tayfun Sönmez** and **M. Bumin Yenmez**, Boston College, "Affirmative Action in India via Vertical and Horizontal Reservations"

- **Marek Pycia**, University of Zurich, "Evaluating with Statistics: Which Outcome Measures Differentiate among Matching Mechanisms?"

- **Daniel C. Waldinger**, New York University, "Targeting In-Kind Transfers Through Market Design: A Revealed Preference Analysis of Public Housing Allocation"

- **Joshua Angrist** and **Parag A. Pathak**, MIT and NBER, and **Roman Zarate**, MIT, "Choice and Consequence: Assessing Mismatch at Chicago Exam Schools" (NBER Working Paper 26137)

- **Mohammad Akbarpour**, Stanford University; **Julien Combe**, University College London; **Yinghua He**, Rice University; **Victor Hiller**, Université Paris II; **Robert Shimer**, University of Chicago and NBER; and **Olivier Tercieux**, Paris School of Economics, "Unpaired Kidney Exchange: Overcoming Double Coincidence of Wants without Money"

- **Gianluca Brero** and **Sven Seuken**, University of Zurich, and **Benjamin Lubin**, Boston University, "Machine Learning-Powered Iterative Combinatorial Auctions"

- **Nick Arnosti**, Columbia University, and **Peng Shi**, University of Southern California, "Design of Lotteries and Waitlists for Affordable Housing Allocation"

Summaries of these papers are at www.nber.org/conferences/2019/MDf19/summary.html

Public Economics

Members of the NBER's Public Economics Program met October 24–25 in Chicago. Program Director Amy Finkelstein of MIT and Research Associate Neale Mahoney of the University of Chicago organized the meeting. These researchers' papers were presented and discussed:

- **Hunt Allcott**, New York University and NBER; **Joshua J. Kim**, Stanford University; **Dmitry Taubinsky**, University of California, Berkeley and NBER; and **Jonathan Zinman**, Dartmouth College and NBER, "Payday Lending, Self Control, and Consumer Protection"
- **Patrick Bayer**, Duke University and NBER; **Peter Q. Blair**, Harvard University and NBER; and **Kenneth Whaley**, Clemson University, "Is Spending on Schools Efficient? A National Study of the Capitalization of School Spending and Local Taxes"
- **Joshua Rauh**, Stanford University and NBER, and **Ryan J. Shyu**, Stanford University, "Behavioral Responses to State Income Taxation of High Earners: Evidence from California" (NBER Working Paper 26349)
- **Nathaniel Hendren**, Harvard University and NBER, and **Benjamin D. Sprung-Keyser**, Harvard University, "A Unified Welfare Analysis of Government Policies" (NBER Working Paper 26144)
- **Michael Gelman**, Claremont McKenna College; **Shachar Kariv**, University of California, Berkeley; **Matthew D. Shapiro**, University of Michigan and NBER; and **Dan Silverman**, Arizona State University and NBER, "Rational Illiquidity and the Marginal Propensity to Consume: Theory and Evidence from Income Tax Withholding and Refunds"
- **Daniel C. Waldinger**, New York University, "Targeting In-Kind Transfers Through Market Design: A Revealed Preference Analysis of Public Housing Allocation"
- **Cailin R. Slattery**, Columbia University, "Bidding for Firms: Subsidy Competition in the US."
- **Juliana Londono-Velez**, University of California, Los Angeles and NBER, "Can Wealth Taxation Work in Developing Countries? Quasi-Experimental Evidence from Colombia"
- **Juan Carlos Suárez Serrato** and **Daniel Xu**, Duke University and NBER; **Xian Jiang**, Duke University; **Zhao Chen**, Fudan University; and **Zhikuo Liu**, Shanghai University of Finance and Economics, "Tax Policy and Lumpy Investment Behavior: Evidence from China's VAT Reform"

Summaries of these papers are at www.nber.org/conferences/2019/PEf19/summary.html

Economic Fluctuations and Growth

Members of the NBER's Economic Fluctuations and Growth Program met October 25 at the Federal Reserve Bank of Chicago. Research Associates Francisco J. Buera of the Washington University in St. Louis and Ayşegül Şahin of the University of Texas at Austin organized the meeting. These researchers' papers were presented and discussed:

- **Monika Piazzesi** and **Martin Schneider**, Stanford University and NBER; **Ciaran Rogers**, Stanford University; "Money and Banking in a New Keynesian Model"
- **Chang-Tai Hsieh**, University of Chicago and NBER, and **Esteban Rossi-Hansberg**, Princeton University and NBER, "The Industrial Revolution in Services" (NBER Working Paper 25968)
- **Giuseppe Moscarini**, Yale University and NBER, and **Fabien Postel-Vinay**, University College London, "The Job Ladder: Inflation vs. Reallocation"
- **Fernando E. Alvarez**, University of Chicago and NBER, and **David O. Argente**, Pennsylvania State University, "Consumer Surplus of Alternative Payment Methods: Paying Uber with Cash"
- **Maryam Farboodi**, MIT and NBER, and **Peter Kondor**, London School of Economics, "Rational Sentiments and Economic Cycles"
- **Martin Beraja**, MIT and NBER; **Rodrigo Adão**, University of Chicago and NBER; and **Nitya Pandalai-Nayar**, University of Texas at Austin and NBER, "Technological Transitions with Skill Heterogeneity across Generations"

Summaries of these papers are at www.nber.org/conferences/2019/EFGf19/summary.html

International Finance and Macroeconomics

Members of the NBER's International Finance and Macroeconomics Program met October 25 in Cambridge. Research Associates Guido Lorenzoni of Northwestern University and Vivian Yue of Emory University organized the meeting. These researchers' papers were presented and discussed:

- **Chenzi Xu**, Harvard University, "Reshaping Global Trade: The Immediate and Long-Run Effects of Bank Failures"
- **Jordi Galí**, CREI and NBER, "Uncovered Interest Parity, Forward Guidance and the Exchange Rate"
- **Gabriel Chodorow-Reich**, Harvard University and NBER; **Loukas Karabarbounis**, University of Minnesota and NBER; and **Rohan Kekre**, University of Chicago, "The Macroeconomics of the Greek Depression" (NBER Working Paper 25900)
- **Javier Bianchi**, Federal Reserve Bank of Minneapolis and NBER, and **César Sosa-Padilla**, University of Notre Dame, "Reserve Accumulation, Macroeconomic Stabilization and Sovereign Risk"
- **Luis Felipe Céspedes**, Universidad Adolfo Ibáñez, and **Roberto Chang**, Rutgers University and NBER, "Optimal Foreign Reserves and Central Bank Policy under Financial Stress"
- **Jeremy Fouliard**, London Business School; **Michael Howell**, CrossBorder Capital; and **Hélène Rey**, London Business School and NBER, "Answering the Queen: Machine Learning and Financial Crises"
- **Wenxin Du**, University of Chicago and NBER; **Benjamin M. Hébert**, Stanford University and NBER; and **Amy Wang Huber**, Stanford University, "Are Intermediary Constraints Priced?"

Summaries of these papers are at www.nber.org/conferences/2019/IFMf19/summary.html

Behavioral Finance

Members of the NBER's Behavioral Finance Working Group met November 1 in Cambridge. Research Associate Nicholas C. Barberis of Yale University organized the meeting. These researchers' papers were presented and discussed:

- **Peter D. Maxted**, Harvard University, "A Macro-Finance Model with Sentiment"
- **Francesco D'Acunto**, Boston College; **Ulrike Malmendier**, University of California, Berkeley and NBER; **Juan Ospina**, University of Chicago; and **Michael Weber**, University of Chicago and NBER, "Exposure to Daily Price Changes and Inflation Expectations" (NBER Working Paper 26237)
- **Samuel M. Hartzmark** and **Samuel D. Hirshman**, University of Chicago, and **Alex Imas**, Carnegie Mellon University, "Ownership, Learning and Beliefs"
- **Nicholas C. Barberis**; **Lawrence J. Jin**, California Institute of Technology; and **Baolian Wang**, University of Florida, "Prospect Theory and Stock Market Anomalies"
- **Lars A. Lochstoer**, University of California, Los Angeles, and **Tyler Muir**, University of California, Los Angeles and NBER, "Volatility Expectations and Returns"
- **Paul Goldsmith-Pinkham**, Yale University, and **Kelly Shue**, Yale University and NBER, "The Gender Gap in Housing Returns"

Summaries of these papers are at www.nber.org/conferences/2019/BFf19/summary.html

Monetary Economics

Members of the NBER's Monetary Economics Program met November 1 in San Francisco. Faculty Research Fellows Adrien Auclert of Stanford University and Marco Di Maggio of Harvard University, and Program Directors Emi Nakamura and Jón Steinsson of the University of California, Berkeley organized the meeting. These researchers' papers were presented and discussed:

- **Andrés Blanco**, University of Michigan, and **Isaac Baley**, Universitat Pompeu Fabra, "Aggregate Dynamics in Lumpy Economies"
- **Saki Bigio**, University of California, Los Angeles and NBER, and **Yuliy Sannikov**, Stanford University, "A Model of Intermediation, Money, Interest, and Prices"
- **Anthony A. DeFusco** and **John A. Mondragon**, Northwestern University, "No Job, No Money, No Refi: Frictions to Refinancing in a Recession"
- **Greg Buchak**, Stanford University; **Gregor Matvos**, Northwestern University and NBER; **Tomasz Piskorski**, Columbia University and NBER; and **Amit Seru**, Stanford University and NBER, "The Limits of Shadow Banks" (NBER Working Paper 25149)
- **Ian Dew-Becker**, Northwestern University and NBER; **Alireza Tahbaz-Salehi**, Northwestern University; and **Andrea Vedolin**, Boston University and NBER, "Macro Skewness and Conditional Second Moments: Evidence and Theories"
- **Rohan Kekre**, University of Chicago, and **Moritz Lenel**, Princeton University, "Monetary Policy, Redistribution, and Risk Premia"

Summaries of these papers are at www.nber.org/conferences/2019/MEf19/summary.html

Labor Studies

Members of the NBER's Labor Studies Program met November 7–8 in Chicago. Program Directors David Autor of MIT and Alexandre Mas of Princeton University organized the meeting. These researchers' papers were presented and discussed:

- **Emily Breza**, Harvard University and NBER; **Supreet Kaur**, University of California, Berkeley and NBER; and **Yogita Shamdasani**, University of Pittsburgh, "Labor Rationing: A Revealed Preference Approach from Hiring Shocks"
- **Gizem Kosar**, Federal Reserve Bank of New York; **Ayşegül Şahin**, University of Texas at Austin and NBER; and **Basit Zafar**, Arizona State University and NBER, "The Work-Leisure Tradeoff: Identifying the Heterogeneity"
- **Paul Mohnen**, University of Michigan, "The Impact of the Retirement Slowdown on the US Youth Labor Market"
- **Henrik Kleven**, Princeton University and NBER, "The EITC and the Extensive Margin: A Reappraisal" (NBER Working Paper 26405)
- **Peter Q. Blair**, Harvard University and NBER, and **Benjamin Posmanick**, Clemson University, "When Does Labor Market Flexibility Reduce Gender Wage Gaps?"
- **Ellora Derenoncourt**, Princeton University, and **Claire Montialoux**, University of California, Berkeley, "Minimum Wages and Racial Inequality"
- **Stefano DellaVigna** and **Ulrike Malmendier**, University of California, Berkeley and NBER; **John A. List**, University of Chicago and NBER; and **Gautam Rao**, Harvard University and NBER, "Estimating Social Preferences and Gift Exchange with a Piece-Rate Design"
- **Brent R. Hickman**, Washington University in St. Louis, and **Jack Mountjoy**, University of Chicago, "The Returns to College(s): Estimating Value-Added and Match Effects in Higher Education"

Summaries of these papers are at www.nber.org/conferences/2019/LSf19/summary.html

Organizational Economics

Members of the NBER's Organizational Economics Working Group met November 8–9 in Cambridge. Research Associate Robert S. Gibbons of MIT organized the meeting. These researchers' papers were presented and discussed:

- **Dana Foarta** and **Takuo Sugaya**, Stanford University, "Wait-and-See or Step In? Dynamics of Interventions"
- **Canice Prendergast**, University of Chicago, "Making A Difference"
- **Mark J. Borgschulte**, University of Illinois at Urbana-Champaign; **Marius Guenzel**, University of California, Berkeley; **Canyao Liu**, Yale University; and **Ulrike Malmendier**, University of California, Berkeley and NBER, "CEO Stress and Life Expectancy: The Role of Corporate Governance and Financial Distress"
- **Francesco Decarolis** and **Paolo Pinotti**, Bocconi University; **Raymond Fisman**, Boston University and NBER; and **Silvia Vannutelli**, Boston University, "Rules, Discretion, and Corruption in Procurement: Evidence from Italian Government Contracting"
- **Nicholas Bloom**, Stanford University and NBER; **Michael Christensen** and **Jan Rivkin**, Harvard University; **Raffaella Sadun**, Harvard University and NBER; and **Mu-Jeung Yang**, University of Utah, "How Do CEOs Make Strategy?"

- **Raúl Sanchez de la Sierra**, University of Chicago and NBER, and **Kristof Titeca**, University of Antwerp, "Corruption in Hierarchies"
- **Chen Cheng** and **Yiqing Xing**, Johns Hopkins University, and **Wei Huang**, National University of Singapore, "A Theory of Multiplexity: Sustaining Cooperation with Multiple Relationships"
- **Ernst Fehr** and **Ivo Schurtenberger**, University of Zurich, "The Dynamics of Norm Formation and Norm Decay"
- **Giuseppe Berlingieri**, ESSEC Business School and CEP; **Frank Pisch**, University of St. Gallen; and **Claudia Steinwender**, MIT and NBER, "Organizing Global Supply Chains: Input-Output Linkages and Vertical Integration" (NBER Working Paper 25286)
- **W. Bentley MacLeod**, Columbia University and NBER, and **Victoria Valle Lara** and **Christian Zehnder**, University of Lausanne, "On Building a Conflict Culture in Organizations"
- **Katherine Casey**, Stanford University and NBER; **Edward Miguel**, University of California, Berkeley and NBER; **Rachel Glennerster**, UK Department for International Development; and **Maarten J. Voors**, Wageningen University & Research, "Skill versus Voice in Local Development" (NBER Working Paper 25022)

Summaries of these papers are at www.nber.org/conferences/2019/OEf19/summary.html

Corporate Finance

Members of the NBER's Corporate Finance Program met November 8 at Stanford University. Research Associates John Graham of Duke University and Paola Sapienza of Northwestern University organized the meeting. These researchers' papers were presented and discussed:

- **Matthew Smith**, Department of the Treasury; **Owen M. Zidar**, Princeton University and NBER; and **Eric Zwick**, University of Chicago and NBER, "Top Wealth in America: New Estimates and Implications for Taxing the Rich"
- **Simon Jäger**, MIT and NBER; **Benjamin Schoefer**, University of California, Berkeley; and **Jörg Heining**, Institut für Arbeitsmarkt und Berufsforschung, "Labor in the Boardroom"
- **Jean-Noël Barrot**, MIT; **Thorsten Martin**, HEC Paris; **Julien Sauvagnat**, Bocconi University; and **Boris Vallée,** Harvard University, "Employment Effects of Alleviating Financing Frictions: Worker-level Evidence from a Loan Guarantee Program"
- **Ankit Kalda**, Indiana University; **Marco Di Maggio**, Harvard University and NBER; and **Vincent Yao**, Georgia State University, "Second Chance: Life without Student Debt" (NBER Working Paper 25810)
- **Holger Mueller**, New York University and NBER, and **Constantine Yannelis**, University of Chicago and NBER, "Reducing Barriers to Enrollment in Federal Student Loan Repayment Plans: Evidence from the Navient Field Experiment"
- **Winston Wei Dou** and **Lucian A. Taylor**, University of Pennsylvania; **Wei Wang**, Queens University; and **Wenyu Wang**, Indiana University, "Dissecting Bankruptcy Frictions"
- **Francesco D'Acunto**, Boston College; **Ulrike Malmendier**, University of California, Berkeley and NBER; and **Michael Weber**, University of Chicago and NBER, "Gender Roles Distort Women's Economic Outlook"

Summaries of these papers are at www.nber.org/conferences/2019/CFf19/summary.html

Asset Pricing

Members of the NBER's Asset Pricing Program met November 8 at Stanford University. Research Associates Stefano Giglio of Yale University and Tarek Alexander Hassan of Boston University organized the meeting. These researchers' papers were presented and discussed:

- **Matthew Smith**, Department of Treasury; **Owen M. Zidar**, Princeton University and NBER; and **Eric Zwick**, University of Chicago and NBER, "Top Wealth in the United States: New Estimates and Implications for Taxing the Rich"
- **Juan Morelli** and **Diego Perez**, New York University, and **Pablo Ottonello**, University of Michigan and NBER, "Global Banks and Systemic Debt Crises"
- **Wenxin Du**, University of Chicago and NBER; **Benjamin M. Hébert**, Stanford University and NBER; and **Amy Wang Huber**, Stanford University, "Are Intermediary Constraints Priced?" (NBER Working Paper 26009)
- **Martin Lettau**, University of California, Berkeley and NBER; **Sydney C. Ludvigson**, New York University and NBER; and **Paulo Martins Manoel**, University of California, Berkeley, "Characteristics of Mutual Fund Portfolios: Where Are the Value Funds?" (NBER Working Paper 25381)

Summaries of these papers are at www.nber.org/conferences/2019/APf19/summary.html

Education

Members of the NBER's Education Program met November 14–15 in Cambridge. Program Director Caroline M. Hoxby of Stanford University organized the meeting. These researchers' papers were presented and discussed:

- **C. Kirabo Jackson**, Northwestern University and NBER, and **Diether Beuermann**, Inter-American Development Bank, "Do Parents Know Best? The Short and Long-Run Effects of Attending the Schools That Parents Prefer" (NBER Working Paper 24920)
- **Richard Murphy**, University of Texas at Austin and NBER; **Simon Burgess**, University of Bristol; and **Ellen Greaves**, Institute for Fiscal Studies, "Deregulating Teacher Labor Markets"
- **Cher Li**, Colorado State University, and **Basit Zafar**, Arizona State University and NBER, "Ask and You Shall Receive? Gender Differences in Regrades in College"
- **Peter Bergman**, Columbia University; **Eric W. Chan**, Babson College; and **Adam Kapor**, Princeton University and NBER, "Housing Search Frictions: Evidence from Detailed Search Data and a Field Experiment"
- **Kevin Mumford**, Purdue University, "Student Selection into an Income Share Agreement"
- **Andrew Foote**, US Census Bureau, and **Kevin M. Stange**, University of Michigan and NBER, "Attrition from Administrative Data: Problems and Solutions with an Application to Higher Education"
- **Christopher Neilson** and **Franco A. Calle**, Princeton University, and **Sebastian Gallegos**, Inter-American Development Bank, "Screening and Recruiting Talent at Teacher Colleges Using Pre-College Academic Achievement"

- **Kelli A. Bird** and **Benjamin L. Castleman**, University of Virginia; **Jeffrey T. Denning**, Brigham Young University; **Joshua Goodman**, Brandeis University and NBER; **Cait Lamberton**, University of Pittsburgh; and **Kelly Ochs Rosinger**, Pennsylvania State University, "Nudging at Scale: Experimental Evidence from FAFSA Completion Campaigns" (NBER Working Paper 26158)

- **Philip Oreopoulos**, University of Toronto and NBER, and **Uros Petronijevic**, York University, "The Remarkable Unresponsiveness of College Students to Nudging and What We Can Learn from It" (NBER Working Paper 26059)

- **Phillip B. Levine**, Wellesley College and NBER; **Jennifer Ma**, College Board; and **Lauren C. Russell**, University of Pennsylvania, "Do College Applicants Respond to Changes in Sticker Prices Even When They Don't Matter?"

- **Eric Brunner** and **Stephen Ross**, University of Connecticut, and **Shaun Dougherty**, Vanderbilt University, "The Effects of Career and Technical Education: Evidence from the Connecticut Technical High School System"

- **Barbara Biasi**, Yale University and NBER, "Higher Salaries or Higher Pensions? Inferring Preferences from Teachers' Retirement Behavior"

Summaries of these papers are at www.nber.org/conferences/2019/EDf19/summary.html

Development Economics/BREAD

A joint meeting of the NBER's Development Economics Program and BREAD (Bureau for Research and Economic Analysis of Development) was held November 22–23 in Cambridge. Oriana Bandiera and Robin Burgess of the London School of Economics, Research Associates Melissa Dell of Harvard University, Edward Miguel of the University of California, Berkeley and Dean Yang of the University of Michigan, and Program Directors Seema Jayachandran of Northwestern University and Benjamin A. Olken of MIT organized the meeting. These researchers' papers were presented and discussed:

- **Katherine Casey**, Stanford University and NBER, and **Niccoló Meriggi** and **Abou Bakarr Kamara**, International Growth Centre, "An Experiment in Candidate Selection" (NBER Working Paper 26160)

- **Siddharth E. George**, Harvard University, "Like Father, Like Son? The Effect of Political Dynasties on Economic Development"

- **Vittorio Bassi**, University of Southern California; **Tommaso Porzio**, Columbia University; **Ritwika Sen**, Northwestern University; and **Raffaela Muoio** and **Esau Tugume**, BRAC Uganda, "Achieving Scale Collectively"

- **Clare Leaver**, University of Oxford; **Owen Ozier**, The World Bank; **Pieter M. Serneels**, University of East Anglia; and **Andrew F. Zeitlin**, Georgetown University, "Recruitment, Effort, and Retention Effects of Performance Contracts for Civil Servants: Experimental Evidence from Rwandan Primary Schools"

- **Richard Hornbeck**, University of Chicago and NBER, and **Martin Rotemberg**, New York University, "Railroads, Reallocation, and the Rise of American Manufacturing"

- **Adam Aberrra** and **Matthieu Chemin**, McGill University, "Does Legal Representation Increase Investment? Evidence from a Field Experiment in Kenya"

- **Abhijit Banerjee** and **Esther Duflo**, MIT and NBER; **Arun G. Chandrasekhar**, Stanford University and NBER; and **Matthew Jackson**, Stanford University, "Changes in Social Network Structure in Response to Exposure to Formal Credit Markets"

- **Emily Breza**, Harvard University and NBER; **Supreet Kaur**, University of California, Berkeley and NBER; and **Yogita Shamdasani**, University of Pittsburgh, "Labor Rationing: A Revealed Preference Approach from Hiring Shocks"

- **Matti Mitrunen**, University of Chicago, "Structural Change and Intergenerational Mobility: Evidence from the Finnish War Reparations"

- **Dennis Egger** and **Michael W. Walker**, University of California, Berkeley; **Johannes Haushofer**, Princeton University and NBER; **Paul Niehaus**, University of California, San Diego and NBER; **Edward Miguel**, "General Equilibrium Welfare Effects of Cash Transfers: Experimental Evidence from Kenya"

- **Monica Martinez-Bravo** and **Andreas Stegmann**, Centro de Estudios Monetarios y Financieros (CEMFI), "In Vaccines We Trust? The Effects of the CIA's Vaccine Ruse on Immunization in Pakistan"

Summaries of these papers are at www.nber.org/conferences/2019/DEVf19/summary.html

Health Care

Members of the NBER's Health Care Program met December 6 in Cambridge. Program Director Jonathan Gruber of MIT and Research Associates Leemore Dafny of Harvard University, Benjamin R. Handel of the University of California, Berkeley, and Neale Mahoney of the University of Chicago organized the meeting. These researchers' papers were presented and discussed:

- **Shooshan Danagoulian**, Wayne State University; **Daniel S. Grossman**, West Virginia University; and **David Slusky**, University of Kansas, "Office Visits Preventing Emergency Room Visits: Evidence from the Flint Water Switch"

- **Liran Einav**, Stanford University and NBER; **Amy Finkelstein**, MIT and NBER; **Yunan Ji**, Harvard University; and **Neale Mahoney**, "Voluntary Regulation: Evidence from Medicare Payment Reform"

- **Pierre-Thomas Léger** and **Wu Jiashan**, University of Illinois at Chicago, and **Robert Town**, University of Texas, Austin and NBER, "A Theory of Geographic Variations in Medical Care"

- **Richard Domurat**, University of California, Los Angeles; **Isaac Menashe**, Covered California; and **Wesley Yin**, University of California, Los Angeles and NBER, "The Role of Behavioral Frictions in Health Insurance Marketplace Enrollment and Risk: Evidence from a Field Experiment" (NBER Working Paper 26153)

- **Diane E. Alexander**, Federal Reserve Bank of Chicago, and **Molly Schnell**, Northwestern University and NBER, "The Impacts of Physician Payments on Patient Access, Use, and Health" (NBER Working Paper 26095)

- **Abby E. Alpert**, University of Pennsylvania and NBER; **William N. Evans** and **Ethan Lieber**, University of Notre Dame and NBER; and **David Powell**, RAND Corporation, "Origins of the Opioid Crisis and Its Enduring Impacts"

- **Benjamin R. Handel** and **Jonathan T. Kolstad**, University of California, Berkeley and NBER, and **Thomas Minten** and **Johannes Spinnewijn**, London School of Economics, "The Social Determinants of Choice Quality: Evidence from Health Insurance in the Netherlands"

- **Yiqun Chen**, Stanford University, and **Petra Persson** and **Maria Polyakova**, Stanford University and NBER, "The Roots of Health Inequality and the Value of Intra-Family Expertise" (NBER Working Paper 25618)

Summaries of these papers are at www.nber.org/conferences/2019/HCf19/summary.html

Entrepreneurship

Members of the NBER's Entrepreneurship Working Group met December 6 in Cambridge. Program Director Josh Lerner of Harvard University and Research Associate David T. Robinson of Duke University organized the meeting. These researchers' papers were presented and discussed:

- **Kristoph Kleiner** and **Isaac Hacamo**, Indiana University, "Confidence Spillovers in Competitive Environments: Evidence from Entrepreneurship"
- **Johan Hombert**, HEC Paris, and **Adrien Matray**, Princeton University, "Technology Boom, Labor Reallocation, and Human Capital Depreciation"
- **Barbara Biasi**, Yale University and NBER, and **Song Ma**, Yale University, "The Education-Innovation Gap"
- **Thomas F. Hellmann**, University of Oxford and NBER, and **Nir Vulkan**, University of Oxford, "Be Careful What You Ask For: Fundraising Strategies in Equity Crowdfunding" (NBER Working Paper 26275)
- **Olav Sorenson** and **Rodrigo Canales**, Yale University; **Michael Dahl**, Aarhus University; and **M. Diane Burton**, Cornell University, "Do Startup Employees Earn More in the Long Run?"
- **Juanita González-Uribe**, London School of Economics, and **Santiago Reyes**, Inter-American Development Bank, "Identifying and Boosting "Gazelles": Evidence from Business Accelerators"
- **Aymeric Bellon**, University of Pennsylvania; **J. Anthony Cookson**, University of Colorado; **Erik P. Gilje**, University of Pennsylvania and NBER; and **Rawley Z. Heimer**, Boston College, "Personal Wealth and Self-Employment"

Summaries of these papers are at www.nber.org/conferences/2019/ENTf19/summary.html

International Trade and Investment

Members of the NBER's International Trade and Investment Program met December 6–7 at Stanford University. Program Director Stephen J. Redding of Princeton University organized the meeting. These researchers' papers were presented and discussed:

- **Dominick G. Bartelme** and **Ting Lan**, University of Michigan, and **Andrei A. Levchenko**, University of Michigan and NBER, "Specialization, Market Access and Real Income"
- **Joseph S. Shapiro**, University of California, Berkeley and NBER, "The Environmental Bias of Trade Policy"
- **Andrés Rodríguez-Clare**, University of California, Berkeley and NBER; **Mauricio Ulate**, Federal Reserve Bank of San Francisco; and **José P. Vásquez**, University of California, Berkeley, "New-Keynesian Trade: Understanding the Employment and Welfare Effects of Sector-Level Shocks"
- **Nezih Guner**, CEMFI; **Alessandro Ruggieri**, Universitat Autònoma de Barcelona and Barcelona GSE; and **James R. Tybout**, Pennsylvania State University and NBER, "Trade, Offshoring, and the Job Ladder"
- **Costas Arkolakis** and **Michael Peters**, Yale University and NBER, and **Sun K. Lee**, Columbia University, "European Immigrants and the United States' Rise to the Technological Frontier in the 19th Century"
- **Bradley Setzler**, University of Chicago, and **Felix Tintelnot**, University of Chicago and NBER, "The Effects of Foreign Multinationals on Workers and Firms in the United States" (NBER Working Paper 26149)
- **Alejandro G. Graziano**, University of Maryland; **Kyle Handley**, University of Michigan and NBER; and **Nuno Limão**, University of Maryland and NBER, "Brexit Uncertainty and Trade Disintegration" (NBER Working Paper 25334)
- **Vanessa I. Alviarez**, University of British Columbia; **Javier Cravino**, University of Michigan and NBER; and **Natalia Ramondo**, University of California, San Diego and NBER, "Accounting for Cross-Country Income Differences: New Evidence from Multinational Firms"
- **Wulong Gu**, Statistics Canada; **Alla Lileeva**, York University; and **Daniel Trefler**, University of Toronto and NBER, "Global Sourcing from Low-Wage Countries: Implications for R&D and Employment"

Summaries of these papers are at www.nber.org/conferences/2019/ITIf19/summary.html

NBER Books

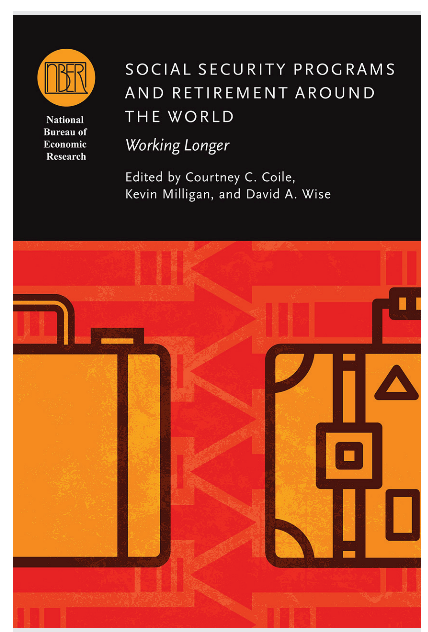
Productivity in Higher Education

Caroline M. Hoxby and Kevin Stange, editors

How do the benefits of higher education compare with its costs, and how does this comparison vary across individuals and institutions? These questions are fundamental to quantifying the productivity of the education sector. *Productivity in Higher Education* uses rich and novel administrative data, modern econometric methods, and deep institutional understanding to explore productivity issues in the education sector. The authors examine the returns to undergraduate education, differences in costs by major, the productivity of for-profit schools, the productivity of various types of faculty, the effects of online education on the higher education market, and the ways in which the productivity of different institutions responds to market forces. The analyses recognize five key challenges to assessing productivity in higher education: the potential for multiple student outcomes in terms of skills, earnings, invention, and employment; the fact that colleges and universities are "multiproduct" firms that conduct varied activities across many domains; the fact that students select which school to attend based in part on their aptitude; the difficulty of attributing outcomes to individual institutions when students attend more than one; and the possibility that some of the benefits of higher education may arise from the system as a whole rather than from a single institution. The findings and the approaches illustrated can facilitate decision-making processes in higher education.

Social Security Programs and Retirement around the World: Working Longer

Courtney C. Coile, Kevin Milligan, and David A. Wise, editors



Developed countries during the last two decades have experienced a long-term decline in men's labor force participation at older ages, followed by a more recent pattern of sharply rising participation rates. Participation rates for women at older ages also have been rising. What explains the trend reversal for men, the evolving pattern for women, and the differences in these trends across countries? The answers to these questions are pivotal as countries seek solutions to the fiscal and retirement security challenges posed by longer lifespans. This eighth volume of the International Social Security project, which compares the social security and retirement experiences of 12 developed countries, documents trends in participation and employment, and explores reasons for the rising participation rates of older workers. The chapters use a common template for analysis which facilitates comparison of results across countries. Using within-country natural experiments and cross-country comparisons, the researchers study the impact of improving health and education, changes in the occupation mix, the retirement incentives of social security programs, and the emergence of women in the workplace. The findings suggest that social security reforms and other factors such as the movement of women into the labor force have played an important role in labor force participation trends.

Innovation Policy and the Economy, volume 20

Josh Lerner and Scott Stern, editors

The chapters in this 20th volume of *Innovation Policy and the Economy* present research on the interactions among public policy, the innovation process, and the economy. One explores changes in the ability of the US to attract talented foreign workers and the role of sponsoring institutions in shaping immigration policy. Another explains how the division of innovative labor between research universities and corporate labs affected productivity growth and the transformation of knowledge into new products and processes. A third reviews a variety of innovation policies and their performance in the pharmaceutical sector. Next is a chapter on the effects of competition policy on innovation, "creative destruction," and economic growth. A fifth chapter focuses on how experimental policy design can be a cost-effective way to attain program goals. The last chapter examines geographic disparities in innovation, joblessness, and technological dynamism, and studies how reallocation of grants and geographically targeted entrepreneurship policy could affect labor supply and welfare.

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