Program Report

The International Trade and Investment Program

Robert C. Feenstra*

The rise in exports from China has been one of the most significant events in international trade in recent decades. This trend has accelerated since that country's entry into the World Trade Organization (WTO) in 2001. Even before that date, by a vote of the U.S. Congress China received the low-tariff, most-favored-nation status associated with WTO membership each year. But with WTO membership, Chinese firms experienced a reduction in the uncertainty associated with the outcome of that vote. This contributed importantly to the surge in exports to the United States, according to studies by Justin Pierce and Peter Schott and by Kyle Handley and Nuno Limão; their hypothesis is supported by empirical work by Ling Feng, Zhiyuan Li, and Deborah Swenson.[1] Pierce and Schott observe that the surge in Chinese exports to the United States coincides with a substantial decline in U.S. manufacturing employment. Handley and Limão find that the welfare gain for consumers due to this increase in Chinese imports is of the same order of magnitude as the U.S. gain from new imports in the preceding decade. These initial findings highlight the dual role that Chinese imports play for the United States: on the one hand, they create import competition with associated labor-market dislocation; on the other, they benefit U.S. consumers.

The first of these roles is explored in a series of papers by David Autor, David Dorn, and Gordon Hanson.[2] They analyze the impact of Chinese import competition between 1990 and 2007 on local U.S. labor markets, exploiting geographic differences in import exposure that are due to initial differences in industry specialization. Higher exposure increases unemployment, lowers labor force participation,

Feenstra is director of the NBER's International Trade and Investment Program. He is C. Bryan Cameron Distinguished Chair in International Economics at the University of California, Davis.

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and reduces wages. [See Figure 1, at right] At the aggregate level, a conservative estimate is that the import surge accounts for one-quarter of the decline in U.S. manufacturing employment. The regional concentration in the decline in manufacturing employment is inconsistent with some alternative explanations of this phenomenon, notably the possibility of a systemic technology shock.[3] The trade effects on unemployment are confirmed by examining worker-level evidence.[4] Most recently, in joint work with Daron Acemoglu and Brendan Price, these authors find that the import surge from China also contributed to unusually slow employment growth in the United States following the global financial crisis and the Great Recession.[5]

While these papers have explored the impact of import competition from China, they do not incorporate the consumer gains or the export opportunities created by expanded Chinese exports. The first attempt to put the surge in Chinese exports into a general equilibrium context is that of Lorenzo Caliendo, Maximiliano Dvorkin, and Fernando Parro.[6] Their computable general equilibrium model incorporates labor mobility frictions and dislocation costs. They find that growing Chinese import competition resulted in a 0.6 percentage point reduction in manufacturing's share of total employment, or approximately one million jobs lost, which is about 60 percent of the change in manufacturing employment not explained by a secular trend. At the same time, the China shock increased U.S. welfare by 0.2 percent in the short run and 6.7 percent in the long run, with very heterogeneous effects across labor markets. Despite the fact that employment impacts and labor market dislocation are much stronger in some areas, the consumer gains and export opportunities mean that nearly all regions experience net benefits from rising Chinese imports.

This work has inspired much additional research on the China shock. In the United States, Avraham Ebenstein, Ann Harrison, and Margaret McMillan analyze the impact of globalization at the occupational level and find that offshoring to low-wage countries and imports are both associated with wage declines for U.S. workers, though imports from China have a greater impact than does offshoring.[7] In France, analysis

THE CHINA SHOCK
Manufacturing sectors with higher exposure to import competition lost more employment

Distribution of total employment decline (%)

Source: L. Caliendo, M. Dvorkin, and F. Parro, NBER Working Paper No. 21149
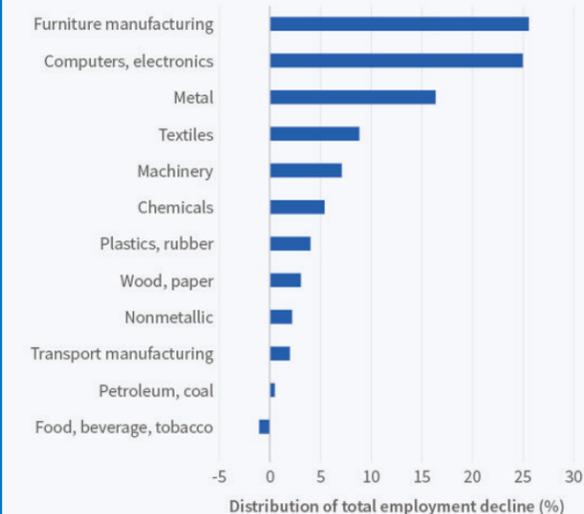
Figure 1

by James Harrigan, Ariell Reshef, and Farid Toubal concludes that increased polarization of the labor market is associated more with technological change than with imports from China.[8] In Denmark, Wolfgang Keller and Hâle Utar find that import competition from China is an important cause of job polarization, with about four times the impact of offshoring.[9] They confirm a strong role for technical change and computerization in leading to polarization, but find that these factors cannot explain the rise in low-wage employment up to the early 2000s.

Global Supply Chains and Wage Inequality

A great deal of work in the International Trade and Investment Program deals with multinational firms, their global sourcing decisions, and wage inequality. Understanding which countries a company chooses to use for offshoring is a challenging theoretical problem. In the presence of fixed costs of procurement, that problem is inherently discrete in nature, since the firm must choose zero, one, two or more countries to which to outsource. Pol Antràs, Teresa Fort, and Felix Tintelnot develop a method to analyze the outsourcing problem as though firms were choosing a continuous rather than a discrete outcome, and they apply it to firm-level U.S. data.[10] They study the implications of a hypothetical 100 percent increase in China's sourcing potential, such as could be produced by a reduction in bilateral trade costs between the U.S. and China. They find that such a shock tends to create gains by decreasing the equilibrium industry-level U.S. price index, even while some U.S. final goods producers exit the market. Other U.S. firms choose to source from China as a result of the shock, and these firms on average *also* increase their input purchases from the U.S. and other countries. Greater sourcing by U.S. firms from China can lead to enhanced demand for local inputs, too, as these firms grow.

In other work, Antràs and Davin Chor analyze offshoring using a property-rights model of the firm.[11] They consider a continuum of production stages, where at each stage a final goods producer contracts with a distinct supplier for a customized, stage-specific component. They show that the incentive to integrate suppliers varies systematically with the relative position — upstream versus downstream — at which the supplier enters the production process and that the nature of the relationship between integration and "downstreamess" depends crucially on the elasticity of demand faced by the final goods producer. Using the U.S. Census Bureau's Related Party Trade database, they find empirical evidence broadly supportive of these predictions. In work with co-authors Laura Alfaro and Paola Conconi, they provide further evidence supporting this theory of offshoring using data on the production activities of firms operating in more than 100 countries.[12] These papers build on work by Antràs and Chor with co-authors Thibault Fally and Russell Hillberry which measures the "upstreamness" of production and trade flows.[13] Fally and Hillberry further build on these insights to provide their own Coasian model of international production chains.[14]

The linkage of wage inequality to global supply chains is studied in a

theoretical model by Arnaud Costinot, Jonathan Vogel, and Su Wang, who find that the emergence of these chains has opposite effects on wage inequality for workers employed at the bottom and the top of the chains, thereby generating wage inequality across sectors.[15] A more detailed, empirical examination of inequality in the United States, which focuses on inequality between groups of workers, such as those of high and low skill, is done by Ariel Burstein, Eduardo Morales, and Vogel using an assignment framework with many labor groups, equipment types, and occupations.[16] Elhanan Helpman, Oleg Itskhoki, Marc-Andreas Muendler, and Stephen Redding drill down further to examine inequality across firms within sector and occupation for workers with similar observable characteristics.[17] Their model allows for heterogeneity across firms in the cost of screening workers and in the fixed cost of exporting. They show, using Brazilian data, that residual wage dispersion between firms is related to firm employment size and to participation in trade. Other work linking the regional skill-premium in Brazil to trade liberalization is provided by Rafael Dix-Carneiro and Brian Kovak.[18]

These papers rely on matching models between heterogeneous firms or managers and heterogeneous workers with complementary abilities. This type of model is developed by Gene Grossman individually and in work with Helpman and Philipp Kircher.[19] To study the implications for income distribution, Grossman and Helpman develop a dynamic growth model with heterogeneous firms and workers.[20] They find that a country with greater innovation capacity grows faster in autarky, but experiences greater income inequality, than one with less innovation capacity. Globalization raises growth rates in all countries, but it worsens the income distribution because the more-able workers benefit relatively more from the improved matching with new technologies.

Sources of the Gains from Trade

The entry of China into the WTO in 2001 is but one example — albeit a very important one — of a reduction in the trade costs between countries. But surprisingly, the paper by Caliendo, Dvorkin, and Parro cited previously models the export surge from China as arising from a positive technology shock in that country rather than from an effective U.S. tariff cut. That is also the case for the research of Chang-Tai Hsieh and Ralph Ossa dealing with the impact of China's export growth on the rest of the world.[21] The reason that an effective tariff cut is not used in the models is twofold. First, as noted, the U.S. tariff cut received by China when it entered the WTO in 2001 was actually a reduction in the risk of having non-WTO tariffs applied, since most-favored-nation tariffs had been approved in previous years.

Setting aside this issue, there is a deeper reason why these papers do not use a tariff cut to explain China's export surge. Suppose that we model the Chinese economy and the rest of world as being composed of heterogeneous firms with a Pareto distribution of productivities competing under monopolistic competition, as in the widely used Melitz-Chaney model.[22] Then, let us introduce an iceberg trade cost — the assumption that trade costs rise with the distance between as a proxy for border costs. It turns out that a reduction in the iceberg trade cost has no impact on the entry of firms into the monopolistically competitive sector. For this reason, it would be difficult to calibrate the large export surge from China as arising from a reduction in trade costs alone. Furthermore, in this setting, the gains from trade resulting from a reduction in trade costs are much the same as in an Armington model, where the number of firms is fixed by assumption, or as in a monopolistic competition model with homogeneous firms. For these reasons, Costas Arkolakis, Costinot, and Andrés Rodríguez-Clare conclude that new models such as these have not contributed much, at least so far, to measuring the welfare gains from trade.[23] That conclusion led to a strong response to the contrary by Marc Melitz and Redding in "New Trade Models, New Trade Implications."[24]

This debate has led to ongoing research dealing with the gains from trade. Melitz and Redding explore how gains are affected when the distribution of firms' productivities takes on a truncated Pareto distribution, with an upper-bound to the highest productivity available. In that case, a change in trade costs indeed leads to entries and exits by firms that influence the gains from trade. Melitz and Redding, and also Thomas Chaney and Ossa, further consider a model of sequential production, whereby a reduction in trade costs feeds back into domestic productivity, leading to greater gains from trade.[25] Ana Fernandes, Peter Klenow, Sergii Meleshchuk, Martha Denisse Pierola, and Rodríguez-Clare use data from the World Bank's *Exporter Dynamics Database* and conclude that the productivity distribution cannot be an unbounded Pareto.[26]

My own work extends the discussion of truncated Pareto by allowing for a wide range of preference beyond the constant elasticity of substitution, called the "quadratic mean of order *r*" preferences.[27] Again, entry by firms responds to changes in trade costs. The average markup charged by firms and the variety of goods available to consumers also change. Therefore, increased trade has positive pro-competitive and variety effects. Using a truncated Pareto distribution in this way avoids the result of Arkolakis, Costinot, Dave Donaldson, and Rodríguez-Clare, who also allow for quite general preferences, but do not find any positive, pro-competitive effect of trade.[28] David Weinstein and I have measured the pro-competitive effect and the positive impact of import variety for the U.S. economy; we assume translog preferences but do not restrict the distribution of productivities.[29] An entirely new specification of preferences that allows for strong pro-competitive and variety effects is proposed by Paolo Bertoletti,

Federico Etro, and Ina Simonovska.[30]

The welfare effects of changing markups and variety must take into account the impact on domestic firms, too. Colin Hottman, Redding, and Weinstein document how markups differ in the United States across firms of various sizes, with only the largest firms showing evidence of variable markups.[31] For Mexico, David Atkin, Benjamin Faber, and Marco Gonzalez-Navarro document how the arrival of foreign firms in the retail sector created gains for consumers by creating more competition and lowering markups, as well as expanding variety.[32] [See Figure 2.] They also find evidence of store exit. Despite this, the gains are on average positive for all income groups but regressive, benefiting those with higher income more. A different view of how the gains from trade are distributed across consumers and countries of differing incomes is presented by Pablo Fajgelbaum and Amit Khandelwal, who use an Almost-Ideal Demand system.[33] They find that trade typically favors the poor, because they spend more in traded sectors.

These papers refer to general sources of gains from trade. Returning to the specific case of tariffs, recent research has shown that changes in tariffs — in striking contrast to the conclusion in models with iceberg transport costs — can indeed induce firm entry and exit. This point was recognized by Costinot and Rodríguez-Clare in their survey; they allow for potential changes in the entry of firms in their treatment of tariffs.[34] But because they focus on tariffs that are charged on the variable costs of firms, the only difference between tariffs and iceberg transport costs is that tariffs generate revenue that is redistributed to consumers. In contrast, Caliendo, John Romalis, Alan Taylor, and I allow tariffs to be applied to total import revenue, inclusive of the markup earned by the exporting firm.[35]

A tariff is then equivalent to a tax on costs and on profits. We find a quite pronounced impact of the Uruguay Round on firm entry, and therefore also on welfare, due to the component of the tariff that functions as an implicit tax on profits.

The link between tariffs and the profits of exporters is also apparent from the empirical work of Jan De Loecker, Pinelopi Goldberg, Khandelwal, and Nina Pavcnik, who focus on trade liberalization in India.[36] They find that a reduction in output tariffs has the expected pro-competitive effects, with firms lowering their net-of-tariff prices.

FOREIGN FIRMS AND WELFARE GAINS
Entry of foreign retail firm in Mexico benefits all, especially high-income groups

Source: D. Atkin, B. Faber, and M. Gonzalez-Navarro, NBER Working Paper No. 21176
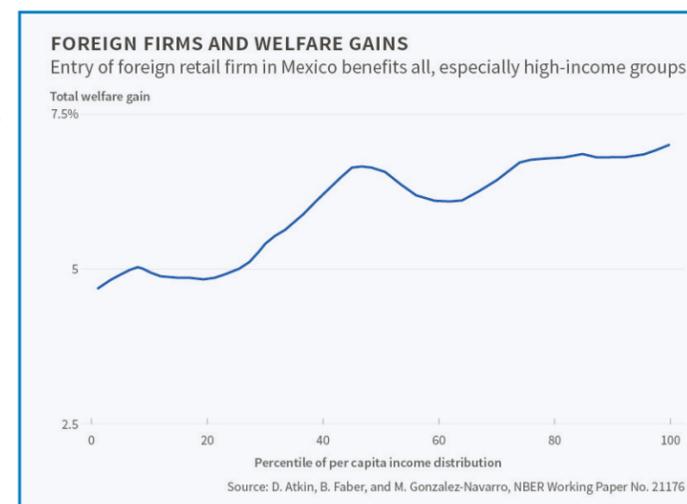
Figure 2

However, a reduction in input tariffs leads to a sizable increase in markups as firms absorb the fall in marginal costs with little change in prices.

We conclude this section by noting that historical data remains a rich source for exploration of the effects of tariff changes. Examining the change in U.S. sugar duties from 1890 to 1930, Douglas Irwin finds a striking asymmetry: a tariff *reduction* is immediately passed through to consumer prices with no impact on the import price, whereas about 40 percent of a tariff *increase* is passed through to consumer prices and 60 percent is borne by foreign exporters.[37] A comprehensive examination of historical tariff negotiations that will give rise to new data is being undertaken by Kyle Bagwell, Robert Staiger, and Ali Yurukoglu.[38] They have access to recently declassified data from rounds of GATT/WTO tariff bargaining. These data give us an unprecedented opportunity to examine the motivations for and results of GATT/WTO rules, such as most-favored-nation status and reciprocity.

The Gravity Equation and Intranational Trade

An ongoing topic of research in the ITI program is the gravity equation, which explains trade between countries based on their size and the distance between them, as well as other variables. The foundations of this equation and its estimation are constantly being expanded. Chaney shows how this equation can arise from stable networks of firms with their suppliers and customers.[39] Treb Allen, Arkolakis, and Yuta Takahashi nest alternative models to provide a very general treatment of this equation in what they call "Universal Gravity."[40] The estimation of the gravity equation using moment inequalities is discussed by Morales, Gloria Sheu, and Andrés Zahler, who also examine "extended gravity," whereby a firm's entry into one country makes entry into neighboring countries easier.[41] On the other hand, the difficulty of entering markets means that many country-pairs have zero trade between them in specific products. While it can be difficult to account for zero trade flows in standard models, a new approach is proposed and implemented by Jonathan Eaton, Samuel Kortum, and Sebastian Sotelo.[42]

One goal when estimating the gravity equation is to obtain estimates of the elasticity of trade flows with respect to trade costs. Simonovska and Michael Waugh show the elasticity obtained is very sensitive to the underlying model for the gravity equation.[43] Their work

informs the trade elasticity that is used in computational models. In addition to the micro-elasticity between foreign countries, Philip Luck, Maurice Obstfeld, Katheryn Russ, and I extend the estimation of the gravity equation to incorporate a macro-elasticity between foreign and home variety. We find that the micro-elasticity is typically larger than the macro-elasticity, and quite often conforms to the "rule of two" by being twice as large.[44]

ITI program members have also used the insights of the gravity equation to inform research on intranational as opposed to international trade. Delina Agnosteva, James Anderson, and Yoto Yotov develop a procedure to flexibly estimate both intranational border barriers and intraregional trade costs.[45] A more detailed examination of intraregional costs is undertaken by Ferdinando Monte, Redding, and Esteban Rossi-Hansberg.[46] They examine spatial linkages between goods markets through trade and between factor markets through commuting and migration. The latter are subject to heterogeneous moving costs between regions. They find that without these costs, commuting flows cannot be explained by only considering conventional variables such as the difference between regions in their size or wages.

There are many "natural experiments" that can be used to test spatial models. Andrew Bernard, Andreas Moxnes, and Yukiko Saito use the opening in Japan of a high-speed bullet train (Shinkansen) line that lowered the cost of passenger travel but left shipping costs unchanged.[47] They find significant improvements in firm performance as well as creation of new buyer-seller links, consistent with their model. Allen and Arkolakis apply a quite general theoretical framework to the construction of the interstate highway system in the United States and find that this system increased U.S. welfare by 3.5 percent, which is roughly twice its cost.[48] In another natural experiment, Gabriel

Ahlfeldt, Redding, Daniel Sturm, and Nikolaus Wolf study the changes to city structure in Berlin due to the fall of the Berlin Wall.[49] The general relationship

DISTANCE AND INTRANATIONAL TRADE COSTS
Costs in Ethiopia and Nigeria four to five times larger than in U.S.
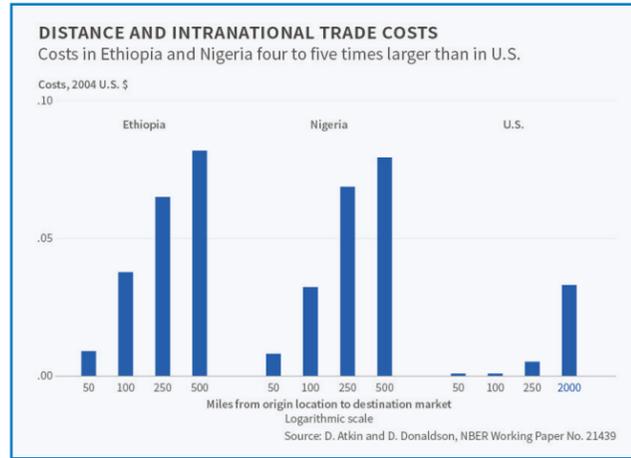
Figure 3

between transportation costs and the spatial distribution of economic activity is surveyed by Redding and Matthew Turner.[50] Finally, a new model of cities is proposed by Donald Davis and Jonathan Dingel, who test it using data on U.S. metropolitan areas.[51]

The tools of the gravity equation also can be used to study optimal policies at the state level. Fajgelbaum, Morales, Juan Carlos Suárez Serrato, and Owen Zidar analyze the potential spatial misallocation arising from differing state taxes in the United States.[52] They find that revenue-neutral tax harmonization leads to aggregate real-GDP and welfare gains of 0.7 percent. Ossa studies how the difference in state taxes can arise from welfare-enhancing subsidy competition between them.[53] He finds that subsidy competition can create large distortions, so that the gains from cooperative setting of state taxes and subsidies are substantial. Caliendo, Parro, Rossi-Hansberg, and Pierre-Daniel Sarte abstract from taxes to study how productivity shocks within U.S. regions spill over to the entire economy.[54]

Internal transportation costs can have a significant impact on international trade, too. Atkin and Donaldson use newly collected CPI microdata from Ethiopia and Nigeria to assess the impact

of internal distance on the prices at the port of exit.[55] They find that the effect of distance on trade costs within Ethiopia or Nigeria is four to five times larger than in the U.S. [See Figure 3.]

In addition, they find that intermediaries capture the majority of welfare benefits from international trade, and that their share is even higher in distant locations, suggesting that remote consumers receive only a small share of the gains from falling international trade barriers. Kerem Coşar and Fajgelbaum also study the connections between internal geography, regional specialization, and international trade, using data from Chinese prefectures.[56]

Conclusions

Research on all four of the topics covered in this review — the rise of China's exports, global supply chains and wage inequality, the sources of gains from trade, and the gravity equation and intranational trade — is motivated by observations about trade between countries (or regions) and how it has changed. Nearly all of the papers reviewed use a general equilibrium model and estimation techniques appropriate to that setting, which is an important distinguishing feature of research in the ITI program. Another unifying theme in all trade research is the concern for social welfare — accounting for the well-being of consumers and the profits earned by firms.

Other important topics, such as immigration[57] and the evaluation of policies to promote growth in developing countries,[58] are studied in the ITI program but have not been described here. Still, it would be remiss to conclude without mentioning one area on which there is likely to be a substantial volume of future research: the impact of global climate change. Donaldson, Costinot, and Cory Smith examine the implications of climate change for a variety of crops and locations around the world.[59] They fully incorporate the alternatives to current

crop patterns as global temperature rises. With this costless substitution of crops and allowing trade to adjust, they find that the impact of climate change on the agricultural markets in their study would amount to a rather modest 0.26 percent reduction in global GDP.

Klaus Desmet and Rossi-Hansberg use a less-detailed model of agriculture along with a manufacturing sector, both of which are impacted by global warming.[60] They assume that trade is subject to iceberg transport costs, like Donaldson, Costinot, and Smith, but allow for free labor migration either worldwide or within a northern and southern region. They find that the adverse effects of global climate change are much more pronounced when migration is limited. The actual response of migrants to changes in temperature across a large number of countries is studied by Cristina Cattaneo and Giovanni Peri.[61] They find that in middle-income countries, migration represents an important margin of adjustment, with migrants moving towards cities or other countries as temperature warms. This mechanism does not seem to work in poor economies, where higher temperatures reduce the probability of emigration to cities or to other countries, consistent with the presence of severe liquidity constraints.

This research suggests that the results from multi-country general equilibrium models may be very sensitive to the efficacy with which different margins of substitution operate — substitution between crops, between regions, and between countries. Understanding those margins of substitution and the costs associated with them is an important ongoing direction of research in the ITI program, and one on which future research, allowing for realistic adjustment through trade, migration and other margins, is likely to be forthcoming.

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Research Summaries

Early Impacts of the Affordable Care Act

Kosali Simon

My recent research has focused on measuring the ways that the Affordable Care Act (ACA) affects the delivery of health services, labor market outcomes, and population health and well-being. Most of my work relies on quasi-experimental research designs that exploit differences in the ways states have implemented parts of the ACA, or ways that the law affects different sub-populations.

The ACA is a massive law that overhauls many parts of the U.S. health economy. The insurance expansions at the heart of the legislation only occurred in 2014, and studies of the early effects of these changes are only now starting to emerge. However, other aspects of the law came into play much earlier, and I have focused on those changes. In particular, my coauthors and I have examined the 2010 young-adult provision that requires private insurers to allow dependents to remain on their parents' policies until the age of 26 and have several interesting findings.

First, the effect of the law on young adults' insurance coverage was quite dramatic. Almost immediately, this provision increased parental employer coverage of young adults by more than 40 percent — slightly more than 2 million young adults. This expansion also altered health care utilization, increasing young adults' use of inpatient health care and slightly reducing emergency room use. So far, the young-adult expansion does not appear to have substantially affected labor market outcomes.[1]

My work on the young-adult expansion exploits a quasi-experimental research design. The key idea is that even though this provision was implemented nationally, it only affected 19- to 25-year-olds. To help control for time trends and other sources of bias, my colleagues and I compare the time series of outcomes among the 19- to 25-year-olds with the time series in a comparison group of young adults slightly outside that age range and therefore unaffected by the policy change. This approach

THE IMPACT OF THE YOUNG-ADULT MANDATE
Insurance coverage rose for those who could stay on parents' plan

Young adults with any insurance coverage

16-18 & 27-29 years old (Not affected by mandate)

ACA passed

When most new plan years started after mandate

Young-adult mandate implemented

19-25 years old (Affected by mandate)

Source: Y. Akosa Antwi, A. Moriya, and K. Simon, NBER Working Paper No. 18200

Figure 1

rests on the assumption that, absent the policy change, the younger and older adults would have followed similar time trends in outcomes. For most outcomes, the assumption appears plausible based on pre-policy trends tests, and the age-based difference-in-difference comparison is now the standard approach in a sizable literature on the ACA young-adult provision.

Take Up and Crowd Out

In a series of papers with Yaa Akosa Antwi, Aaron Carroll, Bradley Heim, Ithai Lurie, Jie Ma, Asako S. Moriya, and Benjamin D. Sommers, I examine the impacts of the young-adult mandate using both survey and administrative data. In our first paper, we use household survey data to show that the provision proved popular, with parental employer-sponsored insurance among young adults rising quite dramatically from March 2010 to November 2011, leading to large reductions in the number of uninsured.[2] [See Figure 1.] Our estimates suggest that the ACA reduced by about one third the number of uninsured among targeted individuals with parental offers of employer coverage. The high take-up rate of the newly available coverage may be surprising, given that young adults are a relatively healthy population with other spending priorities. Anecdotal evidence suggests that the protective role of parents may have proved key to accounting for the impact of this particular provision.

Aside from takeup, a pressing question in health insurance expansion has been the extent to which pre-existing forms of insurance are crowded out. We find that the increase in parental coverage drew almost equally from among the uninsured and the otherwise-insured populations. Prior research shows that substitution between different forms of coverage was present during the Children's Health Insurance Program (CHIP) expansion. In the CHIP case, however, concern focused on whether public coverage displaced private coverage, whereas in the case of the young-adults reform associated with ACA, private parental coverage mostly displaced other sources of private coverage.[3]
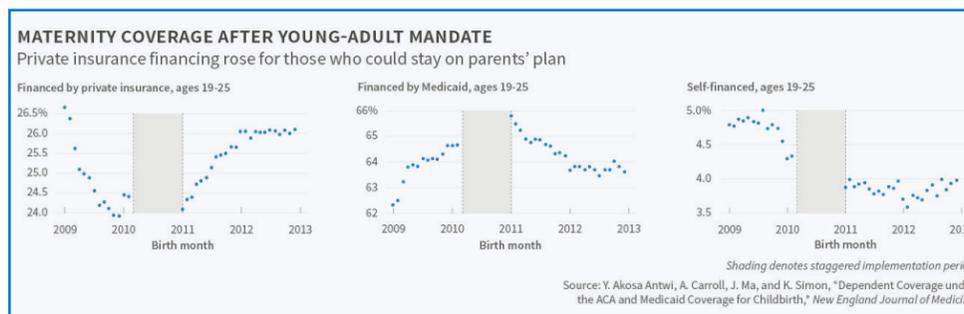
Health Care Utilization

Even though young adults are not frequent users of health care generally, they are at greater risk than the general population of needing certain types of care, such as mental health care. We examine the effects of the young-adult expansion on use of care, using administrative hospital claims data, and find that use of inpatient hospital care increased 3.5 percent among young adults, with care for mental health-related illnesses rising 9.0 percent and emergency room (ER) use falling slightly.[4] The reduction in ER use occurred mainly for weekday admissions, suggesting that use of ambulatory care increased; unfortunately, while researchers have access to a great deal of all-payer data on hospital care, there are no rich sources of data available to directly study ambulatory or preventive care.

Maternity Care Coverage

Following the insights that young adults are highly represented in certain patient populations, and that some degree of substitution among types of health insurance occurs in response to expansion, we examine impacts of the young-adult provision on use of maternity care. More than a third of all babies in the U.S. are born to women age 19 to 26. Although non-disabled young adults are generally ineligible for Medicaid coverage, pregnancy-related health insurance through Medicaid is an exception. Using birth certificate records that document source of payment for childbirth, we find evidence consistent with a reverse crowd-out effect, by which, following implementation of the young-adult provision, private insurance replaced Medicaid to a certain extent.[5] Figure 2 shows that the percentage of births financed by private insurance increased following the stag-

gered implementation of the young-adult mandate, while the percentage of births financed by Medicaid fell. These patterns are evident for the affected age group (19- to 25-year-olds), while no such clear pattern emerges for older mothers unaffected by the policy (27- to 29-year-olds).

This particular change in source of payment may be useful to exploit in the future to understand how generosity of insurance type affects access to providers, as this case represents a substitution of high-generosity insurance offered through parents' employers for low-generosity insurance (Medicaid).

Labor Market Effects

One of the unintended consequences of U.S. reliance on health insurance provided through employers is its potential to reduce workers' job mobility. The young-adult law provides an opportunity to test the job-lock hypothesis, using availability of health insurance through another family member. This method echoes an identification approach used in the previous literature that found substantial evidence of job lock in the early 1990s.[6] We used rich administrative tax data to test the implications of the young-adult provision on labor market outcomes and related aspects of young-adult lives.[7] These data have several advantages over survey data, as they contain information on non-resident parents' access to employer benefits which is not typically available in survey data. We detect no substantial changes in a large set of outcomes, including measures of employment status, job characteristics, and postsecondary education, even when restricting attention to young adults whose parents have access to employer benefits. These findings may be unsurprising given the relatively good health of this age group, implying a lack of salience of health insurance in their employment choices. In ongoing work with the same data, we examine the demographic consequences of the law, following prior work in which my coauthors and I investigated the relationships between health insurance and marriage and fertility.[8] These administrative data present exciting opportunities for future research on the 2014 ACA expansions, particularly because the ACA mandates the collection of additional information on insurance coverage in tax data.

MATERNITY COVERAGE AFTER YOUNG-ADULT MANDATE
Private insurance financing rose for those who could stay on parents' plan

Financed by private insurance, ages 19-25

Financed by Medicaid, ages 19-25

Self-financed, ages 19-25

Shading denotes staggered implementation period

Source: Y. Akosa Antwi, A. Carroll, J. Ma, and K. Simon, "Dependent Coverage under the ACA and Medicaid Coverage for Childbirth," *New England Journal of Medicine*

Figure 2

Kosali Simon is a research associate in the NBER programs on health care, health economics, and children. A professor in the School of Public and Environmental Affairs at Indiana University, Simon is a health economist, with a background in labor economics and public finance. Many of her projects examine the impact of regulation of health insurance systems on labor-related activities, as well as on health care use and health outcomes. In past research, she has examined state and national regulations in private health insurance, Medicaid, and Medicare Part D. Most of her current research focuses on the Affordable Care Act.

Simon is active in professional development, serving on the governing boards of the American Society of Health Economists, the American Economic Association's Committee on the Status of Women in Economics, the Robert Wood Johnson Foundation Health Policy Scholars Program, and the Association for Public Policy Analysis & Management. She is director of the national CeMENT program, which provides mentoring for female assistant professors in economics. She is also an associate editor of *Health Economics* and the *Journal of Health Economics*, and sits on the editorial boards of the *Journal of Policy Analysis and Management* and the *American Journal of Health Economics*.

Simon lived in Asia, Africa, and Eastern Europe prior to completing her education in the United States. She received her B.A.s in economics and in German at Hamilton College in 1994 and her Ph.D. in economics at the University of Maryland, College Park, in 1999. She currently lives in Bloomington, Indiana, with her husband and their six young children.

My most recent research explores early effects of the 2014 Medicaid expansion. Using the quasi-natural experiment created by a 2012 Supreme Court decision, following which about half the states opted out of the Medicaid expansion that would cover adults earning less than 138 percent of the federal poverty level, my co-authors and I find no statistically detectable effects on labor market outcomes.[9] While this is important early evidence, sharper study designs are needed to focus exclusively on those who are treated.

Future Directions in ACA Impact Studies

When the ACA passed in 2010, there was a great deal of ambiguity regarding how U.S. health policy would be redefined by the law. The years since have witnessed much uncertainty about the law's implementation. However, aside from the 2012 Supreme Court decision weakening the Medicaid expansion, the main ACA provisions took effect largely as planned. Taken as a package, the ACA has made vast changes to the regulation and financing of the health care sector, providing researchers with openings to explore many questions in health economics. In light of the prominent position of health reform in current public affairs, these opportunities for research will also produce evidence that informs the ongoing and deeply salient debates about the appropriate design of U.S. health care policy.

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The Structure of the International Monetary System

Pierre-Olivier Gourinchas

Anyone looking at recent financial headlines could be forgiven for thinking that the international monetary system is under heavy strains. The People's Bank of China faces severe private capital outflows, a result of the yuan's appreciation in tandem with the U.S. dollar and the slowing of the Chinese economy. The Bank of Japan is battling persistent deflation by trying to depreciate the yen. The European Central Bank has clearly telegraphed that it would welcome further depreciation of the euro. In the United States, notwithstanding a modest "lift-off" in December 2015, the Federal Reserve is confronted with a global slowdown and a rising dollar. Policy discussions explicitly mention the possibility of negative rates in the future. Talk of "currency wars" abounds.

To understand the current environment, it is helpful to step back and consider the international monetary system circa 1960, during the Bretton Woods era.

The International Monetary System then…

Back in those days, the international monetary system was relatively simple. Market economies pegged their currencies to the U.S. dollar. In turn, the United States maintained the value of its dollar at $35 per ounce of gold. With the assistance of the International Monetary Fund, countries could obtain liquidity to deal with "temporary" imbalances, but it was incumbent upon them to implement a fiscal and monetary policy mix that would be consistent with a stable dollar parity or, infrequently, to request an adjustment in their exchange rate.

The United States faced no such constraint. The requirement to maintain the $35 an ounce parity had only minimal bite on U.S. monetary authorities, as long as foreign central banks were willing, or

could be convinced, to support the dollar. By design then, the system was asymmetric and dependent on the U.S., a situation that reflected the country's economic and political strengths in the immediate aftermath of World War II.[1]

Not everyone was happy about this state of affairs. Some objected to the special role of the dollar. In 1965, France famously requested the conversion of its dollar reserves into gold, while its minister of finance complained loudly about the United States' "exorbitant privilege."[2] The Bretton Woods regime allowed the U.S. to acquire valuable foreign assets, so the argument went, because the dollar reserves required to maintain the dollar parity of foreign countries amounted to automatic low-interest, dollar-denominated loans to the U.S.[3]

Others worried about the long-term sustainability of the system. As the world economy grew rapidly in the 1950s and 1960s, so did the global demand for liquidity and the stock of dollar assets held abroad. With unchanged global gold supplies, something had to give. This is the celebrated "Triffin dilemma."[4] In 1968, Triffin's predictions came to pass: faced with a run on gold reserves, the U.S. authorities suspended dollar-gold convertibility. Shortly thereafter, the Bretton Woods system of fixed but adjustable parities was consigned to the dustbin of history.

Outside the Zero Lower Bound: Exorbitant Privilege, Safe Assets, and Exorbitant Duty

Under the new regime, countries were free to adjust monetary policy independently. Mundell's "Trilemma" required either that market forces determine the value of the currency or that capital controls be imposed.[5] In principle, this environment should be more
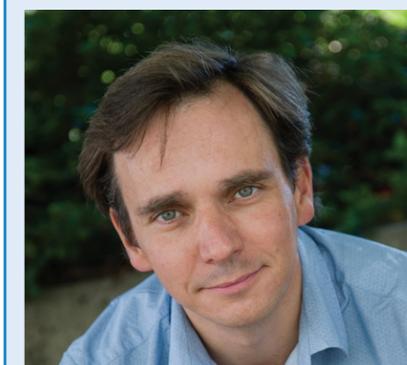
Pierre-Olivier Gourinchas is a research associate in the NBER's programs in finance and international macroeconomics, economic fluctuations and growth, and asset pricing. He received his Ph.D. from MIT in 1996 and is currently professor of economics at the University of California, Berkeley, where he heads the Clausen Center for International Business and Policy.

He also is editor-in-chief of the International Monetary Fund's IMF Economic Review.

In 2007, Gourinchas received the Bernácer Prize for best European economist under the age of 40 working in macroeconomics and finance, and in 2008 he received the prize for best French economist under 40. In 2012–13, he served on the French Council of Economic Advisors to the prime minister and since 2014 he has been a member of the French National Economic Commission, an advisory board to the French Treasury.

Gourinchas is a visiting scholar at the Federal Reserve Bank of San Francisco and has been a regular visitor at numerous central banks. His main research interests are in international macroeconomics and finance. His recent research focuses on capital flows and global imbalances, the determination of global interest rates and exchange rates, and the international monetary system. He grew up in France and currently lives in Berkeley with his wife. He has two daughters. In his spare time, he enjoys reading, sailing the San Francisco Bay, and cycling up the East Bay hills.

symmetrical: no more "exorbitant privilege" for the U.S. since other countries would not be forced to hold low-interest dollar reserves to maintain their dollar exchange rate; no asymmetry in external adjustment between the U.S. and the rest of the world since exchange rates would now adjust freely; and no Triffin dilemma since dollar liquidity would be decoupled from gold supply.

Yet, recent research illustrates that the era of floating rates shares many of the same structural features as the Bretton Woods regime. Consider the question of the "exorbitant privilege," defined as the excess return on U.S. gross external assets relative to U.S. gross external liabilities. Hélène Rey and I set out to measure this excess return using disaggregated data on the U.S. Net International Investment Position and its balance of payments. These calculations are often imprecise, given the coarseness of the historical data, but they all point in the same direction: The U.S. earns a significant excess return which has *increased* since the end of the Bretton Woods regime from 0.8 percent per annum between 1952 and 1972, to between 2.0 percent and 3.8 percent per annum since 1973.[6]

A large share of these excess returns arises because of the changing composition of the U.S. external balance sheet over time. As financial globalization proceeded, U.S. investors concentrated their foreign holdings in risky and/or illiquid securities such as portfolio equity or direct investment, while foreign investors concentrated their U.S. asset purchases in portfolio debt, especially Treasuries and bonds issued by government-affiliated agencies in areas such as housing finance, and cross-border loans.[7] [See Figure 1.] The "exorbitant privilege" should be properly understood as a risk premium.

These large and growing U.S. excess

returns have first-order implications for the sustainability of U.S. trade deficits and the interpretation of current account deficits. As an illustration of the orders of magnitude involved, suppose that the U.S. has a balanced net international investment position with

EXTERNAL LEVERAGE OF THE U.S.
External leverage of the U.S. increased sharply in run up to the financial crisis

Percent of U.S. GDP
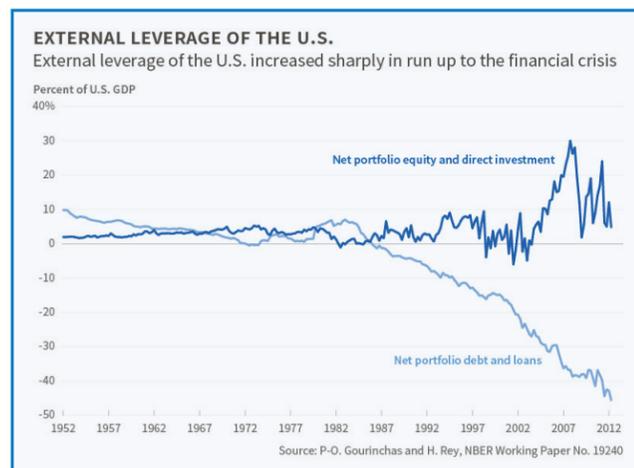
Figure 1

gross assets and liabilities of 100 percent of GDP. An excess return of 2 percent per annum implies that, on average, the U.S. can run an annual trade deficit of 2 percent of GDP while leaving its net international investment position unchanged. More generally, since a large part of realized returns take the

GLOBAL IMBALANCES
Imbalances have receded but not disappeared post-crisis

Current Account balances as a percentage of world GDP
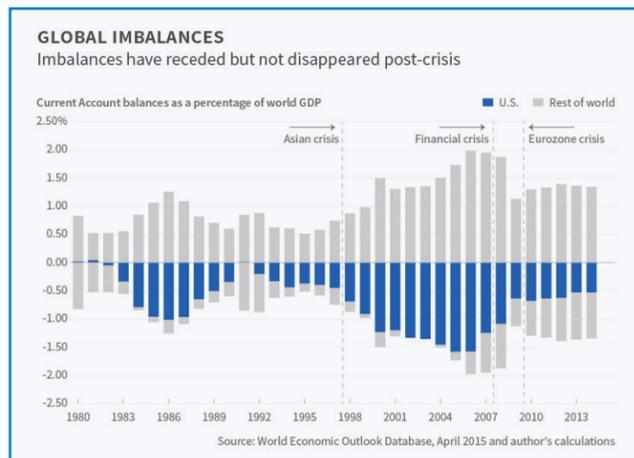
Figure 2

form of valuation gains due to changes in asset prices and exchange rates, the current account, which excludes non-produced income such as capital gains, will provide an increasingly distorted

picture of the change in a country's external position.[8]

Consider next the question of external adjustment. The U.S. still faces a very different process than most other countries. For instance, Rey and I found that a deterioration of the U.S. trade balance or of its net international investment position is often followed by a predictable depreciation of the U.S. dollar against other currencies. This depreciation may subsequently improve the U.S. trade balance along the usual channels, but it also improves the return on U.S. financial assets held abroad, thereby making the U.S. relatively richer.[9] Most other countries don't seem to enjoy a similar advantage.[10] These findings help us understand why markets have taken a somewhat benign view of persistent U.S current account deficits since the 1980s. [See Figure 2.]

What accounts for this risk premium? In my work with Ricardo Caballero and Emmanuel Farhi, we argue that it reflects a superior capacity of the U.S. to supply "safe" assets — assets that will deliver stable returns even in global downturns. To illustrate the argument, consider a world consisting of only two regions, the U.S. (U) and the rest of the world (R). The regions may vary in their capacity to produce safe assets because of differences in the soundness of their fiscal policy or in their levels of financial development. They may also differ in their demand for these assets because of demographic differences, financial frictions, and/or differences in preferences for saving.[11]

Suppose U is a natural *net* supplier of these assets. If the two regions were forced to live in financial autarky, unable to borrow from, or lend to, one another, the price of safe assets would be higher in R, and their return lower. If the two regions inte-

grate financially, capital will flow from R to U, as R investors are eager to purchase U's safe assets. From the perspective of U, two things happen: It runs a current account deficit (foreign capital flows in), and interest rates decrease. By the same logic, suppose R's risky assets offer a higher autarky return. Then U would also want to invest in these risky assets. The pattern of cross-border *gross* financial flows and positions would resemble the one we observe in the data with the U.S. investing in foreign risky assets, issuing safe assets, and earning a risk premium.[12]

This line of research successfully accounts for the simultaneous deterioration in U.S. current account balances [Figure 2], the secular decline in real interest rates [Figure 3], and the increased leverage of the U.S. external portfolio since the 1980s [Figure 1]. These trends reflect a combination of shocks such as the collapse of the Japanese equity and housing bubbles of the early 1990s and the Asian financial crisis of 1997, and trends such as the integration of China into the world economy with low initial levels of financial development and rapidly aging populations in Japan, Germany, and China.[13]

The flip side of the "exorbitant privilege" is an increased vulnerability of the United States' external portfolio to global shocks, which Rey and I dubbed the "exorbitant duty."[14] Indeed, we estimate that, at the peak of the global financial crisis, U.S. valuation losses, corresponding to the valuation gains of the rest of the world, amounted to roughly 14 percent of U.S. GDP.[15] We then build a model in which the U.S. has more risk-absorbing capacity than the rest of the world. The model replicates the external portfolio structure of the U.S., long on risky assets and short on safe ones — exorbitant privilege as well as exorbitant duty. The model has one key implication: Willingly or not, global suppliers of safe-haven assets

must bear more exposure to global risks. These findings carry important lessons for regional safe-asset providers such as Germany or Switzerland, or for future safe-asset providers, be they the eurozone or China. Lower funding costs come with a commensurate

GLOBAL INTEREST RATES
Long term yields have declined to historically low levels
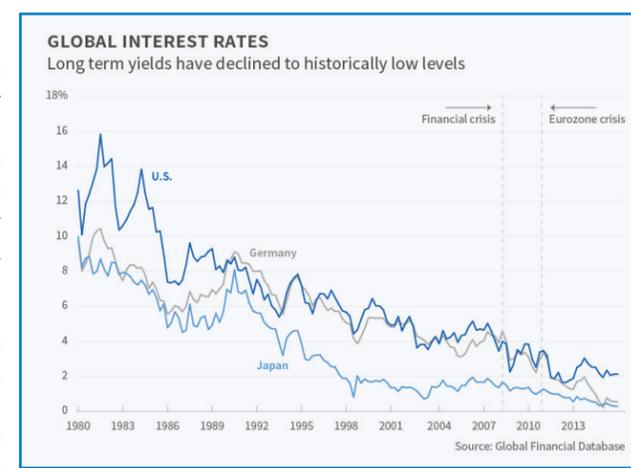
Figure 3

increase in the global exposure of their external balance sheet.

At the Zero Lower Bound: Capital Flows and Currency Wars

With the global financial crisis and its aftermath, we have entered a new phase in the relationship between safe-asset imbalances and capital flows. The crisis triggered a sharp contraction in safe-asset supply and a surge in global demand as households and the non-financial corporate sector attempted to de-leverage. These shocks further depressed equilibrium real interest rates, pushing policy rates throughout the developed world to the Zero Lower Bound (ZLB).[16]

In recent theoretical work, Caballero, Farhi, and I show that the safe-asset scarcity mutates at the ZLB, from a benign phenomenon that depresses risk-free rates to a malign one where interest rates cannot equilibrate asset markets any longer, leading to a global recession. The reason is that the decline in output reduces net-asset demand more than asset supply.[17] Hence our analysis predicts the emergence of potentially

persistent global-liquidity traps, a situation that actually exists in most of the advanced economies today.

Our theoretical model features nominal rigidities, so that the ZLB matters, and a non-Ricardian setting, so that heterogeneity in asset supply and demand affects interest rates. We use this framework to address two questions.

First, we ask: What is the role of capital flows at the ZLB? We find that, everything else equal, capital flows propagate recessions from one country to another. Countries with more-severe safe-asset scarcities under financial autarky will experience milder recessions when integrated, and will run current account surpluses. In effect, current account surpluses help spread liquidity traps globally.

Next we ask: What is the role of exchange rates? Here, our theoretical analysis delivers an important result: Within a range, the nominal exchange rate becomes indeterminate. The fundamental reason is that exchange rates are indeterminate when countries follow pure interest-rate targets, as is the case at the ZLB.[18] In our environment, this indeterminacy has real consequences. Different values of the nominal exchange rate translate into different values of the real exchange rate, and therefore affect the relative demand for domestic versus foreign goods. Our theoretical framework provides a powerful way to think about the current lively debate on currency wars. By pursuing policies that lead to a more-depreciated exchange rate, a country can shift the burden of the global recession onto its trading partners, a beggar-thy-neighbor policy.[19]

Our analysis also uncovers a new and important dimension of the "exorbitant duty" faced by safe-asset net suppliers. In a ZLB environment, such nations either must have more-appreciated currencies, as a result of investors' flight to safety, or lower funding costs, because their currencies are expected to appreciate in case of global shocks. The first effect tends to worsen the size of the ZLB recession for

these countries. The second indicates that these safe-asset suppliers are more likely to hit the ZLB in the first place and experience a recession. Either way, safe-asset suppliers shoulder a larger share of the burden. Yet, because issuance of safe assets anywhere, public or private, is beneficial everywhere, the global provision of safe assets may remain inadequate.

This recent research illustrates that the fundamental structure of the international monetary system may largely transcend formal exchange-rate arrangements, with U.S. dollar assets at the center. Going forward, this raises a number of important questions which current research is exploring. First, a recent and influential line of work is questioning whether floating exchange rates provide much insulation against foreign shocks, a central tenet of Mundell's Trilemma.[20] If they don't, monetary authorities may find that they are even more dependent on the monetary policy "at the center" than was the case during Bretton Woods.

Second, our results point to a modern — and more sinister — version of the Triffin dilemma. As the world economy grows faster than that of the U.S., so does the global demand for safe assets relative to their supply.[21] This depresses global interest rates and could push the global economy into a persistent ZLB environment, a form of secular stagnation.[22]

One likely response would be the endogenous emergence of alternatives to dollar-denominated safe assets produced either by the private sector or by other countries. This raises the difficult question of how different safe assets can coexist and compete in equilibrium, and suggests that the safety of an asset is an equilibrium outcome, one that depends both on the underlying fundamental characteristics of the asset itself and also on the coordination decisions of investors.[23]

Finally, a body of empirical evidence suggests that environments with low interest rates may fuel leverage boom and bust cycles. The vulnerability of emerging and advanced economies alike to these crises has been amply demonstrated in the past. At the country level, the empirical evidence suggests that self-insurance via official reserve (safe asset) accumulation is an effective line of defense against leveraged booms.[24] But what is optimal at the level of an individual country may be inefficient at a global level if it fuels further safe-asset scarcity and depresses global interest rates. This question is central to current discussions on global safety nets.

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[2] R. Aron, Le Figaro, February 16, 1965, from Les Articles du Figaro, vol. II, Paris, France: Editions de Fallois, 1994, p.1475. For a historical perspective on the exorbitant privilege, see also B. Eichengreen, Exorbitant Privilege: The Rise and Fall of the Dollar, Oxford, United Kingdom: Oxford University Press, 2012.
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[3] J. Rueff, "The West is Risking a Credit Collapse," Fortune, June 1961, pp.126–127, 262, and 167–268.
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[5] R. Mundell, "Capital Mobility and Stabilization Policy under Fixed and Flexible Exchange Rates," Canadian Journal of Economic and Political Science, 29(4), 1963, pp. 475–485.
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[6] P.-O. Gourinchas and H. Rey, "From World Banker to World Venture Capitalist: U.S. External Adjustment and the Exorbitant Privilege," NBER Working Paper No. 11563, August 2005, and in G7 Current Account Imbalances: Sustainability and Adjustment, R. Clarida, ed., Chicago, IL: University of Chicago Press, 2007. See also P.-O. Gourinchas and H. Rey, "External Adjustment, Global Imbalances and Valuation Effects," NBER Working Paper No. 19240, July 2013, and Chapter 10 in G. Gopinath, E. Helpman, and K. Rogoff, eds., Handbook of International Economics, Volume 4, Amsterdam, The Netherlands: North Holland, Elsevier, 2014, pp.585–645. For a more conservative estimate on a shorter time period, see S. Curcuru, T. Dvorak, and F. Warnock, "Cross-Border Return Differentials," NBER Working Paper No. 13768, February 2008, and Quarterly Journal of Economics, 123(4), 2008, pp. 1495–1530.
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[7] Recent work on the structure of global banking flows helps nuance this picture. For instance, H. Shin, "Global Banking Glut and Loan Risk Premium," IMF Economic Review, 60(2), 2012, pp. 155–192, shows that prior to the financial crisis, foreign banks borrowed dollars from U.S. money market funds, and invested in riskier U.S. assets such as mortgage backed securities.
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[8] See for instance M. Obstfeld, "Does the Current Account Still Matter," NBER Working Paper No. 17877, March 2012, and American Economic Review, 102(3), May 2012, pp. 1-23, and also P.-O. Gourinchas and H. Rey, "External Adjustment, Global Imbalances and Valuation Effects," NBER Working Paper No. 19240, July 2013, and Chapter 10 in, Handbook of International Economics, Volume 4, op. cit., for a range of countries.
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[9] P.-O. Gourinchas and H. Rey, "International Financial Adjustment," NBER Working Paper No.11155, February 2005, and Journal of Political Economy, 115(4), August 2007, pp. 665–703. See also G. Corsetti and P. Konstantinou, "What Drives U.S. Foreign Borrowing? Evidence on the External Adjustment to Transitory and Permanent Shocks," American Economic Review, 102(2), April 2012, pp. 1062–1092.
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[10] However, K. Rogoff and T. Tashiro, "Japan's Exorbitant Privilege," Journal of the Japanese and International Economies, 35, March 2015, pp. 43–61, find positive excess returns for Japan between 2001 and 2013.
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[14] P.-O. Gourinchas, H. Rey, and N. Govillot, "Exorbitant Privilege and Exorbitant Duty," University of California, Berkeley, mimeo, May 2010.
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[15] P.-O. Gourinchas, H. Rey, and K. Truempler, "The Financial Crisis and The Geography of Wealth Transfers," NBER Working Paper No. 17353, August 2011, and Journal of International Economics, 88(2), 2012, pp. 266–283, explore the geographic distribution of valuation gains and losses during the financial crisis and find that losses are concentrated in the U.S., the eurozone, and China.
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[16] Most estimates of the natural rate of interest rate such as T. Laubach and J. Williams, "Measuring the Natural Rate of Interest," Federal Reserve Bank of San Francisco Working Paper 2015-2016, October 2015, or J. Hamilton, E. Harris, J. Hatzius, and K. West, "The Equilibrium Real Funds Rate: Past, Present, and Future," NBER Working Paper No. 21476, August 2015, are consistent with a substantial decline in the natural real interest rate. Strictly speaking, the ZLB should be defined as the lowest admissible nominal interest rate. As demonstrated by various central banks in recent months, this lowest admissible nominal interest rate may well be negative.
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[17] R. Caballero, E. Farhi, and P.-O. Gourinchas, "Global Imbalances and Currency Wars at the ZLB," NBER Working Paper No. 21670, October 2015. A related analysis is G. Eggertsson, N. Mehrotra, S. Singh, and L. Summers, "A Contagious Malady? Open Economy Dimensions of Secular Stagnation," Working paper, November 2015. By definition, the supply of true safe assets does not change with a decline in output, hence the recession disproportionately affects safe asset demand.
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[18] J. Kareken and N. Wallace, "On the Indeterminacy of Equilibrium Exchange Rates," Quarterly Journal of Economics, 96(2), 1981, pp. 207–222.
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[19] Outside the ZLB, this type of beggar-thy-neighbor policy is unnecessary since each country can reach potential output via traditional monetary policy while letting its currency fluctuate.
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[20] H. Rey, "Dilemma not Trilemma: The Global Financial Cycle and Monetary Policy Independence," NBER Working Paper No. 21162, May 2015, and in Proceedings of the Economic Policy Symposium, Jackson Hole, 2013, Federal Reserve Bank of Kansas City; and E. Farhi and I. Werning, "Dilemma not Trilemma? Capital Controls and Exchange Rates with Volatile Capital Flows," IMF Economic Review, 62(4), 2014, pp. 569–605. See also B. Bernanke, "Federal Reserve Policy in an International Context," IMF Economic Review, Mundell Fleming lecture, forthcoming 2016, for a dissenting view.
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[22] L. Summers, "Have We Entered an Age of Secular Stagnation?" IMF Economic Review, 63(1), 2015, pp. 277–280.
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[23] P.-O. Gourinchas and O. Jeanne, "Global Safe Assets," BIS Working Paper 399, December 2012; See also Z. He, A. Krishnamurthy, and K. Millbradt, "A Model of the Reserve Asset," Stanford Graduate School of Business mimeo, 2015, for a model of competition between reserve assets.
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[24] P.-O. Gourinchas and M. Obstfeld, "Stories of the Twentieth Century for the Twenty-First," NBER Working Paper No. 17252, July 2011, and American Economic Journal: Macroeconomics, 4(1), 2012, pp. 226–265.
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Scientific Teamwork

Joshua Gans and Fiona Murray

Joshua Gans is a professor of strategic management and holder of the Jeffrey S. Skoll Chair of Technical Innovation and Entrepreneurship at the Rotman School of Management, University of Toronto, with a cross appointment in the Department of Economics. Since 2013, he has been area coordinator of strategic management; he also is chief economist of the University of Toronto's Creative Destruction Lab.

Prior to 2011, Gans was the foundation professor of management (information economics) at the Melbourne Business School, University of Melbourne; prior to that he was at the School of Economics, University of New South Wales. In 2011, he was a visiting researcher at Microsoft Research in New England.

Gans holds a Ph.D. from Stanford University and an honors degree in economics from the University of Queensland. In 2012, he was named a research associate of the NBER, where he is involved in the Productivity, Innovation, and Entrepreneurship Program.

At Rotman, Gans teaches M.B.A. and commerce students network and digital market strategy. He is a coauthor with Stephen King and Robin Stonecash of the Australasian edition of Greg Mankiw's *Principles of Economics,* and lead author of *Core Economics for Managers, Finishing the Job,* and *Parentonomics.* Most recently, he has written *Information Wants to be Shared* and *The Disruption Dilemma.*

Gans specializes in the nature of technological competition and innovation, economic growth, publishing economics, industrial organization, and regulatory economics. He has published on these subjects in the *American Economic Review, Journal of Political Economy, RAND Journal of Economics,* and others.

Team performance in many settings has long challenged economic thinking. Even when monetary incentives are present, it is hard to structure those incentives to overcome moral hazard and other issues of free riding, especially when team tasks interact with one another. This is especially true for scientific teams, where the challenges are multiplied: The rewards tend to be non-monetary and thus principals — to the extent they even exist — face additional complexity in structuring those rewards. To add to the challenges, in recent decades science has become more complex and the knowledge frontier is now harder to expand than ever. This manifests itself in many changes, among the most important being a change in the life cycle of scientific careers and an increase in the prevalence and size of research teams.

Along with our coauthor Michael Bikard, we have looked at the choices scientific teams make, both in terms of how they form and in how they signal to the outside world the contributions of individual team members.

Who Gets What?

When entrepreneurs found startups, they agree on a division of equity between themselves and investors. Regardless of the ultimate value of the venture, the division of shares determines what each party owns. When teams form a scientific collaboration, one could imagine the same thing occurring. Two collaborators put their names on a paper and then whatever the paper's scientific value, credit would be divided equally between them.

However, while equity allows for a definitive and legally binding split of future profits, things are not so simple with scientific output. For starters, the total value created by a publication is not necessarily fixed and independent of the number of authors (say, in terms of citations and impact). The total value to the career prospects of authors from a two-author publication may be more than twice what they would receive had they produced two single-author publications, even of the same quality. Likewise, the value of the publication may be much greater for a team of younger scientists than for an older, more-established group of collaborators. In other words, there is nothing to stop "the market" — a shorthand for the complex process that determines the incremental effect of a new paper on the professional standing of its authors — from assigning shares of the publication's value that sum to more than one for the output of scientific teams.

The composition of teams also matters in the market for scientific attribution, which may look at who is part of the team and be influenced in assigning credit by their prior reputations and skills. Thus while attribution may split evenly among authors, it may also be unevenly distributed by outside observers. The great sociologist of science Robert Merton noted that often a Matthew effect arose in that those scientists who had the better reputation upon entering a collaboration would seem to receive a disproportionate share of the benefits from collaborative output.[1]

These issues of attribution introduce a number of complexities. For instance, it is difficult to envisage an economic equilibrium in which a scientist actually contributes less to a project and yet is persistently rewarded more because the market misjudges his contribution on the basis of prior

COLLABORATION AND CITATIONS

Citations per author per year, logarithmic scale

Shading denotes 95% confidence intervals
Each author of *N*-authored paper is credited with 1/*N* citations

Source: M. Bikard, F. Murray, and J.S. Gans, NBER Working Paper No. 18958

reputation. The equilibrium should eliminate the misjudging. If disproportionate rewards persist, it is possible that there is an efficiency explanation for this outcome.

How To Organize?

It was with such challenges in mind that we examined choice of potential collaborators regarding team production. Do two collaborators team up or go their own way?[2] Our first approach imagined an asymmetry between collaborators akin to that which arises in lab settings in the natural sciences. A project was, initially, controlled by a pioneer scientist who could improve the project by eliciting the contribution of a junior scientist (or postdoc or graduate student). Like any good outsourcing arrangement, the pioneer would happily pay for value. Thus, if the junior scientist contributes enough to outweigh any lost share in value accruing to the pioneer, then the pioneer would enter into the arrangement. Of course, the collaboration could also take another form. The pioneer might publish interim results while the junior scientist might publish separately his or her own follow-on results. The entire corpus would add the same increment to the knowledge frontier as an integrated collaboration. The difference lies in how the contributions of each party would be valued in the market for scientific attribution.

The most significant thing we found in our analysis of the organizational choices made by scientists was that if "the market" designated who gets what share in a co-authored work, it would favor an attribution rule that did not sum to more than one. Why? Because any other attribution rule would lead to scientists choosing to co-author rather than publish separately when it was otherwise less efficient to do so. In other words, when a full range of organizational choices is considered, the market for attribution may not freely reward all contributors, but rather must allocate attribution sparingly so as not to overly distort the decision to collaborate rather than to work separately on a scientific project.

Are Teams Optimal?

If economists had the luxury of designing attribution shares, they might ask what type of attribution shares would be optimal. In reality, there is no central designer and who gets what is resolved by norms — and evolving norms at that. So what norms have evolved and how might we measure them?

That was the question we explored with Bikard.[3] We analyzed a unique dataset of the annual research activity of 661 MIT faculty scientists over three decades and examined their choices of whether to collaborate or not. The idea was that by observing their publication outcomes, we could infer, in any given year, a particular scientist's portfolio of collaboration choices. If, in turn, we assumed that the scientist was maximizing the total volume of attributed citations less the costs, if any, associated with collaborating, we might be able to understand whether their choices were optimal.

The figure at left illustrates our findings. It shows that if scientists were (i) maximizing the total attributed number of citations their output generated per year and (ii) attributed a share $1/n$ of the credit for papers with n authors, then any collaboration with more than three authors would be, on average, suboptimal for them. This suggests that the scientists were facing large costs in terms of time wasted and drawn from other projects when they were part of large teams.

Our data show that scientists made continual "mistakes" in engaging in large team collaborations. We therefore had to ask if their revealed preference in this regard might suggest a different attribution rule than the simple $1/n$ rule. Using this insight, we fit our data to a number of alternatives of the form $(1/n)^b$. We found that the best fit for b that would explain the behavior as optimal was $b = \frac{1}{2}$. In other words, scientists in our MIT sample appeared to behave as if the attribution rule allocated $1/\sqrt{n}$ share of the total value of a publication to each coauthor. Importantly, with this rule, the sum of the attribution shares would exceed one. This suggests

Fiona Murray is the William Porter (1967) Professor of Entrepreneurship, the associate dean for innovation at MIT's Sloan School of Management, and co-director of the MIT Innovation Initiative. She is also a member of the British Prime Minister's Council on Science and Technology and an NBER research associate.

Murray holds a B.A. and M.A. in chemistry from Merton College, University of Oxford, and an M.S. in engineering sciences and a Ph.D. in applied sciences from Harvard University.

Her research is focused on the economics and sociology of innovation and entrepreneurship. Much of her work evaluates how policies and programs shape the commercialization of science, and how they can positively impact the role of women in entrepreneurship. She is also interested in the organizational economics of science and in how changes in science funding shape the ways in which laboratories and inter-lab collaborations are structured.

Murray has done extensive work with entrepreneurs, governments, large corporations, and philanthropists designing and evaluating policies and programs that shape vibrant innovation ecosystems, such as prizes, competitions, accelerators, patent licensing rules, and proof of concept funding.

She has published in diverse journals: *Science, Nature, Proceedings of the National Academy of Sciences, Management Science, New England Journal of Medicine, American Journal of Sociology, Organization Science,* and *Journal of Economic Behavior & Organization.*
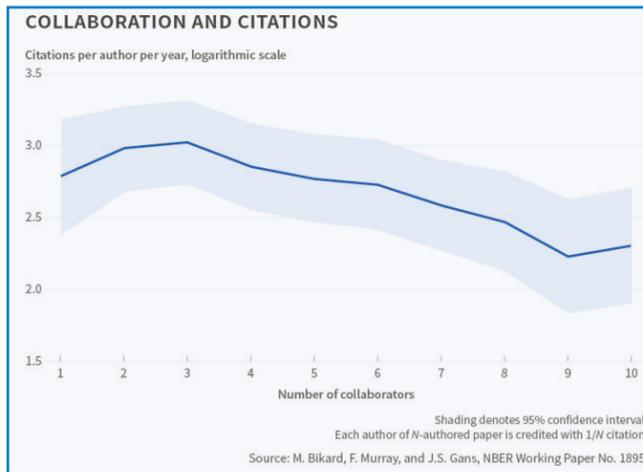
that the prevailing norms were encouraging collaboration disproportionately to individual publication.

What Drives Attribution?

We know from our own experience in evaluating our peers that the process of dividing credit for joint work is not formulaic. In particular, when we are presented with the work of a team, we try to parse the contributions of individual members.

In another collaborative paper, we explore this process by considering again a pioneer and a follow-on scientist.[4] Both can contribute to a project. However, it is the pioneer who determines the prevailing sharing arrangements. When both actually contribute, this increases the likelihood that the project is of high quality. Indeed, we assume that to get very high quality you need both scientists to make a substantive contribution. In this event, the market knows what is going on and so divides attribution between the authors.

Things get tricky if the project is good but not of the highest quality. In that situation, by looking at the output alone, the market for scientific attribution cannot work out the underlying process. The pioneer alone surely could have generated that work. If the pioneer had been a sole author, the market would have given him all of the attribution. But what if there are two names on the paper?

If one scientist has contributed considerably more than the other, "the market" would like to find out who contributed more and attribute more credit to that author. Interestingly, this gives rise to two potential equilibria. In each one, all credit is given to one author or the other. In one of these, the follower scientist only puts in effort if the pioneer has already achieved a promising result, as the follower will share in the reward by also making a significant contribution. However, if the pioneer has

not achieved such a result, the follower puts in no effort and guarantees a low quality result precisely because the market would not attribute any share to either of them. Of course, that assessment is self-fulfilling precisely because the follower does not deserve any credit. A mirror equilibrium holds where the follower receives all of the credit. In each case, the market assessments turn out to be correct because they shape the incentives of scientists to conform to those assessments.

Our principal purpose in this paper is not to consider whether to invite another researcher to become a coauthor but, rather, when to do so. One degree of flexibility pioneer scientists have — if they lead their own labs with some autonomy — is that they can employ junior scientists but can potentially separate that working relationship from the credit or formal attribution that junior scientists receive. Senior scientists might wait until they see their own contribution and that of the junior scientist before inviting the junior scientist to be a coauthor. The senior scientist may never choose to do this, but suppose, perhaps to send a signal to others in their lab, that they commit to putting a junior scientist on the paper only if the junior's contribution is significant.

While this arrangement might seem precarious for the junior scientist, it facilitates attribution in "the market." If the market for scientific attribution understands that the junior scientist is only a coauthor on the paper if the junior made a significant contribution, then in the ambiguous range where it would otherwise be hard to tell who was the main contributor, "the market" can now tell. What is more, this all adds up to maximal incentives for the junior scientist to put effort into generating a significant contribution. The junior scientists are better off for this arrangement. We show that, of all of the organizational arrangements that could have been chosen, leaving the decision of whether to credit

the junior scientist until the end is Pareto optimal.

Conclusion

The research presented here is an initial foray into understanding how the choices of scientific teams are shaped by market assessments of individual performance. It is part of a broader agenda that we think of as the organizational economics of science. By demonstrating that such market assessments are likely to be important, it presents initial insights but also conjectures about what "the market" is. That remains an open theoretical and empirical question. Our work yields some insights but in many respects only highlights the reality that understanding scientific work — in academia and in industry — will require much more research, both theoretical and empirical.

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3   M. Bikard, F. Murray, and J. S. Gans, "Exploring Tradeoffs in the Organization of Scientific Work: Collaboration and Scientific Rewards," NBER Working Paper No. 18958, April 2013, and Management Science, 61(7), 2015, pp. 1473–1495.
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4   J. S. Gans and F. Murray, "Markets for Scientific Attribution," NBER Working Paper No. 20677, November 2014.
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Productivity and Misallocation

Chang-Tai Hsieh and Pete Klenow

The starting point of a large body of recent research on economic growth is the notion that differences in aggregate total factor productivity (TFP) may not be driven solely by technology but rather in part by allocative efficiency. The key building block of this literature is the idea that firms differ, and we do not necessarily want all the resources to be allocated to one firm. For example, suppose that there are a number of firms in a country and the output Y_i of each firm is given by a standard production function, $Y_i = A_i F(K_i, L_i)$, where K_i is the firm's capital stock (equipment and structures), L_i is the firm's labor input (skill-weighted hours worked by its employees), F is the production function which combines capital and labor, and A_i is residual firm productivity.

If each firm produces different products, we do not want all the inputs allocated to the firm with the highest A_i, as we value having access to a variety of differentiated products. Instead, what we want is for resources to be allocated across firms to equalize the *revenue* productivity of the firm, or $P_i A_i$. Resources are misallocated when revenue productivity differs between firms. Reallocation increases aggregate TFP and generates growth when resources flow to firms with high revenue productivity.

Micro-data from manufacturing censuses suggest substantial gaps in revenue productivity across firms within India and China.[1] The gaps are also present in U.S. data, but are much smaller. Figure 1 plots the dispersion of revenue productivity in the three countries. In India and China, revenue productivity of firms in the 90th percentile

exceeds that of firms in the 10th percentile by a factor of five. In the U.S., the equivalent gap in revenue productivity is a factor of three. These gaps in revenue productivity between firms may contribute to substantial gaps in aggregate TFP. In a standard model, aggregate TFP would increase by 43 percent in the U.S. in 1997, by 115 percent in China in 1998, and by 127 percent in India in 1994 if resources were to be reallocated to equalize revenue productivity across firms.

We now have a large body of evidence on gaps in revenue productivity at the microeconomic level, largely thanks to the detailed, firm-level data available for a growing number of countries. A project spearheaded by Santiago Levy at the Inter-American Development Bank provides detailed evidence on these gaps for a large number of countries in Latin America.[2] There is similar evidence from microeconomic data for a number of countries in Europe.[3] These studies find wide gaps in revenue productivity, consistent with substantial misallocation.

The literature has largely focused on measuring the static effects of firm-level gaps in revenue productivity, but the firm-level gaps are likely to also have important

DISTRIBUTION OF REVENUE PRODUCTIVITY
More dispersion in China and India than in U.S.

Revenue productivity
Average firm normalized to 1.0

Source: C. Hsieh and P. Klenow, NBER Working Paper No. 13290

Figure 1

dynamic effects. If more-efficient establishments face larger distortions, it undermines firms' incentives to invest in better technology. Put differently, there are two effects of resource misallocation — the static effect and the dynamic effect of resource misallocation on growth in firm productivity. This has been highlighted in several case studies.[4] Evidence from firm-level censuses in India and Mexico is also consistent with the presence of
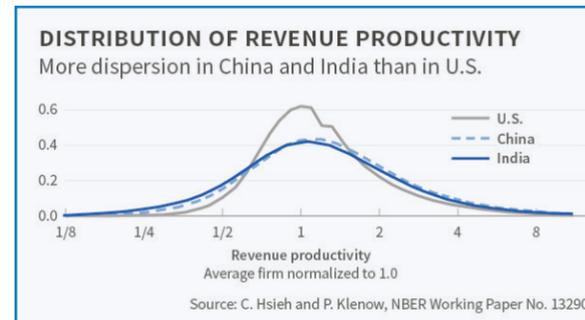
Chang-Tai Hsieh is the Phyllis and Irwin Winkelried Professor of Economics at the University of Chicago's Booth School of Business. He is the co-organizer, with Nick Bloom and Chris Woodruff, of NBER's Working Group in Development, Productivity, and Innovation, and a member of the Steering Group of the International Growth Centre at the London School of Economics.

Before joining the faculty at Chicago, he was an associate professor and professor at the University of California, Berkeley, and an assistant professor at Princeton University. He recently served as the coeditor of the *Journal of Economic Perspectives*. He is a fellow of Academia Sinica, a recipient of the Sun Yefang Award from the Chinese Academy of Social Sciences, and a Sloan Foundation Research Fellow. His research focuses on development and economic growth.

Pete Klenow is codirector with Mark Gertler of the NBER's Economic Fluctuations and Growth Program. He is the Landau Professor of Economics at Stanford University, and the Gordon and Betty Moore Fellow at the Stanford Institute for Economic Policy Research.

Before joining the Stanford faculty, he was a senior economist at the Federal Reserve Bank of Minneapolis and an assistant and associate professor at the University of Chicago's Booth School of Business. He is currently an associate editor of the *Quarterly Journal of Economics* and *Econometrica*, and previously served on the Board of Editors of the *American Economic Review*.

He is a member of the American Academy of Arts and Sciences, and a fellow of the Econometric Society. He serves as a panelist on the IGM Booth Economic Experts Panel, and a regular visiting scholar at the Federal Reserve Banks of Minneapolis and San Francisco. He is currently a Special Sworn Status researcher at the U.S. Census Bureau, and has previously had Intergovernmental Personnel Act assignments at the U.S. Bureau of Labor Statistics.

Klenow's research uses micro data (on prices and productivity, for example) to try to shed light on macro questions such as the causes of growth and development.

dynamic misallocation.[5] Figure 2 shows that, by the age of 40, U.S. firms grow by a factor of eight while Mexican firms only double and Indian firms do not appear to grow at all.

The challenge that follows from these studies is to identify the precise policies and institutions behind the revenue productivity gaps in the micro data. The potential list of explanations is large. We will limit our discussion to five forces that might be important and for which we have some evidence.

• **Substantial Costs to Adjusting Labor and Capital Inputs** [6]

Evidence on whether adjustment costs might be responsible for the differential gaps in revenue productivity between rich and poor countries is limited. Across a number of countries, the dispersion in capital productivity is correlated with productivity volatility, although the underlying sources of productivity volatility are not known.[7] There is much less volatility in employment in Indian than in U.S. manufacturing, almost as if Indian firms face large costs to adjusting employment. This is consistent with evidence on the effects of rigid licensing laws in India.[8]

• **Ownership of Firms by the State or the Politically Connected**

State-owned firms in China had substantially lower revenue productivity in the late 1990s than their privately-owned counterparts, but the gap narrowed after the closure and privatization of many state-owned firms. A detailed study in India shows

FIRM AGE AND NUMBER OF EMPLOYEES
U.S. firms grow faster than firms in Mexico and India

Employment, indexed to 1 when firm age = <5

Source: C. Hsieh and P. Klenow, NBER Working Paper No. 18133
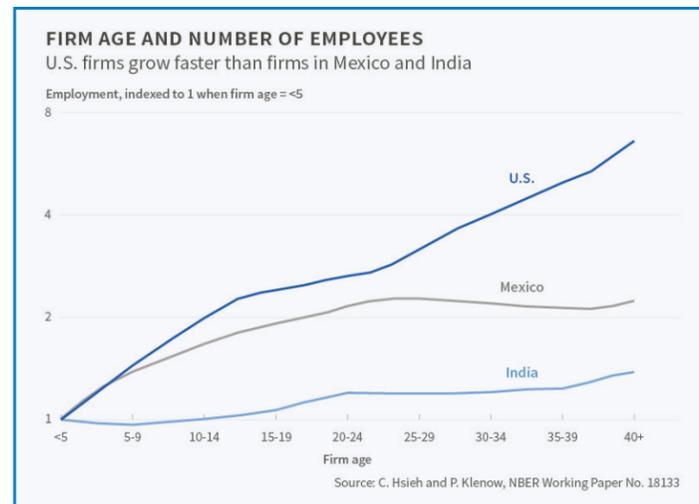
Figure 2

substantial gaps in labor productivity between state-owned firms and privately-owned firms in the same sector.[9] In telecoms, labor productivity is three times higher in private than in state-owned firms. In the retail banking sector, labor productivity is more than five times higher in private than in state-run firms.

• **The Presence of a Large Informal Sector** [10]

This is an important feature of many poor countries. Take retail trade. Modern firms account for 67 percent of retail employment in the U.S. The equivalent numbers are only 21 percent in Brazil, 15 percent in El Salvador, 23 percent in Mexico, 15 percent in the Philippines, and 19 percent in Thailand.[11] In all these countries, labor productivity in modern retail is significantly higher than in informal retail stores. The labor productivity of modern retailers is three times higher than that of informal retailers in Brazil, four times higher in El Salvador, three-and- a-half times higher in Mexico, six times higher in the Philippines, and four times higher in Thailand.

The pervasiveness and low productivity of the informal sector is also seen in manufacturing in India and Mexico. Informal manufacturing establishments in India, defined as establishments that are not formally registered, accounted

for 80 percent of total Indian manufacturing employment in 2005. In Mexico, almost all manufacturing establishments are formal in the sense of being formally registered, but if we define informal firms as those which are not paying Social Security taxes — either legally by only employing unpaid family workers or illegally by explicitly not paying the required social security tax — informal establishments accounted for 30 percent of total Mexican manufacturing employment in 2008. Informal establishments in India and Mexico are significantly smaller than formal establishments. Figure 3 plots the distribution of establishment size in India and Mexico for informal and formal establishments. The typical informal establishment employs four workers in India and about 10 workers in Mexico, while formal establishments employ 20 workers on average in India and about 50 in Mexico.

All of this suggests that a proximate reason poor countries are poor is that modern formal firms find it difficult to obtain resources and/or capture market share. We still have a very limited understanding, however, of the exact forces behind the prevalence of informal and unproductive establishments. The Inter-American Development Bank, and Levy in particular, have argued that the patterns of informality, at least in Latin America, are due to the nature of the tax systems and social-protection programs.[12] A glance at the World Bank *Doing Business* indicators suggests that high costs of doing business may also be a factor.

THE SIZE OF INFORMAL FIRMS
Informal firms typically employ fewer workers

Source: C. Hsieh and P. Klenow, NBER Working Paper No. 18133

Figure 3

• **Social Forces May Distort The Allocation of Talent across Occupations and Firms**

These forces may reflect the legacy of gender and race discrimination in the U.S., caste discrimination in India, discrimination based on economic and ethnic background in some Latin American countries, or the effect of second-generation managers in family firms in many countries.[13] In the U.S., for example, the fraction of white women who work in high-skilled occupations — lawyers, doctors, engineers, scientists, architects, and executives or managers — increased from six percent in 1960 to 21 percent in 2008.[14] The share of black men who work in those high-skilled occupations increased from three percent in 1960 to 15 percent in 2008. By comparison, the share of white men in these occupations increased much more modestly, from 20 percent in 1960 to 25 percent by 2008. We estimate that the convergence in occupations between white men and the other groups might explain around 15 percent of the growth in aggregate productivity in the U.S. from 1960 to 2008.
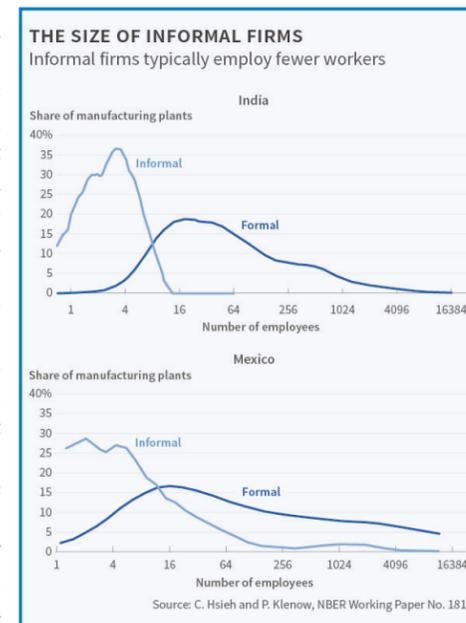
Such forces are surely present, and perhaps even more important, in other countries. In India a generation ago, women from disadvantaged castes completed 4.1 years less schooling than women in non-disadvantaged castes; disadvantaged-caste men completed 2.3 years less school than men from non-disadvantaged castes.[15] The gap is still present today, but has shown a marked

decline. In 2004, the caste schooling gap for women had declined to 2.2 years; for men it had declined to 1.7 years.

• **Internal Trade Barriers Likely Play an Important Role in the Efficiency of Resource Allocation**

Internal trade barriers can be very large in poor countries such as Ethiopia and Nigeria.[16] In the agricultural context, there is evidence that lowering transportation costs led to large gains in agricultural productivity in the U.S. historically, and in places such as Sierra Leone more recently.[17] In the industrial sector, internal trade costs could be similarly costly. If access to input and output markets is critical for modern industrial firms, then barriers that make it difficult for firms to access these networks will affect the incentives of firms to invest in better technology.

This review only touches on a few of the myriad micro forces that may matter for macro productivity. Low allocative efficiency may be "death by a thousand cuts."[18] If so, no magic bullet or single policy reform is likely to transform productivity. We suspect there is no substitute for investigating and quantifying the micro sources of low allocative efficiency one by one.

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NBER News

CRIW Members Elect Abraham

The members of the Conference on Research in Income and Wealth (CRIW) have elected Research Associate Katharine Abraham of the University of Maryland, a former Commissioner of the Bureau of Labor Statistics (1993–2001) and member of the President's Council of Economic Advisers (2011–13), to succeed Charles Hulten as CRIW chair. The CRIW, whose members number more than 300 researchers from colleges and universities, think tanks, and government statistical agencies, organizes an annual conference on economic measurement as well as a session at the NBER Summer Institute.

2015 Awards and Honors

Alberto Alesina, Carlo Favero, and **Francesco Giavazzi** won the Addington Prize for Measurement for their paper on "The Output Effect of Fiscal Consolidations," which is forthcoming in the Journal of International Economics.

Lee J. Alston was named President of the Economic History Association.

Ernst R. Berndt was awarded an honorary doctorate by the Faculty of Economics and Business at the University of Basel.

Francesco Bianchi was awarded the Wim Duisenberg Research Fellowship by the European Central Bank.

David E. Bloom was named an Andrew Carnegie Fellow by the Carnegie Corporation of New York.

Eric Budish received an Alfred P. Sloan Research Fellowship. He also received the 2015 Utah Winter Finance Conference Best Paper Award for "The High-Frequency Trading Arms Race: Frequent Batch Auctions as a Market Design Response," with Peter Cramton and John Shim.

Gary Chamberlain was named a Distinguished Fellow of the American Economic Association.

Wesley Cohen's paper "Innovation and Learning: The Two Faces of R&D," with Dan Levinthal, published in 1989, was named one of the 13 most important papers published in The Economic Journal's 125-year history.

Janet Currie was elected President of the Eastern Economic Association.

Angus S. Deaton was elected to the National Academy of Sciences and received the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel.

Manasi Deshpande received the 2015 APPAM Best Dissertation Award, the 2015 Upjohn Institute Dissertation Award, and the 2016 NASI John Heinz Dissertation Award.

Susan Dynarski was named one of the Chronicle of Higher Education's top 10 influencers. She also received the NASPAA's Public Service Matters Spotlight Award, and a special tribute from Michigan Governor Rick Snyder.

Price Fishback was awarded the Jonathan Hughes Prize for Excellence in Teaching Economic History and the Arthur Cole Prize for Best Article in the Journal of Economic History for his paper with Valentina Kachanovskaya on "The Multiplier for Federal Spending in the States in the 1930s."

Kristin Forbes was awarded a Bicentennial Medal from Williams College, which recognizes "outstanding achievement in any field of endeavor."

Don Fullerton was named a Fellow of the Association of Environmental and Resource Economists (AERE), which recognizes "outstanding contributions to the advancement of the profession of environmental and resource economics."

Martin Gaynor was elected to the National Academy of Social Insurance.

Matthew Gentzkow was elected a Fellow of the American Academy of Arts and Sciences.

Jeffrey Clemens and **Joshua Gottlieb** were awarded the Kenneth J. Arrow Award for Best Paper in Health Economics from the International Health Economics Association for their paper "Do Physicians' Financial Incentives Affect Treatment Patterns and Patient Health?"

Gene Grossman was awarded The Onassis Prize in International Trade. The prize, which recognizes lifetime contributions to this field, is awarded by the Alexander S. Onassis Public Benefit Foundation, the Cass Business School of City University London, and the City of London.

Veronica Guerrieri was awarded the Bernácer Prize for her research applying search theory to explain the emergence of illiquidity and fire sales in different asset markets.

Takeo Hoshi received the Japanese Bankers Academic Research Promotion Foundation Award. This biennial award recognizes a Japanese economist who has made a significant academic contribution in the field of finance and economics.

Amit Khandelwal, Stelios Michalopoulos, and **Jonathan Vogel** received excellence awards in global economic affairs from the Kiel Institute for the World Economy.

Morris Kleiner was honored by the Labor and Employment Relations

Association for his lifetime contributions to the field of human resources and the employment relationship.

Arvind Krishnamurthy and **Annette Vissing-Jorgensen** received the Swiss Finance Institute outstanding paper award for their paper on "The Impact of Treasury Supply on Financial Sector Lending and Stability."

Edward E. Leamer was honored by the Berkeley Initiative for Transparency in the Social Sciences, which awarded the first Leamer-Rosenthal Prizes for Open Social Sciences. The prizes are named in part to recognize his work on sensitivity analysis and the resulting challenges facing social science research transparency.

Ron Lee was elected the 2016 International Population Association Laureate for outstanding contributions to in many subfields of demography.

Steve Lehrer received the Shanghai Thousand Talent for Foreign Experts award from the Shanghai municipal government.

Brigitte Madrian received the 2015 Retirement Income Industry Association Achievement in Applied Retirement Research Award.

Ulrike Malmendier received the Friedrich Wilhelm Bessel Research Award for Outstanding Research from the Alexander von Humboldt Foundation and the FMA Europe Best Paper award for her study of "M&A Negotiations and Lawyer Expertise." She was honored as a Thomson Reuter 2015 Highly Cited Researcher and received the Citation of Excellence by Emerald Management Reviews, recognizing her paper on "Who Makes Acquisitions? CEO Overconfidence and the Market Reaction" as one of the year's 50 best papers in management.

Arnaud Maurel received the 2015 Dennis J. Aigner Award from the *Journal of Econometrics*, recognizing the best empirical article published in the journal in a two-year period, for his joint paper with Xavier D'Haultfoeuille on "Inference on an Extended Roy Model, with an Application to Schooling Decisions in France."

Guido Menzio received the Carlo Alberto Medal, a biennial award recognizing an Italian economist under the age of 40 for outstanding research contributions.

Olivia S. Mitchell was named one of 2015's Top 10 Women Economists by the World Economic Forum.

Enrico Moretti received the Best Paper Prize from the *American Economic Journal: Applied Economics* for his paper on "Real Wage Inequality."

Robert Porter served as President of the Econometric Society.

James Poterba was elected to the National Academy of Sciences.

Paul Romer received the inaugural Innovations in Economic Education Award from the National Economics Teaching Association and Cengage Learning, recognizing advancement in the cause of economic education through new techniques and technology.

Juan Carlos Suárez Serrato received a Kauffman Junior Faculty Fellowship in Entrepreneurship Research.

Jesse Shapiro was the Malim Harding Visitor at the University of Toronto and delivered an invited lecture on "Big Data" at the 2015 World Congress of the Econometric Society.

Douglas Staiger was elected to the National Academy of Medicine.

Marie C. Thursby was named a Fellow of the American Association for the Advancement of Science (AAAS).

Reed Walker received the 2015 IZA Young Labor Economist Award for his paper on "The Transitional Costs of Sectoral Reallocation: Evidence from the Clean Air Act and the Workforce."

Michael Weisbach received the Fama-DFA prize for the best paper in capital markets and asset pricing published in the *Journal of Financial Economics,* for his paper on "Limited Partner Performance and the Maturing of the Private Equity Industry," with Berk Sensoy and Yingdi Wang. He also received the Brattle Group Prize for the best paper on corporate finance published in the *Journal of Finance* for "Borrow Cheap, Buy High? The Determinants of Leverage and Pricing in Buyouts" with Ulf Axelson, Tim Jenkinson, and Per Strömberg.

Eugene N. White was the Houblon-Norman Fellow at the Bank of England.

Heidi Williams received an Alfred P. Sloan Research Fellowship and a MacArthur Foundation Fellowship recognizing her research on innovation in health care markets.

Robert J. Willis received the Jacob Mincer Award from the Society of Labor Economists, recognizing lifetime contributions to the field of labor economics.

Conferences

25th NBER-TCER-CEPR Conference

The 25th NBER-TCER-CEPR Conference, "International Finance in the Global Markets," took place in Tokyo on December 16–17. This meeting was sponsored jointly by the Centre for Economic Policy Research in London, NBER, the Tokyo Center for Economic Research, the Center for Advanced Research in Finance, and the Center for International Research on the Japanese Economy. Organizers Kosuke Aoki and Shin-ichi Fukuda of the Tokyo University; Takeo Hoshi of Stanford University and NBER; and Takashi Kano of Hitotsubashi University chose these papers to discuss:

- **Gianluca Benigno**, London School of Economics, "Contagious Sudden Stops"

- **Hiro Ito**, Portland State University, and **Masahiro Kawai**, University of Tokyo, "Trade Invoicing in the Japanese Yen and the Deutsche Mark in the 1980s and 90s: Lessons for Renminbi Internationalization"

- **Anya Kleymenova**, University of Chicago; **Andrew Rose**, University of California, Berkeley, and NBER; and **Tomasz Wieladek**, Bank of England, "Does Government Intervention Affect Banking Globalization?" (NBER Working Paper No. 21981)

- **Charles Engel**, University of Wisconsin-Madison and NBER, "Macroprudential Policy under High Capital Mobility: Policy Implications from an Academic Perspective" (NBER Working Paper No. 20951)

- **Vahagn Galstyan**, **Philip Lane**, and **Rogelio Mercado**, Trinity College Dublin, and **Caroline Mehigan**, OECD, "The Holders and Issuers of International Portfolio Securities"

- **Shin-ichi Fukuda**, "Strong Sterling Pound and Weak European Currencies in the Crises: Evidence from Covered Interest Parity of Secured Rates" (NBER Working Paper No. 21938)

- **Ethan Ilzetzki** and **Keyu Jin**, London School of Economics, "The Puzzling Change in the International Transmission of U.S. Macroeconomic Policy Shocks"

- **Takashi Kano** and **Kenji Wada**, Hitotsubashi University, "The First Arrow Hitting the Currency Target: A Long-Run Risk Perspective"

- **Matteo Cacciatore**, HEC Montréal; **Fabio Ghironi**, University of Washington and NBER; and **Yurim Lee**, University of Washington, "Financial Market Integration, Exchange Rate Policy, and the Dynamics of Business and Employment in Korea"

Summaries of these papers are at: http://www.nber.org/confer/2015/TRIO15/summary.html

17th Annual Neemrana Conference

On December 18–20, the NBER, India's National Council for Applied Economic Research (NCAER), and the Indian Council for Research on International Economic Relations (ICRIER) sponsored a meeting in Neemrana, India, that included NBER researchers and economists from Indian universities, research institutions, and government departments.

NBER participants, listed in the order of their presentations, were: **Martin Feldstein** of Harvard University, **Anne Krueger** and **John Lipsky** of Johns Hopkins University, **Stephen P. Zeldes** of Columbia University, **Richard Portes** of London Business School, **Sebnem Kalemli-Ozcan** of the University of Maryland, **Hélène Rey** of London Business School, **Ravi Bansal** of Duke University, **Gita Gopinath** of Harvard University, **Nobuhiro Kiyotaki** of Princeton University, **Varadarajan V. Chari** of the University of Minnesota, **Esther Duflo** of MIT, **Ryan Kellogg** of the University of Michigan, **Edward L. Glaeser** of Harvard University, **Matthew Kahn** of the University of Southern California, **Justin McCrary** of the University of California, Berkeley, **Robert W. Staiger** of Dartmouth College, **Abhijit Banerjee** of MIT, and **Karthik Muralidharan** of the University of California, San Diego.

The topics discussed included: India and the world economy; global economic governance; international finance; monetary policy and exchange rate management issues; environmental regulation and climate change; urban economics and sustainability; international trade, manufacturing investment climate, and jobs; and education and skill development.

Economics of Digitization

An NBER Conference on the "Economics of Digitization" took place in Palo Alto on March 4. Research Associates Shane Greenstein of Northwestern University, Josh Lerner of Harvard University, and Scott Stern of MIT organized the program. These researchers' papers were presented and discussed:

- **Garrett A. Johnson**, University of Rochester; **Randall A. Lewis**, Netflix; and **Elmar I. Nubbemeyer**, Google, "Ghost Ads: Improving the Economics of Measuring Ad Effectiveness"

- **Timothy F. Bresnahan**, Stanford University and NBER, and **Xing Li** and **Pai-Ling Yin**, Stanford University, "Paying Incumbents and Customers to Enter an Industry: Buying Downloads"

- **Alexander White**, Tsinghua University, and **Glen Weyl**, Microsoft Research New England, "Insulated Platform Competition"

- **Leonard Nakamura**, Federal Reserve Bank of Philadelphia, and **Rachel Soloveichik**, Bureau of Economic Analysis, "Capturing the Productivity Impact of the 'Free' Apps and Other Online Media"

- **Bo Cowgill**, Columbia University, "Human Bias and Machine Learning: Evidence from Resume Screening"

- **Mitchell Hoffman**, University of Toronto; **Lisa B. Kahn**, Yale University and NBER; and **Danielle Li**, Harvard University, "Discretion in Hiring" (NBER Working Paper No. 21709)

- **Jean-François Houde** and **Katja Seim**, University of Pennsylvania and NBER, and **Peter W. Newberry**, Pennsylvania State University, "Sales Tax, E-commerce, and Amazon's Fulfillment Center Network"

- **Sree Ramaswamy**, McKinsey Global Institute, "Digital America: A Tale of the Haves and Have-Mores"

Summaries of these papers are at: http://www.nber.org/confer/2016/EoDs16/summary.html

Industrial Organization

The NBER's Program on Industrial Organization met in Palo Alto on January 29–30. Research Associates Philip Haile of Yale University and Katja Seim of the University of Pennsylvania organized the meeting. These researchers' papers were presented and discussed:

- **Matthew L. Gentry**, **Tatiana Komarova**, and **Pasquale Schiraldi**, London School of Economics, "Simultaneous First-Price Auctions with Preferences over Combinations: Identification, Estimation, and Application"

- **Marie-Laure Allain** and **Claire Chambolle**, École Polytechnique (Palaiseau); **Stéphane Turolla**, INRA (Rennes); and **Sofia Villas-Boas**, University of California, Berkeley, "The Impact of Retail Mergers on Food Prices: Evidence from France"

- **Steven Berry** and **Philip Haile**, Yale University and NBER, "Identification in Differentiated Products Markets" (NBER Working Paper No. 21500)

- **Amit Gandhi**, University of Wisconsin-Madison, and **Jean-François Houde**, University of Pennsylvania and NBER, "Measuring Substitution Patterns in Differentiated Products Industries"

- **Dominic Coey** and **Kane Sweeney**, eBay Research Labs, and **Bradley Larsen**, Stanford University and NBER, "The Bidder Exclusion Effect" (NBER Working Paper No. 20523)

- **A. Kerem Coşar**, Stockholm School of Economics; **Paul Grieco**, Pennsylvania State University; **Shengyu Li**, Durham University; and **Felix Tintelnot**, University of Chicago and NBER, "What Drives Home Market Advantage?" (NBER Working Paper No. 21583)

- **Anita Rao**, University of Chicago, and **Emily Y. Wang**, University of Massachusetts, Amherst, "Demand for 'Healthy' Products: False Claims in Advertising"

- **Anita Rao**, "Strategic R and D Investment Decisions in the Pharmaceutical Industry"

- **Fernando Luco**, Texas A&M University, "Who Benefits from Price Disclosure? Evidence from Retail Gasoline"

- **Jean-François Houde**; and **Yuya Takahashi** and **Ricard Gil**, Johns Hopkins University, "Preemptive Entry and Technology Diffusion in the Market for Drive-in Theaters"

- **Mitsukuni Nishida**, Johns Hopkins University, and **Nathan Yang**, McGill University, "Dynamic Franchising Decisions"

- **Mitsuru Igami** and **Kosuke Uetake**, Yale University, "Mergers, Innovation, and Entry-Exit Dynamics: The Consolidation of the Hard Disk Drive Industry, 1996–2015"

- **Tiago Pires**, University of North Carolina at Chapel Hill, and **Alberto Salvo**, National University of Singapore, "Cash-Constrained Households and Product Size"

- **Viplav Saini**, Oberlin College, "Entry, Exit, and Investment in Auction Markets"

- **Bradley Shapiro**, University of Chicago, "Informational Shocks, Off-Label Prescribing, and the Effects of Physician Detailing"

- **Yufeng Huang**, University of Rochester, "Learning by Doing and Consumer Switching Costs"

- **Amil Petrin** and **Boyoung Seo**, University of Minnesota, "Identification and Estimation of Discrete Choice Demand Models when Observed and Unobserved Product Characteristics are Correlated"

- **Frank Wolak**, Stanford University and NBER, "Designing Minimum-Risk Nonlinear Price Schedules for Water Utilities"

- **Mar Reguant**, Northwestern University and NBER, "Bounding Equilibria in Counterfactual Analysis"

- **Michael Dinerstein**, University of Chicago, and **Troy D. Smith**, RAND Corporation, "Quantifying the Supply Response of Private Schools to Public Policies"

- **Mark L. Egan**, University of Minnesota, and **Ali Hortaçsu** and **Gregor Matvos**, University of Chicago and NBER, "Deposit Competition and Financial Fragility: Evidence from the U.S. Banking Sector"

Summaries of these papers are at: http://www.nber.org/confer/2016/IOs16/summary.html

National Security

An NBER meeting on the economics of national security, directed by NBER President-Emeritus Martin Feldstein of Harvard University and Research Associate Eli Berman of University of California, San Diego, was held in Cambridge on February 11. These researchers' papers were presented and discussed:

- **Benjamin Crost**, University of Illinois at Urbana–Champaign; **Claire Duquennois**, University of California, Berkeley; **Joseph Felter**, Stanford University; and **Daniel I. Rees**, University of Colorado, Denver, "Climate Change, Agricultural Production and Civil Conflict: Evidence from the Philippines"

- **Mathieu Couttenier** and **Veronica Preotu**, University of Geneva, and **Dominic Rohner** and **Mathias Thoenig**, University of Lausanne, "The Violent Legacy of Victimization: Post-Conflict Evidence on Asylum Seekers, Crimes, and Public Policy in Switzerland"

- **Vera Mironova**, Harvard University; **Sam Whitt**, High Point University; and **Loubna Mrie**, Syrian researcher, "Grievances in Civil War Participation: Micro-Level Evidence from Syria"

- **Samuel A. Bazzi** and **Matthew Gudgeon**, Boston University, "Local Government Proliferation, Diversity, and Conflict"

- **Brian Duncan** and **Hani Mansour**, University of Colorado, Denver, and **Bryson Rintala**, U.S. Air Force Academy, "Weighing the Military Option: The Effects of Wartime Conditions on Career Pathways"

- **Ryan Brown** and **Andrea P. Velásquez**, University of Colorado, Denver; **Verónica Montalva**, Duke University; **Duncan Thomas**, Duke University and NBER, "Impact of Violent Crime on Risk Aversion: Evidence from the Mexican Drug War"

- **Alex Imas**, Carnegie Mellon University; **Michael A. Kuhn**, University of Oregon; and **Vera Mironova**, "A History of Violence: Field Evidence on Trauma, Discounting, and Present Bias"

Summaries of these papers are at: http://www.nber.org/confer/2016/ENSs16/summary.html

Labor Studies

The NBER's Program on Labor Studies, directed by David Card of the University of California, Berkeley, met in San Francisco on February 12. These researchers' papers were presented and discussed:

- **Giovanni Peri**, University of California, Davis, and NBER, and **Vasil Yasenov**, University of California, Davis, "The Labor Market Effects of a Refugee Wave: Applying the Synthetic Control Method to the Mariel Boatlift" (NBER Working Paper No. 21801)

- **Adriana D. Kugler**, Georgetown University and NBER; **Maurice Kugler**, IMPAQ International LLC; **Juan Saavedra**, University of Southern California; and **Luis Omar Herrera Prada**, Inter-American Development Bank, "Long Term Direct and Spillover Effects of Job Training: Experimental Evidence from Colombia" (NBER Working Paper No. 21607)

- **Sarena Goodman**, Federal Reserve Board, and **Adam Isen**, Department of the Treasury, "Un-Fortunate Sons: Effects of the Vietnam Draft Lottery on the Next Generation's Labor Market"

- **Eunice Han**, Wellesley College, "The Myth of Unions' Overprotection of Bad Teachers: Evidence from the District-Teacher Matched Panel Data on Teacher Turnover"

- **Alberto Abadie**, Harvard University and NBER; **Susan Athey** and **Guido Imbens**, Stanford University and NBER; and **Jeffrey Wooldridge**, Michigan State University, "Clustering as a Design Problem"

- **Sebastian Calónico**, University of Miami, and **Jeffrey Smith**, University of Michigan and NBER, "The Women of the National Supported Work Demonstration"

Summaries of these papers are at: http://www.nber.org/confer/2016/LSs16/summary.html

Entrepreneurship and Economic Growth

The NBER's Working Group on Entrepreneurship met in Durham, NC, on February 12. Research Associates David T. Robinson and Manuel Adelino of Duke University organized the meeting. These papers were discussed:

- **Can Tian**, Shanghai University of Finance and Economics, "Cyclical Patterns of Business Entry and Exit Dynamics in the U.S. Economy"

- **Yong Suk Lee**, Stanford University, "Entrepreneurship, Small Businesses, and Economic Growth in Cities"

- **Brian Baugh** and **Hoonsuk Park**, Ohio State University, and **Itzhak Ben-David**, Ohio State University and NBER, "Can Taxes Shape an Industry? Evidence from the Implementation of the 'Amazon Tax' "

- **Titan M. Alon**, Northwestern University; **David W. Berger**, Northwestern University and NBER; and **Robert C. Dent** and **Benjamin Pugsley**, Federal Reserve Bank of New York, "Older and Slower: The Startup Deficit's Lasting Effects on Productivity Growth"

- **Jorge Guzman**, MIT, and **Scott Stern**, MIT and NBER, "The State of American Entrepreneurship: Evidence from 15 States"

- **Mark Curtis**, Wake Forest University, and **Ryan Decker**, Federal Reserve Board, "Entrepreneurship and State Policy"

- **Konrad B. Burchardi**, Stockholm University; **Thomas Chaney**, Toulouse School of Economics; and **Tarek A. Hassan**, University of Chicago and NBER, "Migrants, Ancestors, and Investments" (NBER Working Paper No. 21847)

- **Jean-Noel Barrot**, MIT, and **Ramana Nanda**, Harvard University and NBER, "Labor Market Effects of Financing Frictions"

- **Sabrina T. Howell**, New York University, "Very Early Venture Finance: An Evaluation of Pitch Competitions"

Summaries of these papers are at: http://www.nber.org/confer/2016/EEGs16/summary.html

Economic Growth

An NBER meeting on economic growth, organized by Research Associate Ariel Burstein of the University of California, Los Angeles, and Faculty Research Fellow Nancy Qian of Yale University, was held in San Francisco on February 18. These researchers' papers were presented and discussed:

- **David de la Croix**, Université catholique de Louvain; **Matthias Doepke**, Northwestern University and NBER; and **Joel Mokyr**, Northwestern University, "Clans, Guilds, and Markets: Apprenticeship Institutions and Growth in the Pre-Industrial Economy"

- **Pablo Fajgelbaum**, University of California, Los Angeles, and NBER; **Eduardo Morales**, Princeton University and NBER; **Juan Carlos Suárez Serrato**, Duke University and NBER; and **Owen M. Zidar**, University of Chicago and NBER, "State Taxes and Spatial Misallocation" (NBER Working Paper No. 21760)

- **Francisco J. Buera**, Federal Reserve Bank of Chicago, and **Roberto Fattal-Jaef**, The World Bank, "The Dynamics of Development: Innovation and Reallocation"

- **Lutz Hendricks**, University of North Carolina at Chapel Hill, and **Todd Schoellman**, Arizona State University, "Human Capital and Development Accounting: New Evidence from Wage Gains at Migration"

- **Daron Acemoglu**, MIT and NBER; **Suresh Naidu**, Columbia University and NBER; **Pascual Restrepo**, MIT; and **James A. Robinson**, University of Chicago and NBER, "Democracy Does Cause Growth" (NBER Working Paper No. 20004)

- **Solomon M. Hsiang**, University of California, Berkeley, and NBER, and **Amir Jina**, University of Chicago, "The Causal Effect of Environmental Catastrophe on Long-Run Economic Growth: Evidence from 6700 Cyclones" (NBER Working Paper No. 20352)

Summaries of these papers are at: http://www.nber.org/confer/2016/EGCw16/summary.html

Economic Fluctuations and Growth

The NBER's Program on Economic Fluctuations and Growth met in San Francisco on February 19. Research Associates Ellen McGrattan of the University of Minnesota and Giorgio Primiceri of Northwestern University organized the meeting. These researchers' papers were presented and discussed:

- **Timo Boppart**, Stockholm University, and **Per Krusell**, Stockholm University and NBER, "Labor Supply in the Past, Present, and Future: A Balanced-Growth Perspective"

- **Greg Kaplan** and **Benjamin Moll**, Princeton University and NBER, and **Giovanni L. Violante**, New York University and NBER, "Monetary Policy According to HANK" (NBER Working Paper No. 21897)

- **Marcelo Veracierto**, Federal Reserve Bank of Chicago, "Adverse Selection, Risk Sharing, and Business Cycles"

- **Sumit Agarwal**, National University of Singapore; **Souphala Chomsisengphet**, Department of the Treasury; **Neale Mahoney**, University of Chicago and NBER; and **Johannes Stroebel**, New York University and NBER, "Do Banks Pass Through Credit Expansions to Consumers Who Want to Borrow?" (NBER Working Paper No. 21567)

- **Dongya Koh**, University of Arkansas; **Raül Santaeulàlia-Llopis**, Washington University in St. Louis; and **Yu Zheng**, City University of Hong Kong, "Labor Share Decline and Intellectual Property Products Capital"

- **Pedro Bordalo**, Royal Holloway, University of London; **Nicola Gennaioli**, Bocconi University; and **Andrei Shleifer**, Harvard University and NBER, "Diagnostic Expectations and Credit Cycles"

Summaries of these papers are at: http://www.nber.org/confer/2016/EFGw16/summary.html

Law and Economics

The NBER's Program on Law and Economics, directed by Christine Jolls of Yale University, met in Cambridge on March 4. These papers were discussed:

- **Claudia Möllers** and **Hans-Theo Normann**, Düsseldorf Institute for Competition Economics, and **Christopher Snyder**, Dartmouth College and NBER, "Communication in Vertical Markets: Experimental Evidence"

- **David Musto**, University of Pennsylvania, and **Jillian A. Popadak**, Duke University, "Who Benefits from Bond Market Modernization?"

- **Ye Cai**, Santa Clara University; **Jin Xu**, Virginia Polytechnic Institute and State University; and **Jun Yang**, Indiana University Bloomington, "Affiliated Corporate Donations and Director Independence"

- **Alex Edmans**, London Business School; **Luis Goncalves-Pinto**, National University of Singapore; **Yanbo Wang**, Sungkyunkwan University; and **Moqi Xu**, London School of Economics, "Strategic News Releases in Equity Vesting Months" (NBER Working Paper No. 20476)

- **Will S. Dobbie**, Princeton University and NBER, and **Jae Song**, Social Security Administration, "Debt Relief or Debt Restructuring? Evidence from an Experiment with Distressed Credit Card Borrowers"

- **Jesse Leary** and **Jialan Wang**, Consumer Financial Protection Bureau, "Liquidity Constraints and Budgeting Mistakes: Evidence from Social Security Recipients"

- **Alberto Galasso**, University of Toronto and NBER, and **Mark Schankerman**, London School of Economics, "Patent Rights and Innovation by Small and Large Firms" (NBER Working Paper No. 21769)

- **Itai Ater**, Tel Aviv University; **Yehonatan Givati**, Harvard University; and **Oren Rigbi**, Ben-Gurion University of the Negev, "The Economics of Rights: Does the Right to Counsel Increase Crime?"

- **A. Mitchell Polinsky**, Stanford University and NBER, "Prison Work Programs in a Model of Deterrence"

Summaries of these papers are at: http://www.nber.org/confer/2016/LEs16/summary.html

Monetary Economics

The NBER's Program on Monetary Economics met in New York on March 4. Faculty Research Fellows Olivier Coibion of the University of Texas at Austin and Eric T. Swanson of the University of California, Irvine, organized the meeting. These researchers' papers were presented and discussed::

- **Sydney C. Ludvigson**, New York University and NBER; **Sai Ma**, New York University; and **Serena Ng**, Columbia University, "Uncertainty and Business Cycles: Exogenous Impulse or Endogenous Response?" (NBER Working Paper No. 21803)

- **Stefania Albanesi**, Ohio State University; **Giacomo De Giorgi**, Federal Reserve Bank of New York; **Jaromir Nosal**, Boston College; and **Matthew Ploenzke**, Harvard University, "Credit Growth and the Financial Crisis: A New Narrative"

- **Marco Di Maggio**, Columbia University, and **Amir Kermani** and **Christopher Palmer**, University of California, Berkeley, "Unconventional Monetary Policy and the Allocation of Credit"

- **Ali Ozdagli**, Federal Reserve Bank of Boston, and **Michael Weber**, University of Chicago, "Monetary Policy through Production Networks: Evidence from the Stock Market"

- **Richard Crump**, **Stefano Eusepi**, **Andrea Tambalotti**, and **Giorgio Topa**, Federal Reserve Bank of New York, "Subjective Intertemporal Substitution"

- **Gabriel Chodorow-Reich**, Harvard University and NBER, and **Johannes Wieland**, University of California, San Diego, and NBER, "Secular Labor Reallocation and Business Cycles" (NBER Working Paper No. 21864)

Summaries of these papers are at: http://www.nber.org/confer/2016/MEs16/summary.html

Development of the American Economy

The NBER's Program on the Development of the American Economy, directed by Claudia Goldin of Harvard University, met in Cambridge on March 5. These papers were discussed:

- **Marcella Alsan**, Stanford University and NBER, and **Marianne H. Wanamaker**, University of Tennessee and NBER, "Tuskegee and the Health of Black Men"

- **Katherine Eriksson**, University of California, Davis, and NBER, and **Greg Niemesh**, Miami University, "The Impact of Migration on Infant Health: Evidence from the Great Migration"

- **Charles W. Calomiris**, Columbia University and NBER, and **Matthew S. Jaremski**, Colgate University and NBER, "Stealing Deposits: Deposit Insurance, Risk-Taking and the Removal of Market Discipline in Early 20th Century Banks"

- **Michael D. Bordo**, Rutgers University and NBER, and **Arunima Sinha**, Fordham University, "A Lesson from the Great Depression that the Fed Might have Learned: A Comparison of the 1932 Open Market Purchases with Quantitative Easing"

- **Peter Koudijs**, Stanford University and NBER, and **Laura Salisbury**, York University and NBER, "Bankruptcy and Investment: Evidence from Changes in Marital Property Laws in the U.S. South, 1840–50" (NBER Working Paper No. 21952)

- **Joseph P. Ferrie**, Northwestern University and NBER, and **Catherine Massey** and **Jonathan L. Rothbaum**, Bureau of the Census, "Do Grandparents Still Matter? Multigenerational Mobility in the U.S. from 1940–2013"

Summaries of these papers are at: http://www.nber.org/confer/2016/DAEs16/summary.html

Bureau Books

Innovation Policy and the Economy, Volume 16

Edited by Josh Lerner and Scott Stern
Cloth $60,

The papers in the sixteenth annual volume of the National Bureau of Economic Research (NBER) Innovation Policy group offer insights into the changing landscape of innovation by highlighting recent developments in the financing of innovation and entrepreneurship and in the economics of innovation and intellectual property.

The first chapter, by Ramana Nanda and Matthew Rhodes-Kropf, explores the process of experimentation in the context of financing of technology start-ups by venture capitalists. The second, by Yael Hochberg, also analyzes the role of entrepreneurial experimentation by systematically examining the rise of start-up accelerators. The third chapter, by Heidi Williams, studies the relationship between the strength of intellectual property rights and innovation. The fourth paper, by Fiona Scott Morton and Carl Shapiro, discusses recent changes to the patent system and whether they align the rewards from intellectual property with the marginal contributions made by innovators and other stakeholders. The final chapter, by Kevin Boudreau and Karim Lakhani, focuses on the potential use of field innovation experiments and contests to inform innovation policy and management. Together, these essays continue to highlight the importance of economic theory and empirical analysis in innovation policy research.

Josh Lerner is Chair of the Entrepreneurial Management Unit and the Jacob H. Schiff Professor of Investment Banking at Harvard Business School. He is an NBER research associate and codirector of the NBER's Productivity, Innovation, and Entrepreneurship Program. Scott Stern is the David Sarnoff Professor of Management and Chair of the Technological Innovation, Entrepreneurship, and Strategic Management Group at the MIT Sloan School of Management. He is an NBER research associate and director of the NBER's Innovation Policy Working Group.

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NATIONAL BUREAU OF ECONOMIC RESEARCH

1050 Massachusetts Avenue
Cambridge, Massachusetts 02138-5398
(617) 868-3900

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