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# NBER Reporter

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2008 Number 4

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## Program Report

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## The Program on Children

Jonathan Gruber\*

The impact of public policy on the well-being of children continues to be a major area of interest for policymakers. Likewise, the economics of children's issues continue to be a major area of research for members of the Children's Program at the NBER. This program brings together a group of researchers from across many different fields, including labor economics, public economics, industrial organization, econometrics, and development economics. These researchers come together to work on a diverse set of issues related to the well-being of children, and to present their work in annual meetings each spring and at the NBER's Summer Institute each summer.

Since my last report on the Children's Program four years ago, there has been rapid growth in our roster of members, including some of the most exciting young economists in the profession. The number of Working Papers in the last full year before this report, 2007, was almost 40 percent higher than in the last full year before my previous report, 2003. Moreover, there has been a growing diversity of topics addressed by Program researchers, making this summary even more challenging! In this report, I focus on the contributions of this group of researchers to eight areas over the past four years: intergenerational linkages between parent and child; the impact of early life circumstances on later child outcomes; fertility and family structure; child health; children in developing economies; public policies (particularly child care and preschool) and child welfare; risky behavior by and around youths; and education.

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\* Gruber directs the NBER's Program on Children and is a Professor of Economics at MIT. In this article, the numbers in parentheses refer to NBER Working Papers.

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## Intergenerational Linkages

One of the major determinants of the well-being of children is the decisions made by, and changes imposed on, their parents. Over the past four years, a number of researchers in the Children's Program have explored very interesting aspects of this intergenerational linkage. One important area is maternal time inputs to newborns. John Cawley and Feng Liu (13609, 13600) find that employed women spend less time reading to their children and helping with homework, as well as less time cooking and more use of prepared meals. However, Michael Baker and Kevin Milligan (13188, 13826) find that expanded maternity leave, while increasing both maternal time at home and use of breastfeeding, did not have measurable impacts on child development outcomes or health.

Potential improvements in child outcomes from additional parental education or income also are important. Lucia Breirova and Esther Duflo (10513) find that more education for both mothers and fathers in Indonesia led to lower child mortality. Gordon Dahl and Lance Lochner (11279) find that family income increases attributable to the Earned Income Tax Credit lead to improved student test scores. And Philip Oreopolous, Marianne Page, and Ann Huff Stevens (11587) find that children with a parent displaced from a job have lower long-run earnings themselves.

In related studies, Janet Currie and Enrico Moretti (11567) find strong intergenerational correlations in the birth weight of mothers and children. Bruce Sacerdote (10894) compares adoptees to their biological siblings and finds that transmission from parent to child of education, income, height, and obesity are much higher for biological children, but that transmission of drinking and smoking is comparable in both groups. Sandra Black, Paul Devereux, and Kjell Salvanes (13336) use data from Norway to document that planned larger family sizes have little impact on child IQ, but that unplanned increases in family size through twin births do lead to lower IQ among existing children. Patricia Anderson, Kristin Butcher, and Diane Schanzenbach (13479) study the intergenerational correlation of obesity and find that it has increased since the 1970s. And one study provides intriguing evidence of transmission in the other direction: Ebonya Washington (11924) finds that legislators who

have daughters are more likely to vote in favor of women's rights than are those who have sons!

## Long-Run Impacts of Early Childhood Life Events

In addition to the intergenerational linkages between parent and child, another major influence on the life course of individuals is their early childhood experiences. A particular area of innovation over the past four years has been the study of interesting early life influences and how they affect the life course. Here the research has focused on two questions: First, how do child health conditions affect the life course? Oreopolous, Mark Stabile, Randy Walld, and Leslie Roos (11998) compare siblings to show that those in poorer health as infants have lower educational attainment and are more likely to end up on welfare. Black, Devereux, and Salvanes (11796, 10720) use birthweight variation across twin pairs to show that the twin weighing less at birth has lower IQ, education, and earnings later in life; they also show that increases in family size because of twin births lead to lower educational attainment, but this appears to reflect birth-order effects (later children receive less education) rather than family size effects per se. At a cohort level, Carlos Bozzoli, Angus S. Deaton, and Climent Quintana-Domeque (12966) find that groups with higher mortality rates have lower height as adults, consistent with a "scarring" effect of youth disease. And Anne Case, Christina Paxson, and coauthors (12667, 13495) continue to provide evidence that the income gradient in children's health becomes steeper as children age.

Second, what are the long-run effects of negative childhood shocks? Abhijit Banerjee, Duflo, Gilles Postel-Vinay, and Timothy M. Watts (12895) study the impact of a negative income shock from insect attacks in the wine-growing region of France in the late nineteenth century; they find that children born in regions that suffered income losses were shorter later in life but oth-

erwise in no worse health. Jessica W. Reyes (13097) shows that the state-specific variations in the reduction of lead used in gasoline is strongly associated 20 years later with variations in youth crime. David M. Cutler, Winnie Fung, Michael Kremer, and Monica Singhal (13539) show that malaria eradication in India led to long-run gains in literacy and primary school completion rates. Douglas Almond, Lena Edlund, and Marten Palme (13347) show that Swedish children exposed in utero to higher radiation levels from the Chernobyl accident had much worse schooling outcomes later in life. And Almond, Edlund, Hongbin Li, and Junsen Zhang (13384) find that fetal exposure to acute malnutrition during the Chinese famine of 1959–61 was associated with a wide range of worse outcomes later in life.

## Fertility and Family Structure

Since the inception of the Children's Program, a major focus of the research by Program affiliates has been the determinants and implications of fertility decisions and family structure; innovative work in this area has continued over the past four years. A number of these studies investigate the determinants and implications of marriage and divorce decisions. Dahl and Moretti (10281) show that a strong preference for sons leads couples with daughters to be more likely to divorce, and that unwed mothers carrying a boy are more likely to marry in the future. Dahl (11328) uses variation in state laws regulating the age at which individuals are allowed to drop out of school, work, and marry to show that women who marry earlier in life are more likely to live in poverty. Keith Finlay and David Neumark (13928) show that for mothers who are less likely to marry because of higher incarceration rates among potential spouses, there is little negative impact (and perhaps positive impacts) on the outcomes of their children. And Betsey Stevenson and Justin Wolfers (12944) provide a comprehensive review of trends in marriage and divorce and their determinants over the past 150 years.

Other studies in this area focus on the determinants of fertility and abortion decisions. Alma Cohen, Rajeev Dehejia, and Dmitri Romanov (13700) find that government subsidies for childbirth in Israel significantly increased fertility. Melissa Kearney and Phillip B. Levine (13045, 13436) find that expanded access to family planning services under public insurance programs reduced teen births by over 4 percent, and that this was accomplished via greater use of contraception; they also find that women who grow up disadvantaged are much more likely to give birth as teens. Elizabeth Ananat, Levine, Douglas Staiger, and I (12150) show that cohorts with higher rates of abortion have much improved longer-term outcomes, including more education and lower odds of being a single parent, while Ananat and Dan Hungerman (13402) find that the availability of birth control pills led to falls in short-term fertility for young women.

## Child Health

Another major area of activity for the Program has been extensive investigation of the broad determinants of child health. Almond and Joseph J. Doyle, Jr. (13877) use the fact that a child born just before midnight receives almost one full day less of hospital care than one born just after midnight to show that there are no health benefits to the infant from the longer hospital stay. Currie and Stabile (10435) find that Attention Deficit Hyperactivity Disorder (ADHD), the most common child mental health problem, is associated with delinquency, grade repetition, and lower test scores; these findings are confirmed and extended by Jason Fletcher and Barbara Wolfe (13474). Jens Ludwig, Dave Marcotte, and Karen Norberg (12906) use data across 26 countries to show that increased sales of antidepressants are associated with lower suicide rates. Robert Kaestner and Xin Xu (12113) show that the increase in female sports participation mandated by Title IX had strongly beneficial health impacts for adolescent girls. Currie and Matthew



Neidell (10251) find that reductions in air pollution in California during the 1990s saved over 1000 infant lives. Anderson and Butcher (11177) show that schools under financial pressure are more likely to adopt unhealthy food policies, resulting in an increase in body mass index for youths.

A particularly important determinant of children's health is public insurance policies towards children: Anna Aizer (12105) shows that information and administrative costs are barriers to low-income children receiving the public insurance to which they are entitled, and that reducing those barriers increases insurance coverage and improves health. Aizer, Currie, and Moretti (10429) show that mandatory managed care in Medicaid programs reduced the quality of prenatal care and increased poor birth outcomes.

## Children in Developing Countries

A particularly exciting development in the Children's Program over the past several years has been the growth in studies exploring the welfare of children in developing economies. As reviewed by Duflo, Rachel Glennerster, and Kremer (333T), a novel feature of many of these studies is the use of field experiments to assess the causal impact of policy interventions. Felipe Barrera-Osorio, Marianne Bertrand, Leigh Linden, and Francisco Perez-Calle (13890) evaluate cash transfers conditioned on school attendance in Colombia, and find that these transfers increase attendance and graduation rates; incentives for graduation and matriculation are found to be particularly important. Banerjee, Shawn Cole, Duflo, and Linden (11904) demonstrate strong test-score improvements among children in India from programs providing remedial education and computer-assisted learning. Duflo and Rema Hanna (11880) show that a financial incentive to reduce teacher absenteeism in India led to both increased teacher attendance and improved student outcomes. And Kremer, Edward Miguel,

and Rebecca Thornton (10971) find that a merit scholarship program for adolescent girls in Kenya led to significant gains in exam scores that persisted even after the scholarship had ended.

Other studies in this area have explored some of the central issues in development. Eric Edmonds (12926) reviews the explosion of work on child labor in developing countries; he also shows (10265) that income transfers to households in South Africa led to less child labor, while he and Nina Pavcnik (10317) show that free trade leads to higher incomes and lower child labor in developing nations. Ashlesha Datar, Arkadipta Ghosh, and Neeraj Sood (13649) show that villages in India with higher mortality rates invest less in newborns, while Duflo and Christopher Udry (10498) show that a shift in family resources from men towards women leads to more expenditures on food and education and less on alcohol and tobacco. And, Grant Miller (11704) finds that family planning in Colombia led to reduced fertility and education and income gains for young women.

## Public Policies and Child Welfare

There are dozens of policy interventions in the United States and elsewhere that have either intended or unintended consequences for child development, and many studies in the Children's Program have explored the impacts of these interventions. Some of these studies focus on interventions targeted to low-income families. Neeraj Kaushal, Qin Gao, and Jane Waldfogel (12624) study the impact of welfare reform on family expenditure patterns and show that there is an increase in spending on work-related items, but not on child learning or enrichment activities. Ted Joyce, Robert Kaestner, Sanders Korenman, and Stanley Henshaw (10214) show that "family caps" on welfare benefits have little impact on fertility decisions. Mark Duggan and Melissa Kearney (11568) show that participation in the child SSI program (which provides cash resources

to disabled children) leads to increased household income and a reduction in child poverty. But Joyce, Diane Gibson, and Silvie Colman (10796) find relatively limited impacts of maternal participation in the WIC program (which provides food to low-income pregnant women and children) on fetal growth.

A particular focus of research in this area has been on childcare and pre-school availability. Erdal Tekin (10459) finds that childcare subsidies lead to higher labor supply among single mothers. V. Joseph Hotz and Mo Xiao (11873) find that minimum quality regulations in childcare centers deter entry and reduce availability of childcare options. Michael Baker, Kevin Milligan, and I (11832) study the introduction of "\$5/day child care" in Quebec, and find that it led to more use of childcare, higher maternal labor supply, and worse child behavioral outcomes. Katherine Magnuson, Christopher Ruhm, and Jane Waldfogel (10452) find that pre-kindergarten programs are associated with short-run improvement in test scores, but also a long-run increase in behavioral problems. On the other hand, Jens Ludwig and Douglas Miller (11702) find that availability of publicly provided pre-school through the Head Start program led to lower child mortality at ages 5–9, and Ludwig and Phillips (12973) find that the benefits of Head Start exceed the costs. David Blau and Janet Currie (10670) provide a comprehensive review of childcare arrangements in the United States.

## Risky Behaviors Among and Around Youth

The final topic of considerable focus among Children's Program researchers has been risky behaviors by youths — and by those around them who affect their lives. Michael S. Visser, William T. Harbaugh, and Naci H. Mocan (12507) use experimental evidence from the laboratory to show that young people are rational and responsive to incentives in their criminal decisions, such as how much to steal. Mocan and Erdal Tekin

(12019) show that being very attractive reduces a young adult's propensity for criminal activity, while being unattractive increases it. Mark Coppejans, Donna Gilleskie, Holger Sieg, and Koleman Strumpf (12156) show that youths' demand for cigarettes is forward looking, and that they are less likely to smoke when the price of cigarettes is more volatile. Sara Markowitz, Robert Kaestner, and Michael Grossman (11378, 10459) show that increased alcohol use among teens does not change the odds of sexual activity, but does lead to lower contraceptive use; they also find that policies to reduce drinking lead to lower rates of sexually transmitted diseases. Pinka Chatterji and Jeff DeSimone (11337) find that binge drinking by youths is associated with lower probabilities of high school graduation, while DeSimone and Amy Wolaver (11035) find that binge drinking leads to lower grades. Christopher Carpenter and Carolos Dobkin (13374) find that there is a sharp increase in mortality right at age 21 when drinking becomes legal. Tekin and Markowitz (11238) show that suicidal urges among young people decrease the investment that they make in work or schooling.

Much of the risk facing youths also comes from their environment and the decisions of the adults around them. Jeffrey R. Kling, Jens Ludwig, and Lawrence F. Katz (10777) study the important Moving to Opportunity demonstration that randomly moved families out of public housing projects; they find that moving to lower-poverty areas reduces arrests among female youth for both violent and property crimes, while for males violent crimes fall but property crimes rise. Currie and Tekin (12171) use a variety of data strategies to find strong evidence that the mistreatment of children leads them to later engage in criminal activities. Doyle (13291) uses the fact that children at risk of foster care are randomly assigned to case managers, some of whom have a much higher propensity than others to place them in foster care, to show that children placed in foster care have somewhat higher arrest rates later

in life. Aizer (13773) shows that interacting with violent peers increases violence among urban youths. But Matthew Gentzkow and Jesse Shapiro (12021) find that increased preschool exposure to television (because of differential introduction rates of television in the United States) actually *raises* average test scores among youths, and Dahl and Stefano DellaVigna (13718) find that the release of violent movies *lowers* the incidence of youth violence.

## Education

The economics of education remains the main area of focus for researchers affiliated with the Children's Program. Since this work will be summarized independently in a Program Report on the Education Program by its Director Caroline M. Hoxby, I will only briefly discuss the large amount of work in this area.

This past year researchers have made important contributions in five central areas. The most activity has been around evaluating state and federal efforts to increase school accountability and to promote school choice. Eric A. Hanushek and Margaret Raymond (10591) provide an overview of state accountability efforts and find improved student performance, although papers by Neal and Schanzenbach (13293), David N. Figlio (11193), and Brian Jacob (12817) find other responses by schools and students that undercut these gains.

The next step in educational reform, beyond accountability, is to move to free school choice and perhaps even vouchers, whereby parents can bring their public tax dollars to whatever school they choose rather than just the local school. Justine S. Hastings, Thomas J. Kane, and Douglas O. Staiger (11805, 12145) and Hastings, Richard VanWeeden, and Jeffrey Weinstein (12995) use unique data from North Carolina on parent's school choice preferences to explore the role of information in public school choice. Julie B. Cullen and Brian Jacob (13443) find that students winning lotteries to attend higher quality schools in

the Chicago Public School system do not see any improvement in performance, while Joshua Angrist, Eric Bettinger, and Michael Kremer (10713) showed very positive long-run effects of school choice in Colombia.

Another set of papers provided compelling evidence on the impact of a host of interventions in the educational process. For example, Cecelia E. Rouse, Alan B. Krueger, and Lisa Markham (10315) find that a popular computer program for improving writing skills had little positive impact; Brian Jacob and Lars Lefgren (13514) find that grade retention strategies lead to an increase in dropping out of school; and Black, Devereux, and Salvanes (10911) find that compulsory schooling laws lead to reduced teenage childbearing in both the United States and Norway.

In the last few years there was a particular focus on the determinants and implications of segregation among students. David Card and Krueger (10366) find that the abandonment of affirmative action in higher educational admissions decisions led to a very large drop in minority acceptance rates, but had little impact on the college-going of highly qualified minorities. Figlio (11195) finds that across siblings, the one whose name is associated more typically with lower socio-economic status tends to be graded worse by teachers. Thomas Dee (11660) finds that assignment to same-gender teachers improves the performance of both boys and girls in high school, while Florian Hoffman and Oreopolous (13182) find similar effects in a college setting. Card and Jesse Rothstein (12078) find that the black-white test score gap is highest in the most segregated school districts.

Finally, the Program also continues to focus on the all important higher education sector. Kane (10658) finds that allowing residents of the District of Columbia to use in-state tuition in attending colleges in Maryland and Virginia doubled the number of D.C. residents attending college in those other states. Oreopolous, Till Van Wachter, and Andrew Heisz (12159) find that

graduating from college in a recession lowers earnings for eight to ten years thereafter. Angrist, Daniel Lang, and Oreopolous (12790) find that financial incentives for college students in Canada led to improved grades and college completion for female students. Rothstein and Rouse (13117) find that when a U.S. college moved from loans to direct grants to its students, students were willing to take much lower paying jobs.

And, Susan Dynarski (10357, 10470) discusses the pros and cons of tax subsidized savings accounts for college.

## Conclusions

The past four years have seen continued growth in the areas of interest and the depth of research produced by members of the Children's Program. The results are an important set of findings

that dramatically advance our understanding of child well-being. Moreover, the findings summarized here are only a part of the exciting research program being carried out by Program members. This policy-relevant work will continue to promote our understanding of children's well-being in the United States and around the world.

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## Research Summaries

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# Bossonomics? The Economics Of Management And Productivity

Nick Bloom and John Van Reenen\*

## Management and Productivity

Economists have long speculated on why such astounding differences in productivity exist between firms and plants within countries, even within the same narrow sector.<sup>1</sup> While the popular press and business schools have long stressed the importance of different management practices, empirical economists have had relatively little to say about management.<sup>2</sup> A major problem has been the absence of high quality management data that is measured in a consistent way across firms and countries.

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\* Nick Bloom is a Research Associate in the NBER's Programs on Economic Fluctuations and Growth, Monetary Economics, and Productivity, and an Assistant Professor of Economics at Stanford. John Van Reenen is a Research Associate in the NBER's Program on Labor Economics and a Professor of Economics at the London School of Economics. Their profiles appear later in this issue.

Despite this data constraint, heterogeneity in managerial and entrepreneurial ability has become the foundation for a wide range of literatures.<sup>3</sup> In many benchmark theories, it is assumed that management is an unobservable factor that varies across firms, driving productivity differences. In parallel, Mundlak labelled his fixed-effect differences in productivity as "unobserved managerial ability."<sup>4</sup>

## Measuring Management using Double-Blind Surveys

To address this lack of management data, we have been developing a methodology for measuring management practices.<sup>5</sup> We use an interview-based evaluation tool that defines and scores from one ("worst practice") to five ("best practice") 18 basic management practices. This evaluation tool was developed by an international consulting firm, and scores these practices in three broad areas:

- *Monitoring*: how well do companies track what goes on inside their firms, and use this for continuous improvement?
- *Target setting*: do companies set the right targets, track the right outcomes, and take appropriate action if the two don't tally?
- *Incentives*: are companies promoting and rewarding employees based on performance, and systematically trying to hire and keep their best employees?

To obtain accurate responses from firms, we interview production plant managers using a "double-blind" technique: managers are not told they are being scored or shown the scoring grid; they are only told they are being "interviewed about management practices for a research project." To run this blind scoring, we use open questions. For example, on the first monitoring question, we ask "tell me how you monitor your production process," rather than asking a closed question such as "do you moni-

tor your production daily [yes/no]”. We continue with open questions targeting actual practices and examples until the interviewer can make an accurate assessment of the firm’s practices. For example, the second question on that performance tracking dimension is “what kinds of measures would you use to track performance?”. The scoring grid for this performance tracking dimension is shown here as an example.

The other side of the double-blind technique is that interviewers are not told in advance anything about the firm’s performance. They are only provided with the company name, telephone number, and industry. Since we randomly sample medium-sized manufacturers (employing between 100 to 10,000 workers) who are not usually reported in the business press, the interviewers generally have no preconceptions about these firms.

To ensure high sample response rates and skilled interviewers, we hired MBA students to run interviews. We also obtained government endorsements for the surveys in each country covered, and positioned it as a “Lean manufacturing” interview with no requests for financial data. These steps helped to yield a 45 percent response rate which was uncorrelated with the (independently collected) performance measures.

Management Practice Dimension 4 (“Performance tracking”)		
Score 1	Score 3	Score 5
<b>Scoring grid</b>		
Measures tracked do not indicate directly if overall business objectives are being met. Tracking is an ad-hoc process (certain processes aren’t tracked at all).	Most key performance indicators are tracked formally. Tracking is overseen by senior management.	Performance is continuously tracked and communicated, both formally and informally, to all staff using a range of visual management tools.
<i>Sample firm</i>		
<i>A manager tracks a range of measures when he does not think that output is sufficient. He last requested these reports about 8 months ago and had them printed for a week until output increased again. Then he stopped and has not requested anything since.</i>	<i>At a firm every product is bar-coded and performance indicators are tracked throughout the production process. However, this information is not communicated to workers</i>	<i>A firm has screens in view of every line, to display progress to daily target and other performance indicators. The manager meets daily with the shop floor to discuss performance metrics, and monthly to present a larger view of the company goals and direction. He even stamps canteen napkins with performance achievements.</i>

## Management Practices across Firms and Countries

The bar chart in Figure 1 (page 8) plots the average management practice score across countries from the 6,000 interviews we carried out in survey waves from 2004 to 2008. This shows the United States has the highest management practice scores on average<sup>6</sup>, with the Germans, Japanese, and Swedes next, followed by a block of mid-European countries (France, Italy, the United Kingdom, and Poland), with Southern Europe and developing countries Brazil, China, Greece, and India at the bottom. In one sense this is not surprising because it approximates the cross-country spread of productivity. But in another sense it suggests management practices could play

an important role in determining country-level productivity. At the firm-level, better management practices are strongly associated with higher firm-level productivity, profitability, and survival<sup>7</sup>, suggesting they could play an equally important role in country-level productivity. Better management is also linked with improved employee work-life-balance and lower energy use, suggesting better management does not come at the expense of worker welfare or more pollution.<sup>8</sup>

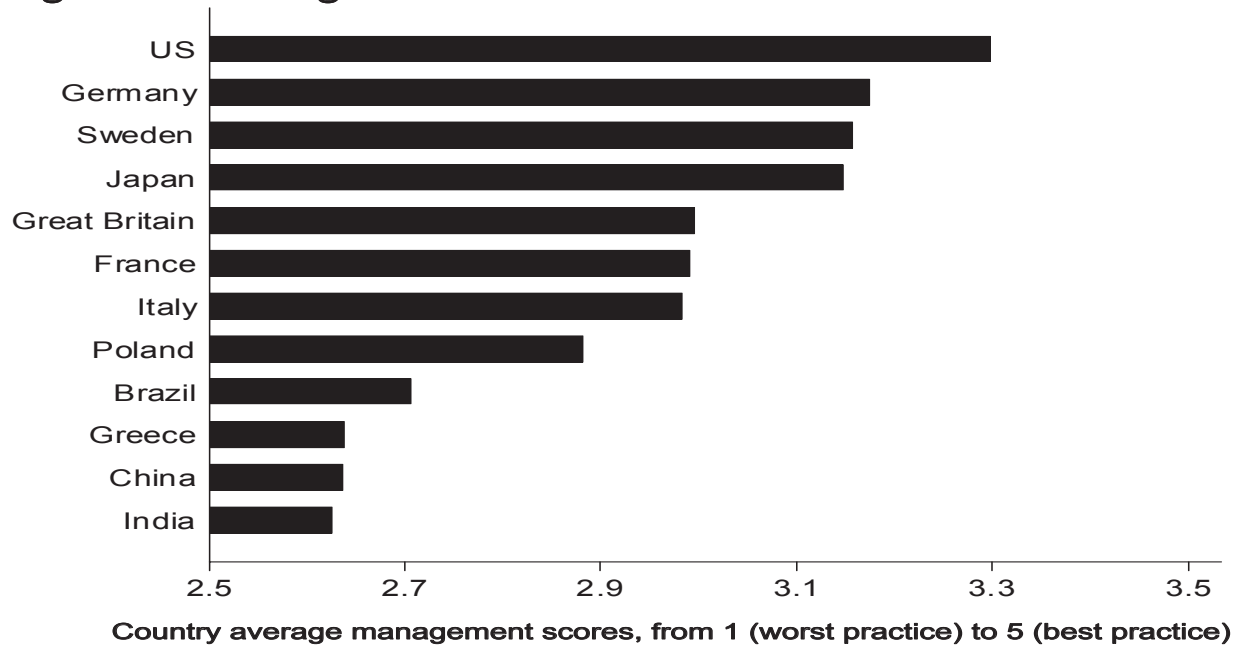
Of course the key question is why are management practices different across countries? Figure 2 (page 8) plots the firm-level histogram of management practices by country, and shows that management practices display tremendous within-country variation. So, much like productivity figures, within-country vari-

ation is far greater than cross-country variation. This figure also highlights that U.S. firms have the highest average management score because they have almost no density of firms with management practices below two. Thus, the infamously badly managed paper-supply firm “Dunder-Miiflin” from the TV show “The Office” is thankfully a rare U.S. exception.<sup>9</sup> In comparison India, which has the lowest cross-country management score, has a large mass of firms with extremely poor management practices (scores of two or less).

This raises two key questions which we are currently working on: Why do these variations in management practices exist, and to what extent do variations in management practices actually *cause* variations in productivity?

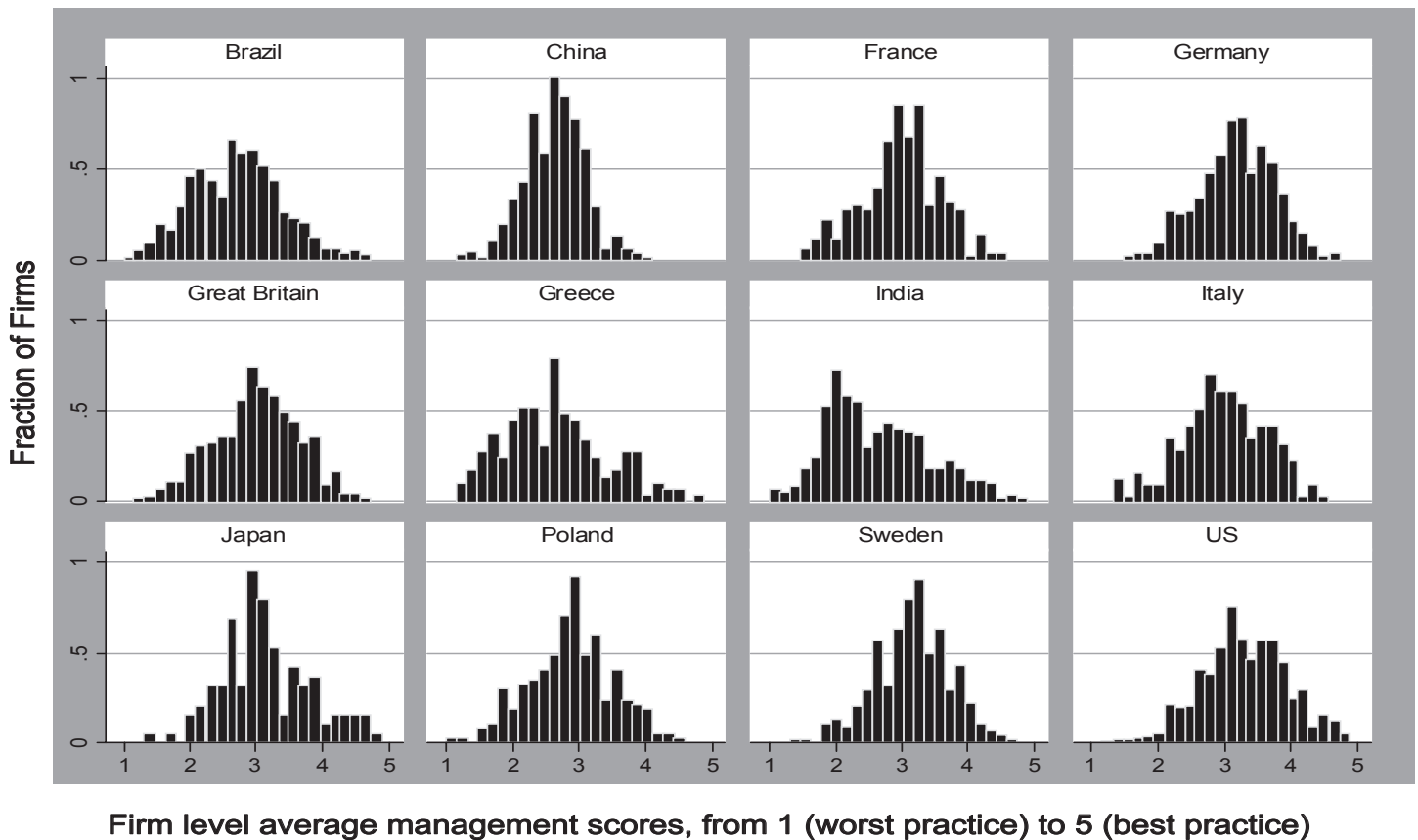


**Figure 1: Management Practice Scores Across Countries**



Averages taken across all firms within each country. 4423 observations in total.

**Figure 2: Management Practice Scores Across Firms**



## Why do Management Practices Vary So Much across Firms and Countries?

We have identified three key factors that appear to play an important role in shaping management practices — competition, family ownership, and multinational status.

*Product market competition* is associated with significantly better management practices. In particular, the tail of badly managed firms shrinks in highly competitive markets. Thus, the competitive product markets of the United States explain much of its lack of badly managed firms. In contrast, many product markets in India have limited competition because of entry barriers, trade regulations, and high transportation costs, enabling badly managed firms to persist.

We are currently investigating the mechanisms through which competition works to improve management. One possibility is Darwinian selection — high levels of competition should drive badly managed firms out of business more quickly. Another is by inducing higher levels of effort — tough product market competition may lead managers to work harder as the stakes are higher (slacking is more likely to lead to losses of market share and bankruptcy). As we follow up the initial cross-sectional firm surveys to convert this into panel data, we can investigate these different mechanisms.

*Firms that are both family owned and family managed* tend to be badly run on average.<sup>10</sup> This is true even after including a battery of econometric controls for country, industry, firm size, human and physical capital intensity. Looking at these family firms in more detail, it appears the worse managed firms are those in particular that hand down the position of CEO using the ancient practice of *primogeniture* (succession of the eldest son). To elicit this information, we asked the plant managers the question: “How was the CEO chosen, was he selected as the eldest son or by some other mechanism?” Surprisingly, in many countries, including Brazil, India, and the United Kingdom,

the answer was often selection by eldest son, while in others countries such as the United States and Sweden this was very rare. A number of factors, including traditions over leadership succession, estate tax breaks, and the external market for CEOs appear to drive these differences.

*Multinational and Export Status* also appears to play an important role in determining a firm’s management practices. One stylized fact is that multinationals have good management practices wherever they are located — so multinationals in the United States, Brazil, and India all appear to be well run. A second stylized fact is that some countries have relative managerial strengths and weaknesses — for example, the Japanese are better at monitoring and the Americans at incentives/people management — and their multinationals take this with them abroad. In other work with Rafaella Sadun, we show that U.S. multinational affiliates located in Europe were able to use their managerial advantage to make better use of information technology to raise productivity.<sup>11</sup> We argue that these managerial differences could account for about half of the superior productivity growth performance in the United States relative to Europe in the decade after 1995. A third stylized fact is that among domestic firms, those that export are better managed than non-exporters. Interestingly, these stylized facts are broadly consistent with a wide range of recent trade models.<sup>12</sup>

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<sup>1</sup> See, for example, L. Foster, J. Haltiwanger, and C. Syverson, “Reallocation, Firm Turnover, and Efficiency: Selection on Productivity or Profitability?” NBER Working Paper No. 11555, August 2005.

<sup>2</sup> Notable exceptions include A. Bartel, C. Ichinowski, and K. Shaw, “How Does Information Technology Really Affect Productivity? Plant-Level Comparisons of Product Innovation, Process Improvement, and Worker Skills,” NBER Working Paper No. 11773, November 2005; and S. Black and L. Lynch, “How to Compete: The Impact of Workplace Practices and Information Technology on Productivity,”

NBER Working Paper No. 6120, August 1997, and Review of Economics and Statistics, LXXXIII (3), (2001), pp.434–45.

<sup>3</sup> For example, R. Lucas, “On the Size Distribution of Business Firms,” *Bell Journal of Economics*, IX (2), (1978), pp. 508–23; B. Jovanovic “Selection and the Evolution of Industry,” *Econometrica*, L (3), (1982), pp. 649–70; H. Hoppenhayn, “Entry, Exit and Firm Dynamics in Long-Run Equilibrium,” *Econometrica*, LX (5), (1992), pp. 1127–50; or M. Melitz, “The Impact of Trade on Intra-industry Reallocations and Aggregate Productivity Growth,” NBER Working Paper No. 8881, April 2002, and *Econometrica*, LXXI (6), (2003), pp. 1695–725.

<sup>4</sup> Y. Mundlak, “Empirical Production Function Free of Management Bias,” *Journal of Farm Economics*, XLIII (1) (1961), pp. 44–56.

<sup>5</sup> See N. Bloom and J. Van Reenen, “Measuring and Explaining Management Practices across Firms and Countries,” NBER Working Paper No. 12216, May 2006, and *Quarterly Journal of Economics*, November 2007, pp. 1351–1408; and N. Bloom, R. Sadun, and J. Van Reenen, “Americans Do I.T. Better: U.S. Multinationals and the Productivity Miracle,” NBER Working Paper No. 13085, May 2007.

<sup>6</sup> We should note that all the co-authors of the management research are European.

<sup>7</sup> See N. Bloom and J. Van Reenen, “Measuring and Explaining Management Practices across Firms and Countries.”

<sup>8</sup> See N. Bloom, T. Kretschmer, and J. Van Reenen, “International Differences in the Business Practices and Productivity of Firms,” forthcoming in an NBER book, R. Freedman and K. Shaw, eds.; and N. Bloom, C. Genakos, R. Martin, and R. Sadun, “Modern Management: Good for the Environment or Just Hot Air?,” NBER Working Paper No. 14393, October 2008.

<sup>9</sup> We should note “The Office” originated in the UK, where a much larger tail of badly run firms exists. Interestingly, the UK was also the source of “Fawlty Towers,” another classic show about bad management practices.

<sup>10</sup> M. Bennedsen, K. Nielsen, F. Perez-Gonzales, and D. Wolfenzon, "Inside the Family Firm: the Role of Families in Succession Decisions and Performance", NBER Working Paper No. 12356, July 2006, uses gender of the founder's first-born child as an instrumental variable for family-run firms. They find that the OLS estimates actually underestimate how bad family firms are.

<sup>11</sup> See N. Bloom and J. Van Reenen, "Measuring and Explaining Management Practices across Firms and Countries", and N. Bloom, R. Sadun, and J. Van Reenen, "Americans Do I.T. Better: US Multinationals and the Productivity Miracle".

<sup>12</sup> See M. Melitz, "The Impact of Trade on Intra-industry Reallocations and Aggregate Productivity Growth"; E. Helpman, M. Melitz, and S. Yeaple,

"Export Versus FDI with Heterogeneous Firms", NBER Working Paper No. 9439, January 2003, and American Economic Review, Vol. 94, 2004, pp. 300–16; and A. Burstein and A. Monge, "Foreign Know-how, Firm Control, and the Income of Developing Countries", NBER Working Paper No. 13073, May 2007, forthcoming in Quarterly Journal of Economics.

## Banking Crises<sup>1</sup>

Charles W. Calomiris\*

The current global financial crisis grew out of banking losses in the United States related to subprime lending. How well do economists understand the origins of such crises and how they spread? Was this crisis something new or a replay of familiar historical phenomena? Will policy interventions be able to mitigate its costs? The history of banking crises provides informative perspectives on these and other important questions.

### Crises Are Not All the Same

When considering the history of banking crises, it is useful to distinguish between two phenomena associated with banking system distress: exogenous shocks that produce insolvency, and pressures on banks that arise from rapid withdrawals of debt or failures to rollover debt during "panics." These two contributors to

*\* Calomiris is a Research Associate in the NBER's Program on the Development of the American Economy and the Henry Kaufman Professor of Financial Institutions at Columbia University's School of International and Public Affairs. His profile appears later in this issue.*

distress often do not coincide. For example, in the rural United States during the 1920s, large declines in agricultural prices cause many banks to fail, often with high losses to depositors, but those failures were not associated with systemic panics.<sup>2</sup> In 1907, the opposite pattern was visible. The United States experienced a systemic panic, originating in New York, which was precipitated by small aggregate shocks but had large short-term systemic effects associated with widespread withdrawals of deposits. Although some banks failed in 1907, failures and depositor losses were not much higher than in normal times.<sup>3</sup> That crisis was resolved only after banks had suspended convertibility and after uncertainty about the incidence of the shock had been resolved.

The central differences between these two episodes relate to the information about the shocks producing loan losses. In the 1920s, the shocks were loan losses in agricultural banks, geographically isolated and fairly transparent. Banks failed without subsequent system-wide concerns. During 1907, although the ultimate losses for New York banks were small, the incidence of the shock was not

clear (loan losses reflected complex connections to securities market transactions, with uncertain consequences for some New York banks).

Sometimes, large loan losses and confusion regarding their incidence occur together. In Chicago in mid-1932, for example, large losses resulted in many failures and also in widespread withdrawals from banks that did not ultimately fail. Despite the confusion about the incidence of the shock, and the consequent widespread temporary disruptions to the financial system, the banks that failed were exogenously insolvent; solvent Chicago banks experiencing withdrawals did not fail. In other episodes, however, bank failures may have reflected illiquidity resulting from runs, rather than exogenous insolvency.<sup>4</sup>

Today's financial turmoil is closer to the Chicago experience in 1932 than to either the banking shocks of the 1920s or those of 1907.<sup>5</sup> The shock that prompted the turmoil was of moderate size (subprime and Alt-A loans totaled roughly \$3 trillion, including those on the balance sheets of Fannie Mae and Freddie Mac, and total losses are likely to generate total

losses of roughly half a trillion dollars), and its consequences were significant for both solvent and insolvent banks. Unlike the Chicago Panic, today's turmoil probably has produced the failures of financial institutions that were arguably solvent prior to their liquidity problems (for example, Bear Stearns).

Banking crises can differ according to whether they coincide with other financial events. Banking crises coinciding with currency collapse are called "twin" crises (as in Argentina in 1890 and 2001, Mexico in 1995, and Thailand, Indonesia, and Korea in 1997). A twin crisis can reflect two different chains of causation: an expected devaluation may encourage deposit withdrawal to convert to hard currency before devaluation (as in the United States in early 1933); or, a banking crisis can cause devaluation, either through its adverse effects on aggregate demand or by affecting the supply of money (when a costly bank bailout prompts monetization of government bailout costs). Sovereign debt crises can also contribute to bank distress when banks hold large amounts of government debt (for example, in the banking crises in the United States in 1861, and in Argentina in 2001).<sup>6</sup>

### Shifting Perceptions of Banking Crises and the Desirability of Government Protection

The consensus views regarding banking crises' origins (fundamental shocks versus confusion), the extent to which crises result from unwarranted runs on solvent banks, the social costs attending runs, and the appropriate policies to limit the costs of banking crises (government safety nets and prudential regulation) have changed dramatically, and more than once, over the course of the nineteenth and twentieth centuries. Historical experience played a large role in changing perspectives toward crises, and the U.S. experience had a disproportionate influence on thinking. Although panics were observed throughout world history (as early as Hellenistic Greece, and in Rome in 33 A.D.), prior to the 1930s, in

most of the world, banks were perceived as stable; large losses from failed banks were uncommon; banking panics were not seen as a great risk; and there was little perceived need for formal safety nets (for example, deposit insurance). In many countries, ad hoc policies among banks, and sometimes including central banks, to coordinate bank responses to liquidity crises (as, for example, during the failure of Barings investment bank in London in 1890), seemed adequate for preventing systemic costs from bank instability.

The unusual experience of the United States was a contributor to changes in thinking which led to growing concerns about banks runs, and the need for aggressive safety-net policies to prevent or mitigate runs. In retrospect, the extent to which U.S. banking instability informed thinking and policy outside the United States seems best explained by the size and pervasive influence of the United States; in fact, the U.S. crises were unique and reflected peculiar features of U.S. law and banking structure.

The U.S. Panic of 1907 (the last of a series of similar U.S. events, including 1857, 1873, 1884, 1890, 1893, and 1896) precipitated the creation of the Federal Reserve System in 1913 as a means of enhancing systemic liquidity, reducing the probability of systemic depositor runs, and mitigating the costs of such events.<sup>7</sup> This innovation was specific to the United States (other countries either had established central banks long before, often with other purposes in mind, or had not established central banks), and reflected the unique U.S. experience with panics—a phenomenon that the rest of the world had not experienced since 1866, the last British banking panic.

For example, Canada did not suffer panics like those of the United States and did not establish a central bank until 1935. Canada's early decision to permit branch banking throughout the country ensured that banks were geographically diversified and thus resilient to large sectoral shocks (like those to agriculture in the 1920s and 1930s), able to compete through the establishment of branches in rural areas (because of low overhead

costs of establishing additional branches), and able to coordinate the banking system's response in moments of confusion to avoid depositor runs (the number of banks was small, and assets were highly concentrated in several nationwide institutions). Outside the United States, coordination among banks facilitated systemic stability by allowing banks to manage incipient panic episodes to prevent widespread bank runs. In Canada, the Bank of Montreal occasionally would coordinate actions by the large Canadian banks to stop crises before the public was even aware of a possible threat.<sup>8</sup>

The United States, however, was unable to mimic this behavior on a national or regional scale. U.S. law prohibited nationwide branching, and most states prohibited or limited within-state branching. U.S. banks, in contrast to banks elsewhere, were numerous (for example, numbering more than 29,000 in 1920), undiversified, insulated from competition, and unable to coordinate their behavior to prevent panics.

The structure of U.S. banking explains why the United States uniquely had banking panics in which runs occurred despite the health of the vast majority of banks. The major U.S. banking panics of the postbellum era (listed above) all occurred at business cycle peaks, and were preceded by spikes in the liabilities of failed businesses and declines in stock prices; indeed, whenever a sufficient combination of stock price decline and rising liabilities of failed businesses occurred, a panic always resulted.<sup>9</sup> Owing to the U.S. banking structure, panics were a predictable result of business cycle contractions that, in other countries, resulted in an orderly process of financial readjustment.

The United States, however, was not the only economy to experience occasional waves of bank failures before World War I. Nor did it experience the highest bank failure rates, or banking system losses of that era. None of the U.S. banking panics of the pre-World War I era saw nationwide banking distress (measured by the negative net worth of failed banks relative to annual GDP) greater than the 0.1 percent loss of 1893. Losses were gen-



erally modest elsewhere, but Argentina in 1890 and Australia in 1893, the most severe cases of banking distress during the 1875–1913 era, suffered losses of roughly 10 percent of GDP. Losses in Norway in 1900 were roughly 3 percent of GDP and in Italy in 1893 roughly 1 percent of GDP. With the possible exception of Brazil (for which data have yet to be collected to measure losses), there were no other cases in 1875–1913 in which banking loss exceeded 1 percent of GDP.

Loss rates tended to be low because banks structured themselves to limit their risk of loss, by maintaining adequate equity-to-assets ratios, sufficiently low asset risk, and adequate asset liquidity. Most importantly, market discipline (the fear that depositors would withdraw their funds) provided incentives for banks to behave prudently. The picture of small depositors lining up around the block to withdraw funds has received much attention, but perhaps the more important source of market discipline was the threat of an informed (often “silent”) run by large depositors (often other banks). Banks maintained relationships with each other through inter-bank deposits and the clearing of public deposits, notes, and bankers’ bills. Banks often belonged to clearinghouses that set regulations and monitored members’ behavior. A bank that lost the trust of its fellow bankers could not long survive.<sup>10</sup>

This perception of banks as stable, as disciplined by depositors and inter-bank arrangements to act prudently, and as unlikely to fail, was common prior to the 1930s. The banking crises of the Great Depression changed that perception. U.S. bank failures resulted in losses to depositors in the 1930s in excess of 3 percent of GDP. Bank runs, bank holidays (local and national government-decreed periods of bank closure to attempt to calm markets and depositors), and widespread bank closure suggested a chaotic and vulnerable system in need of reform. The Great Depression saw an unusual raft of banking regulations and interventions, especially in the United States, many of which have subsequently been discredited as unwarranted and undesirable, includ-

ing restrictions on bank activities (the separation of commercial and investment banking, subsequently reversed in the 1980s and 1990s), and government insurance of deposits. Targeted bank recapitalizations were also implemented via the Reconstruction Finance Corporation, in an innovative program that proved quite successful at little cost to taxpayers.<sup>11</sup>

Academic perspectives on the Depression fueled the portrayal of banks as crisis-prone. The most important of these was the treatment of the 1930s banking crises by Milton Friedman and Anna J. Schwartz in their book, *A Monetary History of the United States* (1963). Friedman and Schwartz argued that many solvent banks were forced to close as the result of panics, and that fear spread from some bank failures to produce failures elsewhere. Their views that banks were inherently unstable, that irrational depositor runs could ruin a banking system, and that deposit insurance was a success, were particularly influential coming from economists known for their skepticism of government interventions.

Since the publication of *A Monetary History of the United States*, however, other scholarship has led to important qualifications of the Friedman-Schwartz view of 1930s’ bank distress, and particularly of the role of panic in producing distress.<sup>12</sup> Detailed studies of particular regions and banks’ experiences do not confirm the view that panics were a nationwide phenomenon during 1930 or early 1931, or an important contributor to nationwide distress until very late in the Depression (that is, early 1933). Regional bank distress often was localized and traceable to fundamental shocks to the values of bank loans. Indeed, recent scholarship in banking has emphasized that government protections of banks, including the U.S. federal deposit insurance, can undermine market discipline of bank risk taking, and contribute significantly to the risk of a banking crisis.

Interestingly, the theory behind the problem of destabilizing protection has been well-known for over a century, and was the basis for Franklin Roosevelt’s opposition to deposit insurance in 1933

(an opposition shared by the Fed, the Treasury, and Senator Carter Glass). Deposit insurance was seen as undesirable special-interest legislation designed to benefit small banks. Numerous attempts to introduce it failed to attract support in the Congress.<sup>13</sup> Deposit insurance removes depositors’ incentives to monitor and discipline banks, and frees bankers to take imprudent risks (especially when they have little or no remaining equity at stake, and see an advantage in “resurrection risk taking”). The absence of discipline also promotes banker incompetence, which leads to unwitting risk taking.

Empirical research on the banking collapses of the last two decades of the twentieth century has produced a consensus that the greater the protection offered by a country’s bank safety net, the greater the risk of a banking collapse.<sup>14</sup> Studies of historical deposit insurance reinforce that conclusion. Indeed, the basis for the opposition to federal deposit insurance in the 1930s was the disastrous experimentation with insurance in several U.S. states during the early twentieth century, which resulted in banking collapses in all the states that adopted insurance.<sup>15</sup>

## Macroeconomic Consequences

As macroeconomists increasingly have emphasized, when banks respond to losses, deposit outflows, and increased risk of loan loss by curtailing the supply of credit, that can aggravate the cyclical downturn, magnifying declines in investment, production, and asset prices, whether or not bank failures occur. Recent research explores the linkages among bank credit supply, asset prices, and economic activity, and focuses in particular on the adverse macroeconomic consequences of “credit crunches” that result from banks’ attempts to limit their risk of failure.<sup>16</sup>

This new literature provides evidence in support of a “shock-and-propagation” approach to understanding the contribution of financial crises to business cycles. This approach has empirical implications that can distinguish it from other theories of the origins, propagation, and con-

sequences of bank distress. For example, this approach helps us to understand why it was that during previous severe banking panics in the United States, in the face of severe asymmetric-information problems and associated adverse-selection costs of potential bank equity offerings in the wake of banking crises, it was prohibitive for banks to issue new equity in support of continuing lending. Interestingly, following the subprime shock, nearly \$500 billion of new capital was raised prior to any announcement of public injections of funds. This unusual behavior reflected improvements in the structure of the U.S. banking system since the 1980s, which resulted from nationwide branching and the diversification of banking income through the deregulation of bank activities, which mitigated problems of adverse selection (in comparison with the 1930s or the 1980s). Although it is sometimes wrongly believed that deregulation promoted the recent instability of banks, in fact subprime lending and securitization were in no way linked to deregulation, and whatever prudential regulatory failures attended the subprime boom and bust, the last decade has seen substantial increases in those regulations, not a relaxation of prudential regulation.<sup>17</sup>

The shock-and-propagation approach to understanding the origins and transmission of banking crises also implies that regulatory policy and policy interventions that are targeted to respond to the shocks buffeting banks (like the bank recapitalizations recently employed by the G7 countries) can be used very effectively to offset the harmful macroeconomic consequences of shocks to banks' balance sheets, just as the Reconstruction Finance Corporation's preferred stock purchases helped to stabilize the banking sector and restart the flow of credit after 1933.<sup>18</sup>

<sup>1</sup> A longer treatment of many of the issues surveyed in this article appears as C. W. Calomiris, "Bank Failures in Theory and History: The Great Depression and Other 'Contagious' Events," NBER Working Paper No. 13597, November 2007.

<sup>2</sup> C. W. Calomiris, "Do 'Vulnerable'

*Economies Need Deposit Insurance? Lessons from the U.S. Agricultural Boom and Bust of the 1920s,"* in *If Texas Were Chile: A Primer on Banking Reform*, P. Brock, ed., ICS Press, 1992, pp. 237–314, 319–28, and 450–8.

<sup>3</sup> C. W. Calomiris and G. Gorton, "The Origins of Banking Panics: Models, Facts, and Bank Regulation," in *Financial Markets and Financial Crises*, R. G. Hubbard, ed., University of Chicago Press, 1991, pp. 109–73. See also R.F. Bruner and S. D. Carr, *Money Panic: Lessons from the Financial Crisis of 1907* (2007).

<sup>4</sup> C. W. Calomiris and J. R. Mason, "Contagion and Bank Failures During the Great Depression: The June 1932 Chicago Banking Panic," NBER Working Paper No. 4924, November 1994, and *American Economic Review* 87, December 1997, pp. 863–83.

<sup>5</sup> C. W. Calomiris, "The Subprime Turmoil: What's Old, What's New, and What's Next," in "Maintaining Stability in a Changing Financial System," Federal Reserve Bank of Kansas City Symposium Proceedings, 2008.

<sup>6</sup> For a discussion of the Argentine experience, see C. W. Calomiris, "Devaluation with Contract Redenomination in Argentina," NBER Working Paper No. 12644, October 2006, and *Annals of Finance* 3, January 2007, pp. 155–92.

<sup>7</sup> The national banking era panics are discussed in Calomiris and Gorton (1991); the Panic of 1857 is treated in C. W. Calomiris and L. Schweikart, "The Panic of 1857: Origins, Transmission, and Containment," *Journal of Economic History*, December 1991, pp. 807–34.

<sup>8</sup> C. W. Calomiris, *US Bank Deregulation in Historical Perspective*, Cambridge University Press (2000).

<sup>9</sup> Calomiris and Gorton (1991).

<sup>10</sup> For a theoretical perspective on market discipline, see C. W. Calomiris and C. M. Kahn, "The Role of Demandable Debt in Structuring Optimal Banking Arrangements," *American Economic Review* 81, June 1991, pp. 497–513. For historical evidence, see C. W. Calomiris and J. R. Mason, "Fundamentals, Panics and Bank Distress During the Depression," *American Economic Review*

93, December 2003a, pp. 1615–47, and C. W. Calomiris and B. Wilson, "Bank Capital and Portfolio Management: The 1930s 'Capital Crunch' and Scramble to Shed Risk," *Journal of Business* 77, July 2004, pp. 421–55. A modern-day example of market discipline (Argentina 1991–9) is analyzed in C. W. Calomiris and A. Powell, "Can Emerging Market Bank Regulators Establish Credible Discipline?" NBER Working Paper No. 7715, May 2000, in *Prudential Supervision: What Works and What Doesn't*, F. S. Mishkin, ed., University of Chicago Press, 2001, pp. 147–96.

<sup>11</sup> See J. R. Mason, "Do Lender of Last Resort Policies Matter? The Effects of Reconstruction Finance Corporation Assistance to Banks During the Great Depression," *Journal of Financial Services Research* 20, 2001, pp. 77–95; C. W. Calomiris and J. R. Mason, "How to Restructure Failed Banking Systems: Lessons from the U.S. in the 1930s and Japan in the 1990s," NBER Working Paper No. 9624, April 2003, and in *Governance, Regulation, and Privatization in the Asia-Pacific Region*, T. Ito and A. Krueger, eds., University of Chicago Press, 2004, pp. 375–420.

<sup>12</sup> J. L. Lucia, "The Failure of the Bank of United States: A Reappraisal," *Explorations in Economic History* 22, 1985, pp. 402–16; E. Wicker, *The Banking Panics of the Great Depression*, Cambridge University Press, 1996; Calomiris and Mason (1997); Calomiris and Mason (2003a).

<sup>13</sup> C. W. Calomiris and E. N. White, "The Origins of Federal Deposit Insurance," in *The Regulated Economy: A Historical Approach to Political Economy*, C. Goldin and G. Libecap, eds., University of Chicago, 1994.

<sup>14</sup> See, for example, J. Barth, G. Caprio, and R. Levine, *Rethinking Bank Regulation: Till Angels Govern*, Cambridge University Press, 2006.

<sup>15</sup> C. W. Calomiris, "Is Deposit Insurance Necessary? A Historical Perspective," *Journal of Economic History*, June 1990, pp. 283–95.

<sup>16</sup> B. S. Bernanke, "Nonmonetary Effects of the Financial Crisis in the Propagation

of the Great Depression,” NBER Working Paper No. 1054, 1983, and American Economic Review 73, June 1983, pp. 257–76; B. S. Bernanke and M. Gertler, “Financial Fragility and Economic Performance,” NBER Working Paper No. 2318, July 1987, and Quarterly Journal of Economics 105, February 1990, pp. 87–114; C. W. Calomiris, “Financial

Factors in the Great Depression,” Journal of Economic Perspectives, 7, Spring 1993, pp. 61–85; C. W. Calomiris and J.R. Mason, “Consequences of Bank Distress During the Great Depression,” NBER Working Paper No. 7919, September 2000, and American Economic Review 93, June 2003b, pp. 937–47; Calomiris and Wilson (2004);

F. Allen and D. Gale, “Financial Fragility, Liquidity, and Asset Prices,” Journal of the European Economic Association 2, 2004, pp.1015–48.

<sup>17</sup> Calomiris (2008).

<sup>18</sup> Mason (2001) and Calomiris and Mason (2004).

## Using Field Experiments in the Economics of Charity

John A. List\*

The experimental approach in scientific inquiry is commonly traced to Galileo Galilei, who pioneered the use of quantitative experiments to test his theories of falling bodies.<sup>1</sup> Extrapolating his experimental results to the heavenly bodies, he pronounced that the services of angels were not necessary to keep the planets moving, enraging the Church and disciples of Aristotle alike. For his efforts, Galileo is now viewed as the Father of Modern Science. Since the Renaissance, fundamental advances making use of the experimental method in the physical and biological sciences have been fast and furious.<sup>2</sup> Within economics, the use of controlled experiments has steadily increased, fueled by the exploration of important economic phenomena in the laboratory more than one half century ago.

Although laboratory experiments have dominated the experimental landscape in economics, the past decade has witnessed a significant surge in studies that gather data via field experiments. In

economics, field experiments occupy an important middle ground between laboratory experiments and studies that use naturally occurring field data.<sup>3</sup> This is convenient because, on the one hand, economic theory is inspired by behavior in the field, so we would like to know if results from the laboratory domain are transferable to field environments. Alternatively, because it is sometimes necessary to invoke strict assumptions to achieve identification using naturally occurring data, we wonder whether similar causal effects can be found in studies that have different identification assumptions.

Field experiments can play an important role in the discovery process by allowing us to tackle questions that are quite difficult to answer without use of randomization in a field setting. They also can serve an important complementary role — similar to the spirit in which astronomy draws on the insights from particle physics and classical mechanics to make sharper insights, field experiments can supplement insights gained from lab and naturally occurring data. To date, field experiments have shed insights on areas as diverse as tests of auction theory, tests of the theory of private provision of public goods, tests that pit neoclassical theory and prospect

theory, tests that explore issues in cost/benefit analysis and preference elicitation, tests that explore competitive market theory in the field, tests of alternative incentive schemes in developing nations, and tests of information assimilation among professional financial traders.<sup>4</sup>

In the remainder of this research summary, I will summarize field experiments within the realm of the economics of charity, with an emphasis on my work, completed with several colleagues.

### Charitable Fundraising

The charitable marketplace represents an interesting set of actors, which might be usefully parsed into three distinct types.<sup>5</sup> First, is the Government, which decides on tax treatment of contributions and the level of grants to charities. This insightful literature includes studies that explore crowding out, and studies that measure responsiveness of giving to price changes.<sup>6</sup> Second are the donors, who provide the resources to produce public goods. The final set of actors is the charitable organizations, which develop strategies to attract resources to produce public goods. The economic interplay of these three actor types represents a vibrant area of research.

\*List is a Research Associate in the NBER's Program on Public Economics and a Professor in Economics and the College and Co-Director of Graduate Admissions at the University of Chicago. His profile appears later in this issue.



My own research has focused on studying the relationship between individual donors and charities. In the United States alone, annual individual giving now exceeds 2 percent of GDP, with roughly 90 percent of people giving money to at least one cause annually. Further, there is at least one capital campaign under way in virtually every major population center in North America that has an objective of raising between \$25–\$100 million. Smaller capital campaigns are even more numerous.<sup>7</sup> Increased individual wealth, an aging population, and recent devolutionary trends across governments worldwide combine to set the stage for continued rapid growth in the sector.

Even though the stakes are clearly high, many economic facts concerning the interrelationship between solicitors and solicitees remain unknown. My own interest in this area was shaped in the late 1990s, when I was an Assistant Professor at the University of Central Florida and my Dean asked me to help him raise money for a proposed Center in the Economics Department. He provided me with \$5,000 as “seed money.” After a significant amount of discussion, the administration agreed to allow me to run a charitable fundraising field experiment with the \$5,000.

This first study, completed with David Reiley,<sup>8</sup> was an effort to test economic theory, to learn how best to use the seed funds, and to actually multiply the \$5,000 seed funds. We split the full capital campaign into several smaller capital campaigns to fund one of six computers the Center needed, each of which served as a separate experimental treatment. For example, one household received a solicitation that noted we had already secured \$1000 of the goal, and we were asking solicitees to make up the shortfall. We solicited contributions from 3000 Central Florida residents, randomly assigned to six different groups of 500, with each group asked to fund a separate computer for use at the Center. Most importantly, we found that seed money increased the average gifts of donors: more seeds led to more money.

In a similar spirit, Daniel Rondeau

and I used a natural field experiment, dividing 3000 direct mail solicitations to Sierra Club supporters into four treatments and asking solicitees to support the expansion of a K-12 environmental education program. We find that announcement of seed money increases the participation rate of potential donors by 23 percent and total dollar contributions by 18 percent, compared to an identical campaign in which no announcement of leadership gift is made. Other scholars also have shown the importance of seed money.<sup>9</sup>

Dean Karlan and I explore a different use of upfront monies: we extend this line of inquiry by soliciting contributions using a conditional, rather than an unconditional, match.<sup>10</sup> Soliciting contributions from more than 50,000 supporters of a liberal organization, we randomize households into several different matching rate treatments to explore whether presence of a match, and the match rate, influence giving. We find that simply announcing that a match is available considerably increases the revenue per solicitation — by 19 percent. In addition, the offer of a match significantly increases the probability that an individual donates — by 22 percent. Yet, while the match treatments relative to a control group increase the probability of donating, larger match ratios — for example a \$3 match for every \$1 donated, or \$2 for every \$1 donated — relative to smaller match ratios (such as one to one) have no additional impact.

Other studies also have shed light on the value of using a match. For example, Eckel and Grossman<sup>11</sup> use lab experiments to compare matching to an equivalent rebate of one’s contributions in the context of a dictator game; they find that matching contributions lead to significantly larger contributions than the rebate mechanism. Rondeau and I also report evidence consonant with the positive effects of having a match available.

In a study that explores whether upfront money can be used more effectively by purchasing lottery prizes for donors, several colleagues and I investigated the effects of using lotteries to induce giving.<sup>12</sup> Our efforts were to sup-

port the Center for Natural Hazards Mitigation Research at East Carolina University. Federal gambling laws prohibited us from executing a mail solicitation, a phone-athon, or an email drive. We therefore turned to a door-to-door fundraising drive, wherein we approached nearly 5000 households, randomly assigned to standard voluntary contributions mechanism treatments (VCM — in other words, merely knocking on the door and asking for a contribution) or lottery treatments, where every dollar given provides one chance at a lottery prize.

Some insights emerged from that experiment. For example, the lottery treatments raised roughly 50 percent more in gross proceeds than our VCM treatments. This result was largely driven by greater participation rates in the lotteries: lotteries increase participation rates by roughly 100 percent. This finding highlights an attractive feature of lotteries: they provide fund-raisers with a tool to generate “warm lists,” or a larger pool of active donors to draw from in future fund-raising drives. Our experimental design also permits an exploration of whether, and to what extent, individual solicitor characteristics influence fund-raising success. In this regard, we find that a single-standard deviation increase in physical attractiveness of women solicitors increased the average gift by approximately 35 to 72 percent. This result highlights the power of social factors in effecting fundraising.<sup>13</sup>

Whether, and to what extent, these factors influence long-run giving patterns is an open question. To move the exploration from one of measuring short-run substitution effects to one that measures dynamic effects, we use a second door-to-door study.<sup>14</sup> In this study, we use detailed information on the households that were previously approached and how they were approached. A little more than one year after the first drive, we randomly allocated previous givers (“warm” list agents) and those who have never given (“cold” list agents) into one of three treatments: a VCM, and two gift treatments — asking solicitees for money, but giving a large or a small gift to the potential donors. We also randomized solicitor types across



household — in some cases removing the “beauty incentive” that was present in the first drive, for others adding the “beauty incentive,” and for others keeping the “beauty incentive” the same.

In that experiment, we find that the warm-list enhances fund-raising success: donors who contributed in the first fund-raising drive were twice as likely to give, and provide average gifts that were roughly twice as large, as households that had never given. We find, however, a difference in the efficacy of how warm-list givers were initially attracted: removing the lottery incentive had no discernable impact on the behavior of warm-list households, whereas removing the “beauty incentive” leads to a significant reduction in average contribution levels.

Finally, concerning the effect of the gifts in this natural field experiment, we find that donor gifts can have important effects on the intensive and extensive margins. Importantly, whether the gift is given unconditionally (solicitee receives the gift regardless of whether she gives) or conditionally (solicitee receives the gift if she gives a pre-specified dollar amount) influences the probability and size of the monetary contribution.

## Lessons Learned

A first lesson that I take from this body of research is that what we do not know dwarfs what we know. So, what have we learned from this body of work? One feature of this line of research is that it has been able to lend insights into the types of models that accurately predict giving behavior. In this sense, simple models that treat individual contributions as if they are identical to purchases of private goods should be reconsidered in light of the findings from this literature. Additionally, work in this area that measures key parameters has provided economists with useful information and lent guidance into policymaking discussions. Equally as important, these studies have collected enough facts to help us construct new economic theories of giving.

For practitioners, understanding what motivates people to give, how to

use upfront monies efficiently to generate the greatest level of gifts, and learning about appropriate ask strategies for the present and future are invaluable. In this regard, the data point to the fact that upfront money is important, and that it can be used effectively as announced seed money, a matching grant, to purchase donor gifts, or to purchase lottery gifts. Critically, long-run fundraising success depends on incentives used to attract first-time donors. More specifically, some types of incentives might crowd out reasons for giving later. The literature also pinpoints that non-price incentives can have important effects on givers; in some cases surprisingly large effects. For example, giving small donor gifts to new solicitees can substitute for a warm-list.

I suspect that this line of research will continue to be a strong growth area. As fundraisers continue to recognize the value of experimentation, economists will increasingly be called upon to lend their services. Likewise, as economists continue to recognize the value of using naturally occurring settings as laboratories, such domains increasingly will be used to generate new datasets.

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<sup>1</sup> S.D. Levitt and J.A. List, “Field Experiments in Economics: The Past, The Present, and The Future,” NBER Working Paper No.14356, September 2008.

<sup>2</sup> For a more complete discussion see J.A. List and D. Reiley, “Field Experiments” in *The New Palgrave Dictionary of Economics*, S. N. Durlauf and L. E. Blume, eds. Palgrave Macmillan Publishing.

<sup>3</sup> See J.A. List, “Field Experiments: A Bridge between Lab and Naturally Occurring Data,” NBER Working Paper No. 12992, March 2007, and *Advances in Economic Analysis and Policy* 6(2), Article 8.

<sup>4</sup> See my website, [www.fieldexperiments.com](http://www.fieldexperiments.com), which contains a catalogue of field experiments in these and several related areas.

<sup>5</sup> See the valuable work of J. Andreoni, “Philanthropy,” In *Handbook of Giving, Reciprocity and Altruism*, S-C. Kolm and J. Mercier Ythier, eds. Amsterdam:

North Holland (2006), pp. 1201–69.

<sup>6</sup> See the important work of Martin Feldstein and Charles T. Clotfelter. For example, M. Feldstein, “The Income Tax and Charitable Contributions: Part II—The Impact on Religious, Educational and Other Organizations,” *National Tax Journal* 1975, 28(2): pp. 209–26; C.T. Clotfelter, *Federal Tax Policy and Charitable Giving*, University of Chicago Press, (1985), and more recently G. Auten, H. Sieg, and C.T. Clotfelter, “Charitable Giving, Income and Taxes: An Analysis of Panel Data,” *American Economic Review*, 2002, 92: pp. 371–82.

<sup>7</sup> See D. Rondeau and J.A. List, “Matching and Challenge Gifts to Charity: Evidence from Laboratory and Natural Field Experiments,” NBER Working Paper No.13728, January 2008, and “Special Issue on Field Experiments in Charity,” *Experimental Economics*, 11(3), pp. 253–67.

<sup>8</sup> J.A. List and D. Lucking-Reiley, “The Effects of Seed Money and Refunds on Charitable Giving: Experimental Evidence from a University Capital Campaign,” *Journal of Political Economy* (2002), 110(1), pp. 215–33.

<sup>9</sup> One unique recent example is S. Huck and I. Rasul, “Comparing Charitable Fundraising Schemes: Evidence from a Natural Field Experiment,” working paper, UCL.

<sup>10</sup> D. Karlan and J.A. List. “Does Price Matter in Charitable Giving? Evidence from a Large-Scale Natural Field Experiment,” NBER Working Paper No.12338, June 2006, and *American Economic Review*, (2007), 97(5), pp. 1774–93.

<sup>11</sup> C.C. Eckel, and P.J. Grossman. “Rebate versus Matching: Does How We Subsidize Charitable Contributions Matter?” *Journal of Public Economics*, 87, 2003, pp. 681–701. See also B. Frey and S. Meier, “Social Comparisons and Pro-social Behavior: Testing ‘Conditional Cooperation’ in a Field Experiment,” *American Economic Review* 94(5), 2005: pp.1717–22.

<sup>12</sup> C.A. Landry, A. Lange, J.A. List, M.K. Price, and N. Rupp, “Toward an Understanding of the Economics

*of Charity: Evidence from a Field Experiment*,” NBER Working Paper No. 11611, September 2005, and *Quarterly Journal of Economics*, 121 (2): pp. 747–82.

<sup>13</sup> For more in the economics literature on the effects of social factors, I direct the

interested reader to the clever work of Frey and Meier (2005; cf. footnote 11) and R. Croson and J. Shang, “The impact of downward social information on contribution decisions,” “Special Issue on Field Experiments in Charity,” *Experimental Economics*, 11(3), pp. 221–33.

<sup>14</sup> C.A. Landry, A. Lange, J.A. List, M.K. Price, and N. Rupp, “Is a Donor in Hand Better than Two in the Bush? Evidence from a Natural Field Experiment,” NBER Working Paper No. 14319, September 2008.

## Prices, Productivity, and Innovation

David E. Weinstein and Christian Broda\*

Economists have long known the importance of focusing on “real” as opposed to “nominal” variables in order to understand a wide range of economic outcomes including growth, productivity, and welfare. While the distinction between real and nominal variables is simple in theory, in practice it is very difficult for statistical agencies to measure prices accurately. One of the main problems is that the set of goods in the economy is constantly changing because of the creation of new goods and quality upgrading. How can we measure price changes when the set of goods consumed in two periods is different? Much of our research over the last few years has focused on estimating the impact of new goods on our understanding of the U.S. and world economies.

A hallmark of our approach has been to combine micro data with a rich framework that allows the biases in the price measurement of individual goods to be aggregated over large sectors of the

economy. This research has produced a series of papers that have emphasized the macro implications of these micro biases. The principle macro implications of our work are:

- Because trade provides consumers with new goods, we have underestimated the gains from globalization around the world over the last few decades.<sup>1</sup>

- We estimate the aggregate CPI bias for a large set of goods to be close to 1 percentage point per year and to have a strong pro-cyclical component. The cyclical nature of the bias suggests that business cycles are more pronounced than is typically reported in official statistics.<sup>2</sup>

- Incorporating the effect of new goods into the measurement of prices suggests that real wages for the typical worker in the United States have risen substantially over the last 30 years. It also suggests that poverty rates based on our corrected CPI measurements have fallen sharply since the late 1960s relative to their official counterparts.<sup>3</sup>

### New Goods and Inflation

The starting point for thinking about how new goods and higher quality goods affect price measurement is an understanding of how prices are currently mea-

sured. Virtually all price indexes used by economists are essentially “common goods” price indexes. In other words, most of these indexes compare the prices of a common set of goods sampled in two periods and then take a weighted average of those prices to obtain a single estimate of inflation. In the case of the U.S. Consumer Price Index (CPI), we adjust a small subsample of the prices for quality changes (for example, computers), but in general no adjustments are made for the appearance of new goods.

The problem with this methodology is that the appearance of new goods has price implications for consumers. To understand this, one needs to think about how a new good affects a consumer. As John Hicks argued decades ago, the appearance of a new good can be thought of as a drop in the price of the good from its reservation price—that is, the price at which demand equals zero—to the observed market price. Since official price indexes do not record these implied price drops, they overstate inflation.

Although this problem with conventional indexes is well known, prior work has only been able to address it for a handful of products. The Boskin Commission, for instance, extrapolated the findings of

\* Broda is an NBER Faculty Research Fellow and a professor at the University of Chicago’s Graduate School of Business. Weinstein is an NBER Research Associate and a professor of economics at Columbia University. Their profiles appear later in this issue.

a few studies to estimate the bias for the entire CPI, but this extrapolation was based on studies that covered at most 10 percent of the CPI. Moreover, these studies were not comprised of a representative sample of goods. One of the main differences between our work and that of prior researchers is that we examine a unique dataset that covers the universe of products with barcodes — approximately 700,000 goods in a typical quarter, covering around 40 percent of all expenditures of goods in the CPI. Because manufacturers almost never change a barcode unless they make some modification, and never make an important modification to a good without changing the barcode, our data enable us to observe virtually all changes in quality, or in the set of goods, in this sample.

The data reveal several important facts for understanding pricing. First, over 90 percent of product creation and destruction happens within firm product lines and because of firm entry and exit. To put this in perspective, we find four times more entry and exit in product markets than is found in establishment and labor market data. In a typical year, 40 percent of a household's expenditures are on goods that were created in the last four years, and 20 percent of expenditures are in goods that disappear in the next four years. This implies that price indexes that do not adjust for the important role played by new goods are likely to be highly susceptible to new goods or quality biases.

Second, we find that net creation is strongly pro-cyclical, with more products being introduced in expansions and in product categories that are booming. Destruction of goods is counter-cyclical, although its magnitude is quantitatively less important. This is suggestive of models where firms have an incentive to defer implementation of the product until aggregate demand is relatively high.

Finally, we develop a methodology that enables us to estimate the aggregate importance of price drops for consumers. We show that since most product creation and destruction is unobserved by the Bureau of Labor Statistics, there

remains a substantial bias arising from new and higher quality goods in the CPI. This upward bias averages 0.6–0.9 percent per year depending on the aggregation methodology. The bias is also strongly pro-cyclical, which suggests that business cycles are more pronounced than is typically reported in official statistics.

### **International Price Implications of Product Heterogeneity**

Barcode data also can help us to understand many of the puzzles in international economics.<sup>4</sup> Consider two key results about international price deviations: borders give rise to flagrant violations of the law of one price, and convergence rates back to purchasing power parity (PPP) are inconsistent with the evidence of micro studies on nominal price stickiness. A major problem with these studies is that they compare goods that are not identical. For example, if we look at product categories similar to those in the CPI — like fresh eggs and milk — we see that the disaggregate price indexes across cities within the United States are comprised of samples of goods with little or no overlap across locations. This fact implies that using these price indexes as the basis of studies of the law of one price has clear limitations.

Moreover, since Canada and the United States use the same barcode system, we can directly compare the similarity of consumption bundles in the two countries. In the typical bilateral city/region comparison between the United States and Canada, only 7.5 percent of the goods are common. This is less than one third the common set of goods available between city pairs of equal distance within the United States. In other words, a random sample of goods sold in the United States is likely to differ substantially from the composition of a sample of goods sold in Canada. By the same token, we find that more proximate locations have more similar consumption bundles than distant locations.

The next key fact is that there is con-

siderable heterogeneity, even in goods categories that sound homogeneous, like bottled water: Perrier can sell at an enormous premium over Poland Springs. Again, these differences are not random. In particular, households with higher incomes tend to buy more expensive varieties of the same class of good. For example, a household that spends twice as much as another household per capita tends to pay 6 percent more for the items in a product group. Approximately 85 percent of this price difference is attributable to richer households purchasing more expensive varieties within a product group. These results hold even for seemingly homogeneous goods like eggs, milk, and sodas, which establishes that tests of price convergence using aggregate data collected across countries or regions with different per capita incomes are likely to falsely reject purchasing price parity (PPP) because the quality of the goods will vary systematically with income.

Taken together, these facts suggest that a major problem in examining PPP across borders is that the set of goods consumed in different countries varies substantially — even seemingly substitutable goods, like eggs, sell at very different prices, even within the same store.<sup>5</sup> Thus, finding that egg prices do not move together across borders may be in part because consumers in different locations purchase similar goods that differ substantially in quality. Moreover, since there is substantial heterogeneity in the prices charged for the same barcode in different locations, even within the United States, the simple fact that international prices differ is not informative of the incremental border barrier.

Indeed, we find that if one restricts the analysis to the set of common goods consumed in the United States and Canada, the border introduces only a small distortion to relative prices, and rates of convergence to PPP are relatively fast. However, if one runs the same analysis on product groups — for example, milk — the border looms much larger because the prices of different goods do not always move together.



## New Goods, Variety, and Growth

We next turn our attention to the implications of the increases in the set of available goods for economic growth. Earlier work had demonstrated an important fact for the United States. If we defined a “variety” as a narrowly defined good exported by a particular country, for example French red wine, we saw that there was a dramatic increase in the number of goods imported by the United States between 1972 and 2001. This analysis indicated that there were substantial gains to the U.S. economy arising from the increased availability of foreign varieties in our markets.

In 2006, we reexamined this from a global perspective.<sup>6</sup> A key feature of endogenous growth models is that the introduction of new varieties drives productivity growth. Analyzing 6-digit bilateral trade flows over the period 1994–2003, we document that the reason that trade-to-GDP ratios have been rising in virtually all countries is that countries are importing new varieties, not because they imported more of existing varieties. In the typical developing country, virtually all of the growth in imports to GDP came from the import of new varieties.

These models also imply that new varieties should affect the growth rate of productivity. The wider access to imported intermediate goods means that R&D labor is more productive, which reduces the cost of generating new blueprints for intermediate products. We find that the effect of varieties on the growth rate of an economy is relatively small, temporary, but persistent. Given this persistence, however, the impact on

the level of long-run growth is large. Our results indicate that the increase in varieties we observed is likely to raise the present discounted value of the income by 17 percent. Of this, only 1.3 percentage points are attributable to the static gains from trade; the remainder is due to the impact that new goods have on the incentive to perform R and D and to invest. In other words, semi-endogenous growth models suggest that there are very powerful growth effects caused by trade liberalization that are ignored by conventional static analyses.

## Political Economy Issues

The previous work has focused on the positive gains from new varieties, but it is legitimate to ask, “if new varieties are so good, why do countries restrict trade?” We have focused on two key theories of trade barriers.<sup>7</sup> First is the standard, but controversial, “optimal tariffs argument,” that is, countries set tariffs to exploit their market power in international markets. Second, we examine more conventional political economy arguments.

In doing so, we make three contributions. First, we estimate elasticities of export supply faced by 15 importer countries at a highly disaggregated level. Second, we use these elasticities to provide evidence that, prior to constraints imposed by the World Trade Organization (WTO), these countries systematically set higher import tariffs on goods in which they have market power. Finally, we estimate similar elasticities for the United States and find that its trade restrictions that are not constrained by the WTO are significantly higher in goods where the United States has more

market power. The results are robust to the inclusion of political economy variables and to a variety of model specifications. The effect is statistically and economically significant, both relative to other explanations and to the average tariff in the typical country. In short, we find strong evidence that countries have market power in imports and exploit it in setting their trade policy.

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<sup>1</sup> C. Broda and D. E. Weinstein, “Globalization and the Gains from Variety,” *Quarterly Journal of Economics*, Vol. 121, Issue 2, May 2006.

<sup>2</sup> C. Broda and D. E. Weinstein, “Product Creation and Destruction: Evidence and Price Implications,” NBER Working Paper No. 13041, April 2007, and forthcoming in *The American Economic Review*.

<sup>3</sup> C. Broda and D. E. Weinstein, *Prices, Poverty, and Inequality*, 2008, Washington: AEI Press.

<sup>4</sup> C. Broda and D. E. Weinstein, “Understanding International Price Differences Using Barcode Data,” NBER Working Paper No. 14017, May 2008.

<sup>5</sup> C. Broda and D. E. Weinstein, “Getting Real about Real Wages,” *Columbia University mimeo*, 2008.

<sup>6</sup> C. Broda, J. Greenfield, and D. E. Weinstein, “From Groundnuts to Globalization: A Structural Estimate of Trade and Growth,” NBER Working Paper No. 12512, September 2006.

<sup>7</sup> C. Broda, D. E. Weinstein, and Nuno Limao, “Optimal Tariffs and Market Power: The Evidence,” NBER Working Paper No. 12033, February 2006, and forthcoming in *The American Economic Review*.



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## NBER Profile: *Nick Bloom*

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Nick Bloom is a Research Associate in the NBER Programs on Economic Fluctuations and Growth, Monetary Economics, and Productivity. He is also an Assistant Professor in the Economics Department at Stanford University and an Associate of the Centre for Economic Performance at the London School of Economics.

Bloom received a B.A. from Cambridge University in 1994, an M.Phil. from Oxford University in 1996, and a Ph.D. from University College London in 2001. He worked at the Institute for Fiscal Studies (a public-economics think-tank in London) from 1996–2001, HM Treasury

(the U.K. Finance Ministry) from 2001–2, McKinsey & Company (the management consultants) from 2002–3, and at the Centre for Economic Performance from 2003–6. His work focuses on firms and productivity, with three particular areas of interest: the effects of uncertainty on economic activity; the causes and consequences of good management; and innovation and technical change.

Nick lives with his wife, Claire, in Palo Alto, along with their two children, Amelia (5) and Alex (3). He enjoys spending his time trying to impress friends and family with his excellent British cooking and wine cellar of classic British vintages.



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## NBER Profile: *Christian Broda*

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Christian Broda is an NBER Faculty Research Fellow and a Professor of Economics at the University of Chicago's Graduate School of Business. He earned a bachelor's degree in economics in 1997 from Universidad de San Andres in Argentina. Four years later, he received his PhD from MIT. Prior to joining Chicago's Business School faculty in 2005, Broda worked in the research department of the Federal Reserve Bank of New York.

Broda studies issues related to international finance and trade, and the impact of exchange rates on asset prices and

financial contracts. He has written for publications ranging from the *American Economic Review* and *Quarterly Journal of Economics* to the *Financial Times* and *New York Times*. He also serves as associate editor of the *Journal of Development Economics* and as a panel member of Latin America's *Economia* journal.

When he's not doing research or teaching, Broda enjoys horse racing, cooking, and playing soccer, especially when followed by an Argentine-style asado.

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## NBER Profile: *Charles W. Calomiris*

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Charles W. Calomiris is a Research Associate in the NBER's Program on the Development of the American Economy and the Henry Kaufman Professor of Financial Institutions at the Columbia University's Graduate School of Business. He is also a Professor at Columbia's School of International and Public Affairs.

In 1995, Calomiris was named a University Scholar at the University of Illinois, where he served as Associate Professor of Finance and Co-Director of the Office for Banking Research. He also has been a visiting faculty member at Stanford University's economics department and at the finance department of the Wharton School of Finance.

Calomiris received a B.A. in economics from Yale University in 1979 and a Ph.D. in economics from Stanford University in 1985. Currently, he teaches courses on corporate finance, emerging financial markets, corporate governance, and international banking at the MBA

and Ph.D. levels at Columbia. His research spans several areas, including banking, corporate finance, financial history, and monetary economics.

In 1999 and 2000, Calomiris served on the International Financial Institution Advisory Commission, a Congressional commission to advise the U.S. government on the reform of the IMF, the World Bank, the regional development banks, and the WTO. He is now a member of the Shadow Financial Regulatory Committee and the Financial Economists Roundtable, and was a Senior Fellow at the Council on Foreign Relations. He also has served as a consultant or visiting scholar for the Federal Reserve Banks of New York, Chicago, Cleveland, St. Louis, and Philadelphia, the Federal Reserve Board, the World Bank, and the governments of Mexico, Argentina, Japan, China, Colombia, and El Salvador, the Attorneys General of Connecticut and Massachusetts, and numerous private sector clients. Calomiris is the recipient of



research grants or awards from the National Science Foundation, the World Bank, the Japanese Government, and others.

Calomiris and his wife, Nancy Wolf Calomiris, have two daughters: Zoi Nicoletta, 18, and Eleni Sophia, 17. In his limited free time, Calomiris performs modern Greek music and ancient Byzantine chants.

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## NBER Profile: *John A. List*

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John A. List is a Research Associate in the NBER's Program on Public Economics and a Professor in Economics and the College and Co-Director of Graduate Admissions at the University of Chicago. He received a B.A. in Economics from the University of Wisconsin-Stevens Point in 1993 and a Ph.D. in Economics from the University of Wyoming in 1996. He has also taught at the University of Central Florida, the University of Arizona, and the University of Maryland.

From May 2002 to July 2003, List served as Senior Economist for Environmental and Resource Economics at the President's Council of Economic Advisers in Washington. His primary work focused on multinational market institutions to address climate change, the Clear Skies Act, revising the Office of Management and Budget benefit cost guidelines, and the softwood lumber trade dispute between the United States and Canada.

List's current research emphasizes the use of experimental methods to address both positive and normative issues. Much of his time has been spent using field experiments to explore economic aspects of environmental regulations, incentives, preferences, values, and institutions.

List is Associate Editor of the *American Economic Review* and the *Journal of Economic Literature*. He also serves on several journal Editorial Boards, is a co-editor of the *Journal of Environmental Economics and Management*, and is on the EPA Science Advisory Board.

List is married and has five children: Annika, twins Eli and Noah, Greta, and Mason. In his spare time he enjoys taking his kids to sports card shows, where he also executes field experiments, and traveling with his family. His wife, Jennifer List, recently started Seven Smooches, a company that designs and makes children's clothing.

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## NBER Profile: *John Van Reenen*

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John Van Reenen has been a Research Associate in the NBER's Program on Labor Studies since 2006. He has also been Director of the Centre for Economic Performance and a professor in the Department of Economics at the London School of Economics (LSE) since 2003. He is currently the Denning Visiting Professor at the Stanford University Graduate School of Business.

Van Reenen received his B.A. from Cambridge University (UK) in 1988, his M.Sc. from the LSE, and his Ph.D. from University College London in 1993. From 1998–9, he was a Visiting Professor of Economics at the University of California, Berkeley. From 1994–2003, he was a Professor of Economics at University College London. Between 1999 and 2002,

Van Reenen was a senior advisor to the UK Secretary of State for Health and Prime Minister.

Van Reenen's work focuses on the causes and consequences of innovation on economic performance, with a particular emphasis on growth and the labor market. His research covers wage inequality, econometrics, many areas of public policy, and the industrial organization of high tech industries. Recently, he has been working on the economics of organization and management.

Van Reenen, his wife Sarah Chambers (an interior designer), and their daughter Charlotte (1) live in San Francisco. Apart from "messing around with Charlotte", his favorite pastimes are politics, music, poetry, and reading novels and comic books.

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## NBER Profile: *David E. Weinstein*

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David E. Weinstein is an NBER Research Associate, Director of the NBER's Japan Project, and the Carl S. Shoup Professor of the Japanese Economy at Columbia University. He is also the Associate Director of Research at the Center for Japanese Economy and Business at Columbia, and a member of the Council on Foreign Relations.

Previously, Weinstein was a Senior Economist at the Federal Reserve Bank of New York and a consultant for the Federal Reserve Bank of San Francisco and the Federal Reserve Board of Governors. Prior to joining the Columbia faculty, he was the Sanford R. Robertson Associate Professor of Business Administration at the University of Michigan's School of Business Administration and an Associate Professor of economics at

Harvard University. He also served on the Council of Economic Advisors from 1989 to 1990.

Weinstein's teaching and research interests include international economics, macroeconomics, corporate finance, the Japanese economy, and industrial policy. He earned his Ph.D. and M.A. in Economics from the University of Michigan and his B.A. at Yale University. He is the recipient of numerous grants and awards, including four National Science Foundation grants, an Abe Fellowship, and a Japan Foundation Fellowship.

Weinstein lives with his family in Manhattan. When not traveling to Asia, they enjoy bicycling, tennis, theater, fine dining, and the "gains from variety that New York has to offer."





## Conferences

### NBER's 23rd Tax Policy and the Economy Conference Held in Washington

The NBER's 23<sup>rd</sup> Conference on Tax Policy and the Economy took place at the National Press Club in Washington on September 25. NBER Research Associate Jeffrey R. Brown of the University of Illinois at Urbana-Champaign and NBER President James M. Poterba of MIT organized this year's meeting. The following papers were discussed:

**Leora Friedberg**, University of Virginia and NBER, and **Anthony Webb**, Boston College, "New Evidence on

the Labor Supply Effects of the Social Security Earnings-Test"

**Jeffrey R. Brown** and **Don Fullerton**, University of Illinois and NBER, and **Julia L. Coronado**, Barclays Global Investors, "Is Social Security Part of the Social Safety Net?"

**Rosanne Altshuler**, Rutgers University; **Alan J. Auerbach**, University of California, Berkeley and NBER; and **Michael Cooper** and **Matthew**

**Knittel**, U.S. Department of Treasury, "Understanding U.S. Corporate Tax Losses"

**James R. Hines, Jr.**, University of Michigan and NBER, and **Lawrence H. Summers**, Harvard University and NBER, "How Globalization Affects Tax Design"

**A. Abigail Payne**, McMaster University, "Empirical Analysis of Crowd-Out"

**Friedberg** and **Webb** investigate the impact on labor supply of changes in the Social Security earnings test in 1996 and 2000. They highlight how inertia in labor supply choices can influence the responses to policy changes in two ways: First, they show that taking account of previous employment status is important in estimating responses to any current earnings-test changes. Second, they test the effect of both actual and anticipated earnings-test parameters that cohorts faced at earlier ages. This approach demonstrates that both past and anticipated future rules can influence current employment and earnings. Thus, Friedberg and Webb identify an impact of earnings-test changes on employment not only contemporaneously for those at the ages directly affected, but also for those at younger ages and in the years that follow the direct change. Finally, the researchers show that earnings-test changes initiated in 1996, like the changes in 2000 that have been studied by others, affected labor supply. Overall, Friedberg and Webb predict that the elimination of the earnings-test in 2000 raised employment among Health and Retirement Study respondents by around 2 percentage points at ages 66 to 69 and 3.5 points at age 65. These

gains persisted as exposed cohorts aged and were also observed at younger ages because of the shock to anticipated earnings-test rules.

Expanding on earlier work, **Brown** and his co-authors develop a large sample of individuals born at different times, construct an entire lifetime earnings history for each individual, and then develop several measures by which to classify each individual's lifetime economic status. Then, they calculate each individual's Social Security taxes and retirement benefits, and use several measures of the impact of the Social Security retirement program on "the poor." Their four major findings are: first, as the definition of income becomes more comprehensive, Social Security's retirement program becomes, overall, less progressive. Indeed, by using "potential" labor earnings (defined as an individual's labor endowment multiplied by the individual's wage rate) at the household level rather than actual earnings at the individual level, the researchers find that Social Security has virtually no effect on *overall* inequality. Second, this result is driven largely by the lack of redistribution across the middle and upper part of the income distribution, so it masks some positive net transfers to the bottom of

the lifetime-income distribution. Third, in cases where redistribution does occur, it is not targeted efficiently: many high-income households receive positive net transfers, while many low-income households pay net taxes. Finally, the progressivity of Social Security changes over time because of changing labor force patterns and other demographic patterns, but the direction of these changes depends on the income concept used to classify someone as "poor." Specifically, when comparing individuals in pre-baby boomer cohorts to baby boomers, the authors find that Social Security is becoming slightly less redistributive when measured by individual income and slightly more redistributive when measured by household income.

Recent data on corporate tax losses present a puzzle: the ratio of losses to positive income was much higher around the recession of 2001 than in earlier recessions, even those of greater severity. Using a comprehensive sample of U.S. corporate tax returns for the period 1982–2005, **Altshuler** and her co-authors explore a variety of potential explanations for this surge in tax losses, taking account of the significant use of stock options in compensation packages beginning in the



1990s and of recent temporary tax provisions that might have had important effects on taxable income. They find that losses rose because the average rate of return of C corporations fell, rather than because of an increase in the dispersion of returns, or an increase in the gap between corporate profits subject to tax and corporate profits as measured by the national income accounts. This analysis also suggests that the increasing importance of S corporations may help to explain the recent experience within the C corporate sector, because S corporations have exhibited a different pattern of losses in recent years. However, the researchers can identify no simple explanation for the differing experience of C and S corporations. Their investigation raises new puzzles about why rates of return of C corporations declined so much early in the decade, and why the incidence of losses among C and S corporations has diverged.

**Hines** and **Summers** suggest that globalization increases citizens' demand for government services while simulta-

neously making it more difficult to raise revenue because of the greater international mobility of economic activities. In essence, the greater mobility of factors of production means that even large countries like the United States are becoming more like small open economies in terms of the responsiveness of the tax base to changes in tax rates. The researchers document that smaller countries tend to rely more heavily on taxes on goods, services, and international trade than do larger countries, noting in particular the growing popularity of value-added taxes on the international scene. Their work also highlights the fact that the United States taxes both personal and corporate income at high rates relative to other countries, and that the efficiency costs of this type of taxation will continue to grow relative to other forms of taxation as the world economy becomes increasingly integrated.

When governments introduce programs, or funding for initiatives that are partially provided by lower levels of governments or in the private or third sectors,

should they be concerned about whether their efforts are crowded out by changes in behavior on the part of individuals and institutions participating in the provision of the good or service? The theoretical literature suggests that crowd-out is an issue. The empirical literature, however, has largely failed to find a measurable crowd-out effect. With better data and more sophisticated empirical techniques, a burgeoning literature now shows that crowd-out does exist. **Payne** examines the recent literature on crowd-out across a variety of venues to better understand the empirical estimation issues, as well as the institutional details that can lead to an enhanced knowledge of the effects of government programs on individuals and organizations.

The proceedings of this conference are being reviewed for publication by the University of Chicago Press. The publication's availability will be announced in a future issue of the *NBER Reporter*. The papers will also be available at "Books in Progress" on the NBER's web page.

## The Great Inflation Conference

Maintaining an environment of low and stable inflation is widely regarded as one of the most important objectives of economic policy in general, and the single most important objective for monetary policy in particular. An environment of price stability reduces uncertainty, improves the transparency of the price mechanism, and facilitates better planning and the efficient allocation of resources, thereby raising productivity.

In the period from 1965 to 1982, known as the Great Inflation, inflation rose from near zero to above 15 percent and caused significant damage to the U.S. economy, including distortions in financial markets, a slumping stock market, declining productivity, and social unrest. Since the mid-1980s, monetary policy has largely succeeded in controlling inflation in the U.S. and other advanced countries.

The Great Inflation is considered the most important macroeconomic policy failure in the United States since World War II, and understanding its roots is important to macroeconomists. To that end, an NBER conference on "The Great Inflation" took place at the Woodstock Inn on September 25–7. It was organized by NBER Research Associate Michael Bordo of Rutgers University and Athanasios Orphanides of the Central Bank of Cyprus, and brought together scholars and policymakers for this important discussion.

The conference began with a panel session, "A View from the Trenches," in which three former central bank governors, on whose watch the Great Inflation was vanquished, reflected on their experiences. **John Crow** of the Bank of Canada, **Donald Brash** of the Reserve Bank of

New Zealand, and **Jacob Frenkel** of the Bank of Israel provided detailed accounts of their experiences with combating inflation in their respective countries. The discussion was focused most prominently on inflation targeting and on the political battles involved in enacting inflation targeting in each of the countries.

The academic sessions that followed began with revisiting the ideas of Milton Friedman. The first paper, "The Great Inflation: Did The Shadow Know Better?" by **William Poole**, **Robert Rasche**, and **David Wheelock** of the Federal Reserve Bank of St. Louis, focused on the Shadow Open Market Committee. Founded in 1973, the shadow committee was based on monetarist precepts and was formed in order to critically evaluate the Federal Open Market Committee's actions and to formulate alternate policies to reduce

inflation. These authors find, using modern techniques, that indeed “the Shadow knew better.” There followed a discussion of the experience of Germany in the 1970s, and how policy there maintained lower inflation than most other advanced countries, and was able to avoid many of the mistakes that were made in the United States. **Andreas Beyer** and **Otmar Issing** of the European Central Bank, **Vitor Gaspar** of the Bureau of European Policy Advisers, and **Christina Gerberding** of the Deutsche Bundesbank, presented their paper on the subject: “Opting Out of the Great Inflation: German Monetary Policy after the Break Down of Bretton Woods.”

The discussion then turned to non-monetary explanations of the Great Inflation. The first came from **Alan Blinder**, NBER and Princeton University, and **Jeremy Rudd**, Federal Reserve Board, in “The Supply-Shock Explanation of the Great Stagflation Revisited.” The authors focused on the commodity price shocks of the 1970s and the price-wage controls enacted by the government. The second paper “Stepping on a Rake: The Role of Fiscal Policy in the Inflation of the 1970s” by **Christopher Sims**, NBER and Princeton University, regarded fiscal policy as too accommodative at that time, aiding in the rapid increase in price pressures. The consensus of both papers was that, had policy been more combative against the forces at the time, the inflation might not have been avoided but potentially could have been far less severe.

Next on the agenda was the issue of time consistency and central bank independence. **Alex Cukierman**, Tel Aviv University, presented “Misperceptions about the Frequency of Price Adjustments and Asymmetric Fed’s Preferences — An Assessment of their Impact on Inflation and Monetary Policy Under Burns and Miller.” Without a doubt, the Federal Reserve Board of Governors of the 1970s, under Chairman Arthur Burns, was influenced heavily by political pressure; the ability to use its independence to fight inflation was masked by the unfounded need to focus solely on keeping unem-

ployment as low as possible.

The conference then switched topics to the role of a nominal anchor, and particularly the role of inflation expectations in the formation of monetary policy. The papers presented included “The Great Inflation Drift” by **Marvin Goodfriend**, NBER and Carnegie-Mellon University, and **Robert King**, NBER and Boston University, and “Falling Behind the Curve: A Positive Analysis of Stop-Start Monetary Policies and the Great Inflation” by **Andrew Levin**, Federal Reserve Board, and **John Taylor**, NBER and Stanford University. If inflation expectations are not anchored, the inflation itself will not remain stable. It was argued that the increase in expectations of inflation was a fundamental reason that inflation rose so dramatically, often because of the misperceptions of policy by the Fed and a lack of coordination and communication.

International perspectives of the time surrounding the Great Inflation in the United States are important, because the United States was not the only country experiencing high inflation at the time. In their paper, “The Great Inflation in the United States and the United Kingdom: Reconciling Policy Decisions and Data Outcomes,” **Riccardo DeCecio** and **Edward Nelson**, both of the Federal Reserve Bank of St. Louis, showed how the United Kingdom suffered with inflation because of poor ideas and economic theory underlying their monetary policy decisions. In a second paper — “Bretton Woods and the Great Inflation” by conference organizer **Michael Bordo** and co-author **Barry Eichengreen** of NBER and the University of California, Berkeley — the authors posited that, before 1965, concern over external balance constrained Fed policy and anchored expectations of inflation. After 1965, when the Treasury increasingly handled policy towards defense of the dollar, the Fed paid more attention to the domestic goal of full employment. This weakened the Bretton Woods nominal anchor.

The final session revolved around learning, expectations, and policy mistakes. In “Monetary Policy Mistakes and

the Evolution of Inflation Expectations,” conference organizer **Athanasios Orphanides** and co-author **John Williams** of the Federal Reserve Bank of San Francisco noted that the policy of the 1960s and 1970s relied heavily on estimates of economic variables that often were misguided and not measured correctly. This led to prescriptions for policy that also were misguided, and may have contributed to the inflation that ensued. Had policymakers been learning from or even noticing the mistakes they were making, it might have been possible for them to readjust their models and to reform policy in a more optimal way.

The conference ended with a panel discussion involving Federal Reserve Vice Chairman **Donald Kohn**, **Harold James** of Princeton University, and **Anna J. Schwartz** of NBER. **Kohn** emphasized some lessons that central banks need to learn after experiences like the Great Inflation. For example, central banks are the policy actors with key responsibility for price stability; inflation expectations are critical; both vigorous debate and alternative viewpoints are essential for creating better policy; shortcuts to price stability are a recipe for disaster; and, central bankers must always exercise humility when forming policy, since much of it depends on variables that no one can estimate. **James** highlighted four questions we still have yet to answer: What is the dating of the Great Inflation? What caused the Great Inflation? How can inflations be ended? Why do we care about inflations? Finally, **Schwartz** returned to the lessons of her colleague Milton Friedman. One of the most important lessons of the Great Inflation was that the Fed incorrectly estimated the costs of disinflation for the stabilization of the real economy, and this forced it to delay deflationary policy to the point where the costs to deflate only became higher.

These papers will be considered for publication in an NBER Conference Volume by the University of Chicago Press and will be posted at “Books in Progress” on the NBER’s website.

## American Universities in a Global Market

An NBER conference on “American Universities in a Global Market,” organized by NBER Research Associate Charles T. Clotfelter of Duke University, was held on October 2–4. Since World War II, American universities have occupied an unchallenged position of global preeminence. Owing to vigorous support of scientific research by the federal government, high rates of educational attainment, and a massive influx of scholars from Europe seeking refuge, America supplanted Europe as the home of the world’s leading universities. Today, American institutions dominate the highest rungs of the various world rankings of great universities, routinely occupying the majority of the every top-twenty list.

But this position of preeminence may now be in jeopardy. The flow of foreign graduate students and scholars, while still massive, shows signs of slowing, in the wake of heightened security concerns and competition from foreign universities. Not only are European universities girding themselves for more vigorous international competition, but those in China, India, and other parts of Asia have signaled their intention to become major players in the global higher education market.

Meanwhile, America’s own production of university graduates has slowed relative to that of other developed nations. Whereas in 1990 the rate of college completion in the United States (30 percent) was 11 percentage points higher than the median of a group of other developed countries; by 2004 the U.S. rate was 7 percentage points lower. And, there are unmistakable signs that America’s position of leadership in the world—financial, military, intellectual, and moral—is increasingly being challenged. One perhaps small but telling example is the recently reported decline among supreme courts in other countries in number of

citations to decisions issued by our own U.S. Supreme Court.

This conference examined aspects of American higher education today that will affect its global standing, in order to provide insight about the likely future of American universities. Will American universities sustain their leading role? Surely first-mover advantages and agglomeration economies, not to mention the traditions of free expression and decentralized competition, will continue to redound to our advantage. But the outcome seems far from clear.

The following papers were presented and discussed:

**James D. Adams**, Rensselaer Polytechnic Institute and NBER, “Is the U.S. Losing its Preeminence in Higher Education?” Discussant: Charles Phelps, University of Rochester

**John Bound**, University of Michigan and NBER, and **Sarah Turner**, University of Virginia and NBER, “Coming to America: Where Do International Doctorate Students Study and How Do U.S. Universities Respond?” Discussant: Michael Teitelbaum, Sloan Foundation

**Paula Stephan**, Georgia State University and NBER, and **Grant Black**, Indiana University, South Bend, “The Economics of University Lab: Science and the Role of Foreign Graduate Students and Postdoctoral Scholars” Discussant: Harold Shapiro, Princeton University

**Haizheng Li**, Georgia Institute of Technology, “Higher Education in China—Complement or Competition to U.S. Universities?” Discussant: Debra Stewart, Council of Graduate Schools

**E. Han Kim** and **Min Zhu**, University of Michigan, “Universities as Firms: The Case of U.S. Overseas Programs” Discussant: Peter Doeringer, Boston University

**Devesh Kapur**, University of Pennsylvania, “Indian Higher Education” Discussant: Arvind Panagariya, Columbia University

**Ofer Malamud**, University of Chicago and NBER, “The Structure of Higher Education in the U.S. and Europe: Reflections on the Nature of the Bologna Reforms” Discussant: Michael Rothschild, Princeton University and NBER

**Lex Borghans** and **Frank Corvers**, Maastricht University, “Mobility and the Changing Structure of Research and Higher Education in Europe” Discussant: Hugo Sonnenschein, University of Chicago

**Sunwoong Kim**, University of Wisconsin, Milwaukee, “Brain Drain, Brain Gain, and Brain Competition: Changing Employment Opportunities and Career Patterns of U.S.-Trained Korean Ph.Ds” Discussant: Elizabeth U. Cascio, Dartmouth College and NBER

**Richard B. Freeman**, Harvard University and NBER, “What Does Global Expansion of Higher Education Mean for the U.S.?” Discussant: Bruce Sacerdote, Dartmouth College and NBER

**Eric Bettinger**, Case Western Reserve University and NBER, “To Be or Not to Be: Major Choices in Budding Scientists” Discussant: Caroline M. Hoxby, Stanford University and NBER

**Adams** asks whether the United States is losing its predominance in

higher education. While the growth of scientific research in Europe and East

Asia since the 1980s has exceeded that of the United States—suggesting con-



vergence in world science and engineering—the slowdown of U.S. publication rates in the late 1990s is a different matter. Using a panel of U.S. universities, fields, and years, **Adams** uncovers evidence of allocative inefficiency in public universities and university fields in the middle and bottom 40 percent of their disciplines. Private/Top 10 universities and top-20-percent university fields, however, do not display this pattern. Slow growth in tuition and state appropriations, compared to revenue growth for private universities, are possible causes of this divergence.

It is well known that the representation of foreign doctorate students at U.S. universities, particularly in science and engineering fields, has increased dramatically over the last three decades, rising to about 50 percent today from about 25 percent in the early 1970s. Much of that growth has come from new demand for advanced study in science and engineering from countries rapidly climbing a development trajectory, particularly South Korea, India, Taiwan, and—more recently—China. **Bound** and **Turner** describe the trends in the distribution of foreign doctorate students across programs of different levels of quality and institutional control and resources, and at both public universities and universities outside the most highly ranked. Expansion of doctorate education propelled by the flow of foreign students has been particularly marked outside the most highly ranked programs and at public sector universities. These differential trends highlight heterogeneity in the supply response among different universities. Whether changes in doctorate production are complementary to other university outputs, such as undergraduate education, helps to explain the pattern observed across universities.

**Black** and **Stephan** study the role of foreign graduate students and postdoctoral scholars (postdocs) in university lab science. To do this, they analyze authorship patterns for a six-month period for articles published in *Science* with a last author who is affiliated with

a U.S. university. They conclude that international graduate students and postdocs are not only important in staffing university labs, but also play a leading role in university research.

In his paper, **Haizheng Li** examines the Chinese university system as a possible competitor to the United States. Enrollment in Chinese universities has increased rapidly since 1978, as has the enrollment of Chinese students abroad. Will Chinese universities continue to serve as a complement to U.S. universities by sending their best students to the United States, or will they gradually become competitors to U.S. universities? Though China has made great progress in improving its university system (China is now ranked fifth as a destination country for international students, behind only the United States, the United Kingdom, France, and Germany), the author concludes that the relative status gap between Chinese and American universities will remain until further reforms are implemented.

**E. Han Kim** and **Min Zhu** investigate the overseas programs of U.S. universities. They discover two waves of overseas programs: a supply driven wave during the late 1980s to the mid-1990s, and the current wave beginning in the early 2000s. Their data reveal that tuition-dependent universities are more likely to offer overseas programs, and real GDP per capita and tertiary school-age populations are two key determinants of the location choice. Also, U.S. universities offer lower tuition discounts in countries with higher real GDP per capita. The authors conclude that universities behave much like multinational corporations in their overseas investments: economics, not altruism, is the key driver of U.S. overseas programs.

In his investigation of Indian higher education, **Kapur** finds an educational system that, paradoxically, is simultaneously collapsing and thriving. Traditional multi-disciplinary universities are in a deplorable state, reflecting cleavages afflicting India's political

economy. Wage premiums are higher; few faculty members are being trained (with implications for higher education in the future); and disciplines outside the professions (especially in the liberal arts) are collapsing. Yet professional training, workforce training, and other highly specialized forms of education are thriving. Does India face a future with a workforce that's reasonably well trained but narrow in its outlook and possibly less liberal?

Europe is adopting some of the unique aspects of the American system of higher education, including a standardized degree structure and a system of transferable academic credits. **Malamud** reflects on how the characteristics of American higher education are responsible for its success, and the possible consequences of these European reforms for the future of American higher education. This paper explores the issues from a theoretical and empirical perspective, focusing on the benefits of flexibility and competition associated with the American system of higher education.

**Borghans** and **Corvers** document changes in research and higher education in Europe and investigate potential explanations for the strong increase in its international orientation. While higher education started to grow substantially around 1960, only a few decades later, research and higher education transformed gradually to the American standard. Decreased communication costs are the likely causes of this trend. This transformation is most clearly revealed in the change in the language used in research from the national language/Latin, German, and French to English. This suggests that returns to scale and the transferability of research results strongly influence adaptation of the international standard.

**Sunwoong Kim** examines changes in migration patterns of U.S.-trained Korean PhDs over the last several decades. Roughly speaking, three different periods are identified: brain drain (1950–70), brain gain (1970–97), and



brain competition (since 1997). The first period is typical of low-income countries in which talented students go to a rich country for further education and stay there after their training; the later two periods reflect a more balanced circulation between Korea and the United States. The author finds the Korean experience useful as a leading-edge example of the internationalization of U.S. higher education with China and India.

Between 1970 and 2006 the number of students enrolled in institutions of higher education increased from 29 million to over 141 million. **Freeman** examines the implications of this expansion in foreign higher education for the United States. The proportion of young people going to col-

lege in advanced countries has risen above those in the United States in some countries, while higher education in developing countries is increasing at a rapid pace, greatly diminishing the U.S. share of the world's university students and graduates. **Freeman** predicts a continued decrease in the U.S. share of global university enrollment, while deferring judgment as to whether the United States should respond by encouraging immigration, or rather through off-shoring of some university graduate-level work overseas.

Over the last forty years, the supply of U.S.-born scientists and engineers has dropped dramatically. **Bettinger** sees worries of shortages as misplaced, however. Interest in the sciences among undergraduates remains high. The fall

in U.S.-born candidates for advanced degrees does not reflect educational deficiencies but other factors, notably the attraction of careers in higher-paying fields such as business or law. Though fewer U.S. citizens are pursuing doctoral degrees in science, technology, engineering, and mathematics, the United States continues to lead the world in production of doctorates, and a significant proportion of these students stay in the United States. **Bettinger** concludes that the shortage of scientists and engineers is overstated.

These papers will be considered for publication in an NBER Conference Volume by the University of Chicago Press and will be posted at "Books in Progress" on the NBER's website.



## Europe and the Euro

An NBER conference on “Europe and the Euro” took place on October 17 and 18 at Bocconi University in Milan. The conference highlighted the success of the first ten years of the Euro in terms of product market reforms, increased trade between members, successful monetary policy by the European Central Bank (ECB)—both in normal times and in the most recent turbulent months, progress towards more financial liberalization, and integration. However, the conference also noted the need for further progress in terms of labor market reforms, banking supervision and regulation on the European level, integration of financial markets, and synchronization of business cycles.

Organizers Alberto F. Alesina, NBER and Harvard University, and Francesco Giavazzi, NBER and Bocconi University, chose these papers to discuss:

**Silvia Ardagna**, Harvard University; **Alberto F. Alesina**; and **Vincenzo Galasso**, Università Bocconi “The Euro and Structural Reforms”  
Discussant: Otmar Issing, European Central Bank

**Barry Eichengreen**, University of California, Berkeley and NBER, “Is the Euro Forever?”

Discussant: Martin Feldstein, Harvard University and NBER

**Antonio Fatas** and **Ilian Mihov**, INSEAD, “The Euro and Fiscal Policy”

Discussant: Roberto Perotti, Università Bocconi

**Jeffrey A. Frankel**, Harvard University and NBER, “The Estimated Effects of the Euro on Trade: Why Are They Below Historical Evidence on Effects of Monetary Unions among Smaller Countries?”

Discussant: Silvana Tenreyro, London School of Economics

**Ulf Soderstrom**, Università Bocconi, “Re-Evaluating Swedish Membership in the EMU: Evidence from an Estimated Model” and **Riccardo DiCecio** and **Edward Nelson**, Federal Reserve Bank of St. Louis, “Britain and the Euro: Re-considering the Pros and Cons”

Discussant: Carlo Favero, Università Bocconi

**Matteo Bugamelli** and **Roberta Zizza**, Bank of Italy; and **Fabiano Schivardi**, Università di Cagliari, “The Euro and Firm Restructuring”  
Discussant: Gianmarco Ottaviano,

Università di Bologna

**Anil K Kashyap**, University of Chicago and NBER, and **Reint Gropp**, European Business School, “A New Metric for Banking Integration in Europe”

Discussant: Loretta Mester, Federal Reserve Bank of Philadelphia

**Alberto Giovannini**, Unifortune Asset Management, Milan, “The Integration of European Financial Markets: Why Has It Not Happened Yet?”

Discussant: Richard Portes, London Business School

**Lucrezia Reichlin**, European Central Bank, and **Domenico Giannone**, Université Libre de Bruxelles, “Business Cycles in the Euro Area”  
Discussant: Olivier J. Blanchard, MIT, NBER, and the International Monetary Fund

**Steven G. Cecchetti**, Bank for International Settlements and NBER, and **Kermit L. Schoenholtz**, Citigroup, “ECB Policy: The First Decade and Beyond”  
Discussant: Pervenche Beres, European Parliament

**Alesina** and his co-authors investigate whether the adoption of the Euro has facilitated structural reforms, which they define as deregulation in the product markets and both liberalization and deregulation in the labor markets. After reviewing theoretical arguments linking the adoption of the Euro to structural reforms and investigating the empirical evidence, they find that the adoption of the Euro has been associated with an acceleration of the pace of structural reforms in the product market. In contrast, they find no

connection between the adoption of the Euro and labor market reforms, at least as measured by changes in the legislation of primary labor markets. Their paper also discusses issues concerning the sequencing of labor market versus product market reforms.

In his paper, **Eichengreen** concludes that it is unlikely that one or more members of the Euro area will leave in the next ten years and that the total disintegration of the Euro area is even more unlikely. The technical difficulties of reintroducing a national cur-

rency should not be minimized. Nor is it obvious that the economic problems of the participating member states can be significantly ameliorated by abandoning the Euro, although that possibility cannot be dismissed either.

The creation of a single currency in Europe was accompanied by significant changes in the institutional setting for fiscal policy. **Fatas** and **Milhov** ask whether these institutional changes have led to a change in the conduct of fiscal policy by the members of the Euro area. The authors review the behavior

of fiscal policy after the introduction of the Euro in several dimensions: procyclicality, volatility, coordination, and the role of automatic stabilizers. They characterize how the common currency and the constraints associated with the Stability and Growth Pact have shaped fiscal policy among the members of the union. In order to provide a more complete picture of fiscal policy, they also report results related to the behavior of fiscal policy at the national level. Their results show that despite the significant change in the institutional setting, the behavior of fiscal policy in the Euro area is mildly procyclical and has not changed much since the introduction of the new currency. In contrast, U.S. fiscal policy has become distinctly countercyclical. Also, there has been a broad-based decline in the volatility of discretionary fiscal policy in all of the major economies. Furthermore, the discrepancy of fiscal policy across Euro-area countries — measured by the dispersion of cyclically adjusted balances — has decreased threefold since 1999.

**Frankel** seeks to address two questions in his paper. First, do the effects on intra-Euroland trade estimated in the Euro's first four years hold up in the second four years? The answer is yes. Second, and more complicated, what is the reason for the large discrepancy vis-à-vis other currency unions, a gap of between 15 and 200 percent? First, the Euro is still very young. Second, the European countries are much bigger than most of those who had formed currency unions in the past. Third, there is endogeneity about the decision to adopt an institutional currency link: perhaps the high correlations estimated in earlier studies were spurious, an artifact of reverse causality. Contrary to expectations, though, Frankel finds no evidence that any of these factors explains any share of the gap, let alone all of it. Instead, surprisingly, the discrepancy appears to stem from sample size. If one estimates the effects of the Euro versus other monetary unions in a large sample that includes all coun-

tries and all years, thereby bringing to bear as much information as possible on questions such as the proper coefficients on common borders and languages in a gravity model, then the effect of the Euro in the five-to-eight year interval is large and comparable to the effect of the other non-Euro monetary unions.

**Soderstrom** revisits the potential costs and benefits for Sweden of joining the Economic and Monetary Union (EMU) of the European Union. He shows that the Swedish business cycle since the mid-1990s has been closely correlated with that of the Euro area economies, more so than that of some current EMU members. Then, using an estimated model of the Swedish economy, he shows that while asymmetric shocks have been important fluctuations in the Swedish economy since 1993, to a large extent the exchange rate has acted to destabilize, rather than stabilize, the economy. Finally, his model predicts that Swedish inflation and GDP growth might have been slightly higher if Sweden had been a member in EMU since 1999, but also that GDP growth might have been more volatile. EMU membership also could have implied higher inflation in Sweden in 2004–5, when inflation was exceptionally low. Thus, the evidence is not conclusive.

Developments in open-economy modeling, and the accumulation of experience with the monetary policy regimes prevailing in the United Kingdom and the Euro area, have increased our ability to evaluate the effects that joining a monetary union would have on the U.K. economy. **DiCecio** and **Nelson** analyze the debate on the U.K.'s monetary policy options using a structural open-economy model.

**Bugamelli** and his co-authors test whether and how the adoption of the Euro, narrowly defined as the end of competitive devaluations, has affected member states' productive structures, distinguishing between within- and across-sector reallocation. They find

that the Euro has been accompanied by a reallocation of activity within, rather than across, sectors. Since adoption of the Euro, productivity growth has been relatively stronger in country-sectors that once relied more on competitive devaluations to regain price competitiveness. Firm-level evidence from Italian manufacturing confirms that low-tech businesses, which arguably benefited most from devaluations, have been restructuring more since the adoption of the Euro. Restructuring has entailed a shift of business focus from production to upstream and downstream activities, such as product design, advertising, marketing, and distribution, and a corresponding reduction in the share of blue-collar workers.

Most observers have concluded that while money markets and government bond markets are rapidly integrating following the introduction of the common currency in the Euro area, there is little evidence that a similar integration process is taking place for retail banking. Data on cross-border retail bank flows, cross-border bank mergers, and the law of one price reveal no evidence of integration in retail banking. **Kashyap** and **Gropp** show that the previous tests of bank integration are weak, in that they are not based on an equilibrium concept and are neither necessary nor sufficient statistics for bank integration. They propose a new test of integration based on convergence in banks' profitability. The new test emphasizes the role of an active market for corporate control and of competition in banking integration. European listed banks' profitability appears to converge to a common level. There is weak evidence that competition eliminates high profits for these banks, and underperforming banks tend to show improved profitability. Unlisted European banks differ markedly. Their profits show no tendency to revert to a common target rate of profitability. Overall, the banking market in Europe appears far from being integrated. In contrast, in the United States both listed and unlisted

commercial banks profits converge to the same target, and high profit banks see their profits driven down quickly.

**Giovannini** explains what a single, integrated European securities market is and why we do not have it yet. He argues that any market, including a securities market, is defined by the arrangements put in place to ensure delivery of goods and payments to the counterparties in each trade (post-trading arrangements). Analyzing these arrangements is the most reliable way to assess the extent to which there is integration in a geographic area like the EU or the Euro Area. In his paper, Giovannini analyzes post-trading arrangements in the EU and discusses their reform, the objective of which is to obtain a single EU securities market.

**Reichlin** and her co-authors note that in those EMU countries that started from similar initial conditions, in terms of real activity in the 1970s, business cycles are very similar and

no significant change can be detected since 1999. For the other countries, there is a lot of uncertainty. No clear change since the EMU can be identified in either group. As for the Euro area business cycle, per capita GDP growth since 1999 has been lower than what could have been predicted on the basis of historical experience and U.S. observed developments. The gap between U.S. and Euro area GDP per capita has been 30 percent on average since 1970, and there is no sign of catching up or of further widening.

In their history of the first decade of European Central Bank (ECB) policy, **Cecchetti** and **Schoenholtz** discuss key challenges for the next decade. Beyond the ECB's track record and an array of published critiques, their analysis relies on unique source material: extensive interviews with current and former ECB leaders and with other policymakers and scholars who viewed the evolution of the ECB from privileged

vantage points. The researchers share the assessment of their interviewees that the ECB has enjoyed many more successes than disappointments. These successes reflect the ECB's design and implementation. Looking forward, the authors highlight the unique challenges posed by enlargement and, especially, by the Euro area's complex arrangements for guarding financial stability. In the latter case, the key issues are coordination in a crisis and harmonization of procedures. As several interviewees suggested, in the absence of a new organizational structure for securing financial stability, the current one will need to function as if it were a single entity.

These papers will be considered for publication in an NBER Conference Volume by the University of Chicago Press and will be posted at "Books in Progress" on the NBER's website.





## Understanding Long-Run Economic Growth: A Conference Honoring the Contributions of Kenneth Sokoloff

The NBER, the All-UC Economic History Group, and the University of California, Los Angeles (UCLA) jointly sponsored “Understanding Long-Run Economic Growth: A Conference Honoring the Contributions of Kenneth Sokoloff” on November 7 and 8 in Los Angeles. NBER Research Associates Dora L. Costa and Naomi R. Lamoreaux of UCLA served as co-organizers of this memorial tribute to Sokoloff, who died in May 2007 at the age of 54. He had been a member of the NBER’s Program on the Development of the American Economy and a professor of economics at UCLA for decades.

More than 150 scholars attended the conference, with participants coming from five different continents (North and South America, Europe, Asia, and Australia). In addition to the formal academic program, Douglass C. North, co-winner of the 1993 Nobel Prize in economics, gave an after-dinner address that interwove reminiscences about Sokoloff with an impassioned brief for the importance of studying economic history and, in particular, the history of economic institutions. Robert W. Fogel, who shared the Nobel Prize with North, gave a paper at a session immediately preceding the dinner, and the two great scholars enlivened the evening with their ongoing repartee about how economic history should be written.

These papers were presented and discussed:

**Stanley L. Engerman**, University of Rochester and NBER (joint with **Kenneth L. Sokoloff**), “Once Upon

a Time in the Americas: Land and Immigration Policy in the New World” Discussant: Peter Lindert, University of California, Davis

**James A. Robinson**, Harvard University and NBER, and **Camilo Garcia**, MIT, “The Myth of the Frontier” Discussant: Ronald Rogowski, University of California, Los Angeles

**Stephen Haber**, Stanford University and NBER, and **Victor Menaldo**, Stanford University, “Do Natural Resources Fuel Authoritarianism? A Reappraisal of the Resource Curse” Discussant: Jeffrey Frieden, Harvard University

**Daniel Kaufmann**, World Bank, “Corruption and Capture in Economic Development: A Few Reflections and Some Evidence” Discussant: Daniel Treisman, University of California, Los Angeles

**Claudia Goldin** and **Lawrence F. Katz**, Harvard University and NBER, “Mass Secondary Schooling and the State: The Role of State Compulsion in the High School Movement” Discussant: David Card, University of California, Berkeley and NBER

**Naomi R. Lamoreaux**; **Kenneth L. Sokoloff**; and **Dhanoos Sutthiphisal**, McGill University and NBER, “The Reorganization of Inventive Activity in the United States in the Early Twentieth Century” Discussant: Ariel Pakes, Harvard

University and NBER

**Robert W. Fogel**, University of Chicago and NBER, “The Impact of the Asian Miracle on the Theory of Economic Growth”

**B. Zorina Khan**, Bowdoin College and NBER, “Premium Inventions: Patents and Prizes as Incentive Mechanisms in Britain and the United States, 1750–1930” Discussant: Manuel Trajtenberg, Tel Aviv University

**Sukoo Kim**, Washington University in St. Louis and NBER, and **Sebastian Galiani**, Washington University in St. Louis, “The Law of the Primate City in the Americas” Discussant: Edward Leamer, University of California, Los Angeles and NBER

**John Majewski**, University of California, Santa Barbara, and **Daniel Bogart**, University of California, Irvine, “Population Densities, Political Structures, and the Early Corporation: The Transportation Revolution in the U.K. and United States” Discussant: John J. Wallis, University of Maryland and NBER

**Jean-Laurent Rosenthal** and **Philip T. Hoffman**, Caltech, and **Gilles Postel-Vinay**, EHESS, “History, Geography, and the Markets for Mortgage Loans in 19th Century France” Discussant: Joel Mokyr, Northwestern University

**Engerman** and **Sokoloff** examine land and immigration policies across the range of colonies/societies established by the Europeans in the New World over the sixteenth, seventeenth, eighteenth, and nineteenth centuries to improve our understanding of whether there are sys-

tematic patterns in the evolution of institutions. The case of the Americas provides an excellent natural laboratory for studying the effects of different forces on the development of institutions. First, these societies were all settled by a limited set of European countries at roughly

the same time, and were extremely diverse with respect to many aspects of their endowments. Second, although their initial conditions differed enormously in some respects, nearly all of these New World societies had a relative abundance of land and natural resources, and came to

specialize quite early in their histories in agriculture and mining. The policies they adopted toward the ownership and use of land, and the openness toward labor flows, had very significant implications for their long-run paths of development. This comparative study not only helps to establish a systematic record, but also attempts to identify salient factors in accounting for the variation over time and place in the design of strategic institutions.

Does the presence of an open frontier explain why the United States became democratic and, at least implicitly, prosperous? In their paper, **Robinson and Garcia** begin with the contradictory observation, that almost every Latin American country had a frontier in the nineteenth century as well. They show that while the data does not support the Frontier thesis, it is consistent with a more complex “conditional Frontier thesis”: that the effect of the frontier is conditional on the way it was allocated, and that this in turn depends on political institutions at the time of frontier expansion. They show that for countries with the worst political institutions, there is a negative correlation between the historical extent of the frontier and contemporary income per capita. For countries with better political institutions, this correlation is positive. The effect of the frontier on democracy is positive irrespective of initial political institutions, but it is larger the better were these institutions.

Is there a relationship between “point source” natural resource dependence and authoritarianism? In order to answer this question, **Haber and Menaldo** develop unique datasets that allow them to focus on within-country variance in resource dependence and regime types. Their results indicate that dependence on oil and minerals is not associated with the undermining of democracy or less complete transitions to democracy. These results are at variance with a large body of scholarship that uses pooled cross-sectional techniques and finds a negative relationship between natural resource dependence and democracy. The authors subject those cross-sectional results to a battery of standard diagnostics and find that they are very fragile; the source of

that fragility is the use of pooled cross-sectional data to address a question about change over time. Haber and Menaldo suggest that when testing theories about processes that take place within countries over time, assembling time-series datasets designed to operationalize explicitly specified counterfactuals better matches the theory and empirics than do regressions centered on the cross-sectional analysis of longitudinally truncated data.

Although little known to many, Ken Sokoloff’s intellectual and geographical adventures also led him to contribute to the field of development. Through his deep historical understanding of the role of endowment and institutions, he provided insights for Latin America today, and for other areas. **Kaufmann** briefly reviews some of Sokoloff’s contributions to development. Then he focuses on a study of one narrow link between governance and development, which intrigued Ken as a scholar and teacher: namely, the role of state capture in development. He summarizes recent research on the effects of capture on development, and goes on to present new empirical results based on a micro-dataset comprised of thousands of investment projects in developing countries whose performance has been rated by the World Bank’s evaluation unit. He investigates the links between state capture, administrative corruption, and other factors and controls and the performance of such investment projects. The results suggest non-trivial effects of capture on investment project performance.

In the three decades after 1910, the fraction of U.S. youths enrolled in public and private secondary schools soared from 18 to 71 percent and the fraction graduating increased from 9 to 51 percent. At the same time, state compulsory education and child labor legislation became more stringent. It might appear from the timing that the laws caused the increase in education rates. **Goldin and Katz** evaluate that possibility using contemporaneous evidence on enrollments and the microdata from the 1960 census to examine the effect of the laws on overall educational attainment. Their estimation approach exploits cross-state differences in the timing of changes in

state laws. The expansion of state compulsory schooling and child labor laws from 1910 to 1939 can, at best, account for 6 to 7 percent of the increase in high school enrollments and can account for about the same portion of the increase in the eventual educational attainment for the affected cohorts over the period. The “state,” in the form of localities, already was providing educational resources in the United States. Compulsory education laws had larger impacts in other nations where the laws compelled the state to expand educational resources.

The standard view of U.S. technological history is that the locus of invention shifted during the early twentieth century to large firms whose in-house research laboratories were superior sites for advancing the complex technologies of the second industrial revolution. In recent years, this view has been subject to increasing criticism. At the same time, new research on equity markets during the early twentieth century suggests that smaller, more entrepreneurial enterprises were finding it easier to gain financial backing for technological discovery. **Lamoreaux** and her co-authors use data on the assignment (sale or transfer) of patents to explore the extent to which, and how, inventive activity was reorganized during this period. They find that two alternative modes of technological discovery developed in parallel during the early twentieth century. The first, concentrated in the Middle Atlantic region, centered on large firms that seem to have owed their prominence less to R and D labs than to their superior access to the region’s rapidly growing equity markets. The other, located mainly in the East North Central region, consisted of smaller, more entrepreneurial enterprises that drew primarily on local sources of funds. Both modes seem to have made roughly equivalent contributions to technological change during this period.

**Fogel** began by reviewing the concept of growth theory, tracing its origins and its evolution. After World War II, there were wide-ranging debates about the future of economic development for the American economy, the economies of Europe, and the economies of less developed nations. The pessimistic views of stagnation for the United States and other OECD econ-

omies—because there was something inherently unstable in the operation of capitalistic economies—were proved to be unfounded. However, the growing gap in income between developed and less developed nations led to an emphasis on cultural and ideological barriers to economic growth in poor countries, worries about over-saving, and concerns that export-led growth was exploitative. The remarkable growth of the four Asian dragons—Hong Kong, Singapore, South Korea, and Taiwan—and, more recently, of Malaysia, China, Indonesia, and Thailand was not only not forecast, but also was believed to be a temporary fluke. Fogel concluded by predicting that by 2030 China and Southeast Asia combined would have a total GDP that exceeds that of the United States and the five largest European countries combined. Nevertheless, U.S. per capita income in 2030 very likely will still be several times greater than that of China.

A number of economists have been persuaded by the implications of theoretical models of prizes and subsidies and have begun to lobby for these policies as superior alternatives to patent institutions. The late-eighteenth and nineteenth centuries provide a natural experiment for studying the emergence, evolution, and effects of different incentive systems for technological innovations. **Khan's** analysis is based on samples of “great inventors” and “ordinary inventors” in Britain and the United States, and includes their patents and inventions, as well as prizes granted during the critical transition from the First to the Second Industrial Revolutions. The results suggest

that the award of prizes tended to be less systematic than that of patents and more susceptible to misallocation, but the results varied by institutional context. If inventors respond to expected benefits, these findings imply that prizes may offer fewer incentives for investments in inventive activity.

**Kim and Ghaliani** explore the causes of urban primacy in the Americas using the insight that primate cities are often political capitals. Using extensive data on cities, they estimate the impact of capital city status on urban concentration after controlling for geographic, climatic, and economic factors. They find that political capitals, both national and provincial, contribute significantly more to urban concentration in Latin America than in North America although there are important country variations within these areas. They suggest that one possible cause of the differing patterns of urban development in the Americas is the differences in the centralization of political power in the Americas, a factor which has deep colonial roots.

**Majewski and Bogart** compare the evolution of transportation organizations in the United Kingdom and the United States—both world leaders in transport development by the mid-nineteenth century—with a focus on the differences in their chartering regimes. They show that U.S. state governments incorporated far more transportation companies per person at far lower fees than did the U.K. Parliament. Their initial investigation suggests that the key difference was the greater degree of democracy in the United States and its competitive economic environment in which cities and localities were engaged in a race to improve

their transport links.

**Rosenthal, Hoffman, and Postel-Vinay** take two themes in Kenneth Sokoloff's research—the negative effects of inequality and the positive effects of large, competitive markets—and examine their impact on mid-nineteenth-century French mortgage markets. In particular, they document a negative externality from inequality: when the distribution of wealth is too skewed, the middle class is excluded from the market. But there is also a second, positive externality generated by the geographical density of markets. The authors distinguish its effects in the credit market itself from possible spillovers from the comparable externality in product markets. They proceed in four steps: 1) summarizing the sources of their data and their aggregate findings on French credit markets; 2) analyzing local credit markets, which suggest that inequality had adverse effects on lending; 3) searching for the positive externality by examining loans between inhabitants of different cities and towns; and 4) showing that there were indeed positive network externalities in credit markets, which are consistent with a queuing model. Although most loans were local, the credit network allowed for significant inter-market flows of resources, they find.

These papers will be considered for publication in an NBER Conference Volume by the University of Chicago Press and will be posted at “Books in Progress” on the NBER's website.

## Microeconomics, Efficiency, and Welfare: Lessons for Latin America

The NBER and Universidad de los Andes in Santiago, Chile co-sponsored this year's Inter-American Seminar on Economics on "Microeconomics, Efficiency, and Welfare: Lessons for Latin America." The conference was held in Santiago on November 10 and 11. Organizers Sebastián Edwards of NBER and University of California, Los Angeles, and Alexander Galetovic of Universidad de los Andes chose the following papers to discuss:

**Stephen H. Haber**, Stanford University and NBER, and **Aldo Musaccio**, Stanford University, "Foreign Entry and the Mexican Banking System, 1997–2007"  
Discussant: Alejandro Micco, Chilean Ministry of Finance

**Hoyt Bleakley**, University of Chicago and NBER, and **Kevin Cowan**, Banco Central de Chile, "Mishmash or Mismatch: Balance Sheet Effects and Emerging Market Crises"  
Discussant: Sebastián Edwards

**Marcela Eslava**, Universidad de Los Andes; **John Haltiwanger**, University of Maryland and NBER; **Adriana Kugler**, University of Houston and NBER; and **Maurice Kugler**, Wilfrid Laurier University, "Lower Barriers to Entry, Experimentation and Aggregate Productivity: Lessons from Colombian Manufacturing Plants"  
Discussant: Roberto Álvarez, Banco Central de Chile

**Fernando Diaz**, **Alexander Galetovic**, and **Ricardo Sanhueza**, Universidad de los Andes, "Mobile-Fixed Substitution and Telecomm Liberalization"  
Discussant: Claudio Agostini, Universidad Alberto Hurtado

**David MacKenzie**, The World Bank, and **Ernesto Schargrodsky**, Universidad di Tella, "Buying Less, but Shopping More: The Use of Non-market Labor during a Crisis"  
Discussant: Harald Beyer, Centro de Estudios Públicos

**Rodrigo Soares**, University of Maryland and NBER, and **Romero Rocha**, PUC, "Evaluating the Impact of Community-Based Health Interventions: Evidence from Brazil's Family Health Program"  
Discussant: Ernesto Schargrodsky

**Cesar Martinelli**, ITAM, "Press and Good Government"  
Discussant: Alexander Galetovic

**Alejandra Mizala**, Universidad de Chile, and **Miguel Urquiola**, Columbia University and NBER, "School Markets: The Impact of Information Approximating Schools' Effectiveness" (NBER Working Paper No. 13676)  
Discussant: Francisco Gallego, Universidad Católica

**Juan Eberhard**, Yale University, and **Eduardo Engel**, Yale University and NBER, "The Educational Transition and Decreasing Wage Inequality in Chile"  
Discussant: Andrea Repetto, Universidad Adolfo Ibáñez

How does the entry of foreign banks affect pricing and the availability of credit in developing economies? The Mexican banking system provides a quasi-experiment to address this question, because in 1997 the Mexican government radically changed the laws governing the foreign ownership of banks; the foreign market share increased five-fold between 1997 and 2007 as a result. **Haber** and **Musaccio** construct and analyze a panel of Mexican bank financial data covering this period and find no evidence that foreign entry increases the availability of credit. Their analysis also indicates that foreign banks screen borrowers more closely and charge higher lending rates than domestic banks. One of their most robust findings is that foreign ownership is associated with a decrease in housing lending. This suggests that there may be less housing lending

going on because foreign-owned banks may wish to avoid Mexico's difficult property rights environment.

**Bleakley** and **Cowan** critically assess the recent empirical literature on the importance of dollar debt and balance-sheet effects in the emerging-market financial crises of the 1990s. Using a simple model, they discuss which specifications are theoretically appropriate, and they provide additional insights as to the proper interpretation of the reduced-form evidence in the literature. Using harmonized microdata on corporations across a dozen countries in Latin America and Asia, they replicate common specifications for the effect of dollar debt on investment and output at the firm level. In this light, they suggest that the literature on corporate level currency mismatch is hardly a mishmash, but in fact is quite concordant.

**Eslava**, **Haltiwanger**, **Kugler**, and **Kugler** use plant output and input prices to decompose the profit margin into three parts: productivity, demand shocks, and input costs. They find that market-oriented reforms increase the effect of market fundamentals on market entry. Their definition of a market is one industry in a particular region. Prior to reforms, they find, market fundamentals often work in the wrong direction with respect to the determinants of entry. These findings suggest that frictions from poor market-oriented institutions have distorted the process of entry. The authors also find that market reforms increased the marginal effect of productivity, and of other market fundamentals, on plant entry. There is also evidence that market reforms yielded an environment conducive to greater market experimentation.



The development and diffusion of mobile telephony has been fast and universal, but whether mobile and fixed phones are substitutes is still a contentious issue. Most studies tend to find positive cross-price elasticity; some suggest that there is complementarity. In any case, it seems fair to say that the evidence is still not compelling. Consequently, tariff liberalization of fixed telephony is still an issue and it seems that regulation will be with us for some time in most countries. **Diaz, Galetovic, and Sanhueza** argue, however, that under particular circumstances one can perform a simple (non-statistical) test of substitution that relies only on the standard properties of demand curves. They perform this test for Chile and find compelling evidence of mobile-fixed substitution.

Households that allocate time between market and non-market uses should respond to income variations by adjusting the time they devote to shopping and other home production activities. **MacKenzie and Schargrodsky** exploit high-frequency data on household expenditures to examine the use of changes in shopping intensity as a method of mitigating the effects of the 2002 Argentine economic crisis. They find that although the total quantity and real value of goods purchased fell during the crisis, consumers were doing more shopping. This increase in shopping enabled households to seek out lower prices and to locate substitutes, allowing a given level of expenditure to buy more goods. The magnitude and prevalence of these effects suggest that this non-market use of labor can be an important coping strategy for households during a recession.

**Soares and Rocha** analyze the direct and indirect impacts of Brazil's Family Health Program. They estimate the effects of the program on mortality and on household behavior related to child labor and schooling, employment of adults, and fertility. They find that the program has consistent effects on reductions in mortality throughout the age distribution, but

mainly at earlier ages. Municipalities in the poorest regions of the country particularly benefit from the program. For these regions, implementation of the program is also robustly associated with increased labor supply of men between ages 41 and 55, and reduced fertility of women between ages 31 and 40.

**Martinelli** presents a model of (possibly hidden) capture of a democratically elected government by the elite. He shows that there is a U-shaped relationship between government turnover and the extent of capture. When politicians are very patient, economic conditions are bad, and press coverage of government behavior is not reliable, the best equilibrium for the majority of citizens requires punishing governments with no re-election, even if citizens know there is no capture in equilibrium. If politicians are not very patient, then the best equilibrium for the majority may not imply government turnover, regardless of the quality of press coverage, even if citizens know that there is a positive probability of hidden capture. Finally, if politicians are quite impatient, and when economic conditions are good and press coverage is not reliable, the best equilibrium for the majority requires not re-electing governments.

The impact of competition on academic outcomes likely depends on whether parents are informed about schools' effectiveness or value added (which may or may not be correlated with absolute measures of their quality), and on whether this information influences their school choices, thereby affecting schools' market outcomes. To explore these issues, **Mizala and Urquiola** consider Chile's SNED program, which seeks to identify effective schools, selecting them from within "homogeneous groups" of arguably comparable institutions. Its results are widely disseminated, and the information it generates is quite different from that conveyed by a simple test-based ranking of schools (which in Chile, turns out to largely resemble a ranking based on socioeconomic status). The authors rely on

a sharp regression discontinuity to estimate the effect that being identified as a SNED winner has on schools' enrollment, tuition levels, and socioeconomic composition. Through five applications of the program, they find no consistent evidence that winning a SNED award affects these outcomes.

**Eberhard and Engel** find that between 1975 and 1990 the wage of the 90th (richest) percentile in Chile increased faster than the median wage and the wage of the 10th percentile. By contrast, from 1990 on the wage of the 10th percentile and the median wage grew faster than the wage of the 90th percentile. This is one of many findings showing that wage inequality in Chile has been falling, first slowly, then faster, over the last two decades. The pattern emerges most clearly once cyclical components of wage inequality measures are removed. To understand this decrease in wage inequality, the authors group workers according to their cohort and educational attainment and decompose the variance of (log) wages into within- and between-group variances. They find that the significant decrease in wage inequality is largely attributable to a decrease in between-group variance. The evidence suggests that this decrease in wage inequality was caused by a secular decline in the skill premium for tertiary education resulting from the deregulation of this market in 1980. Somewhat surprisingly, the marked decrease in the skill premium can be found in the data one decade earlier, yet the corresponding decrease in wage inequality was canceled by a Kuznets-type effect, where an increasing but still small fraction of workers with tertiary education led to more inequality, during the 1985–95 period.

These papers will be considered for publication in an NBER Conference Volume by the University of Chicago Press and will be posted at "Books in Progress" on the NBER's website.

## Economic Aspects of Obesity

Genetic factors cannot account for the rapid increase in obesity since 1980 — these factors change slowly over long periods of time. Therefore, economists can play a role in examining the determinants and consequences of this trend, although the factors at work are complex, and the policy prescriptions are by no means straightforward. To increase our understanding of this subject, the NBER held a conference on the “Economic Aspects of Obesity” at Louisiana State University in Baton Rouge on November 10 and 11. The organizers were Michael Grossman, City University of New York Graduate Center and NBER, and Naci H. Mocan, Louisiana State University and NBER.

Several of the conference papers addressed the role of reductions in real food prices in the period at issue, and reported that these declines could account for some of the increase in obesity. These papers bear on the question of whether taxes on food, especially dense and high-caloric fast food, provide an effective public policy tool for addressing obesity. The case for such taxes is weakened if fully informed consumers are taking account of all the costs of their food choices, and strengthened if the obese do not pay for their higher medical expenditures through differential payments for health care and health insurance, and if body weight decisions are responsive to the incidence of the medical care costs associated with obesity. One paper found that health insurance does indeed “make you fat.” But others at the conference argued that a tax on fast food could actually increase caloric intakes via substitution towards non-taxed food. An alternative policy might be financial rewards for weight loss. But another paper found very small average weight loss associated with worksite programs with this feature. Still other papers found evidence that access to parks, gymnasiums, and other recreational facilities increase exercise and reduce obesity. Whether this finding bears directly on the suggestion that such facilities should receive public subsidies depends on the extent to which people with unobserved

tastes for physical activities choose to locate in areas with better access to these facilities.

The economic consequences of obesity are complex. One paper found that overweight teens have about the same levels of educational attainment as teens of normal weight. One explanation is that the overweight offset the factors associated with poor health and discrimination by allocating more time to schoolwork and less time to sports and other leisure time activities. Another paper reported that the observed negative relationship between obesity and wages is not caused by obesity per se but rather by a factor such as physical attractiveness or discrimination. One paper contained suggestive evidence that this negative relationship between obesity and wages could be attributable in part to low self-esteem on the part of the obese.

These topics were discussed at the conference:

“Effects of the Minimum Wage on Obesity”

**David O. Meltzer**, University of Chicago and NBER, and **Zhuo (Adam) Chen**, Centers for Disease Control and Prevention  
Discussant: Kristin Butcher, Wellesley College

“Outcomes in a Program that Offers Financial Rewards for Weight Loss”

**John Cawley**, Cornell University and NBER, and **Joshua A. Price**, Cornell University  
Discussant: Dhaval Dave, Bentley College and NBER

“Food Prices and Body Weight Among Older Americans”

**Dana Goldman** and **Darius Lakdawalla**, RAND and NBER, and **Yuhui Zheng**, RAND  
Discussant: Michael Anderson, University of California at Berkeley

“Economic Contextual Factors and Child Body Mass Index”

**Lisa M. Powell**, University of Illinois at Chicago, and **Frank J. Chaloupka**, University of Illinois at Chicago and NBER

Discussant: Tinna Asgeirsdottir, University of Iceland

“The Relationship between Neighborhood Quality and Obesity among Children”

**Bisakha Sen**, **Stephen Mennemeyer**, and **Lisa C. Gary**, University of Alabama at Birmingham  
Discussant: Susan Averett, Lafayette College

“Studying the Child Obesity Epidemic with Natural Experiments”

**Robert Sandy**, **Gilbert Liu**, **John Ottensmann**, **Jeff Wilson**, and **O.T. Ford**, Indiana University; and **Rusty Tchernis**, Indiana University and NBER  
Discussant: Barbara Schone, Agency for Healthcare Research and Quality

“Food Stamp Program and Consumption Choices”

**Neeraj Kaushal**, Columbia University and NBER, and **Qin Gao**, Fordham University  
Discussant: Kerry Anne McGeary, Drexel University

“Physical Activity: Economic and Policy Factors”

**Melayne M. McInnes**, University of South Carolina, and **Judy A. Shinogle**, University of Maryland  
Discussant: James Sallis, San Diego State University

“Effects of Weight on Adolescent Educational Attainment”

**Robert Kaestner**, University of Illinois at Chicago and NBER; **Michael Grossman**; and **Ben Yarnoff**, University of Illinois at Chicago  
Discussant: Jeffrey DeSimone, University of Texas at Arlington and NBER

“Where Does the Wage Penalty Bite?”

**Christian A. Gregory**, University of

*(continued)*

North Carolina at Greensboro, and **Christopher J. Ruhm**, University of North Carolina at Greensboro and NBER  
Discussant: Roy Wada, University of California, Los Angeles

“Does Health Insurance Make You Fat?”

**Jay Bhattacharya** and **M. Kate Bundorf**, Stanford University and NBER; **Noemi Pace**, University College of London; and **Neeraj Sood**, Rand and NBER  
Discussant: Alan C. Monheit, University of Medicine and Dentistry of New Jersey School of Public Health and NBER

“Obesity, Self-esteem, and Wages”  
**Naci H. Mocan**, and **Erdal Tekin**, Georgia State University and NBER  
Discussant: Sara Markowitz, Emory University and NBER

Since the 1970s, the real minimum wage in the United States has declined by nearly half, and obesity has increased. Because consumption of food away from home has been suggested as a major cause of increasing obesity, and minimum wage labor is a major contributor to the cost of “fast food”, **Meltzer** and **Chen** examine whether changes in the minimum wage are associated with changes in body weight over this period. Using data from the Behavioral Risk Factor Surveillance System from 1984–2006, they test whether variations in the real minimum wage were associated with changes in body mass index (BMI). They also examine whether this association varied by gender, education, and income, and they test whether the association varied over the BMI distribution. They find that a \$1 decrease in the real minimum wage was associated with a 0.06 decrease in BMI. This relationship was significant across gender and income groups and largest among the highest percentiles of the BMI distribution. Real minimum wage decreases can explain 10 percent of the change in BMI since 1970, they conclude. The declining real minimum wage has contributed to the increasing rate of overweight and obesity in the United States.

Obesity rates in the United States have doubled since 1980. Given the medical, social, and financial costs of obesity, a large percentage of Americans are attempting to lose weight at any given time but the vast majority of weight loss attempts fail. Researchers continue to search for safe and effective methods of weight loss, and **Cawley** and **Price** evaluate one promising method: offering financial rewards for weight loss. They study data on 2,351 employees in 15 worksites who participated in a year-long worksite health pro-

motion program that offered financial rewards for weight loss. The intervention varied by employer, in some cases offering steady quarterly rewards and in other cases requiring participants to post a bond that would be refunded at year’s end conditional on weight loss. Still others received no financial incentives at all and serve as a control group. The authors find far higher attrition in this real-world intervention than has been experienced in similar interventions designed and operated by researchers. Moreover, average weight loss attributable to the financial rewards is small: after one year, it is 1.7 pounds for those who posted a refundable bond and is not significantly different from zero for those facing steady quarterly rewards.

**Goldman** and his co-authors examine the associations between food prices of various kinds and body weight, for adults age 50 and over in the United States. The authors use the Health and Retirement Study, a longitudinal and nationally representative survey of older Americans, along with data on geographical and temporal variations in food price inside the United States, to identify the associations. They find that doubling the price of calories or the price of fat reduces body weight of low-income persons by 5 to 7 percent. This implies that if food taxes were imposed to reduce caloric intake, a substantial share of the reduction in obesity would occur among the population that currently qualifies for Medicaid.

**Powell** and **Chaloupka** examine the relationship between child weight and: the prices of energy-dense foods, such as fast food, versus healthy foods, including fruits and vegetables; the availability of fast food versus full-service restaurants; and access to food outlets, including super-

markets, grocery stores, and convenience stores. The researchers draw on longitudinal data from the Child Development Supplement of the Panel Study of Income Dynamics, combined at the zip-code level with food price data from the American Chamber of Commerce Researchers Association and food-related outlet density data obtained from Dun & Bradstreet. Their results show that higher fruit and vegetable prices are related to a higher body mass index (BMI) among children, with greater effects among those in low socioeconomic status (SES) families. Higher fast food prices are negatively related to child weight only among low-income children. Increased supermarket availability also lowers children’s weight outcomes among the low-SES children. These results provide evidence of the potential effectiveness of using fiscal pricing interventions, such as taxes and subsidies, and other interventions to improve supermarket access as policies to address childhood obesity.

**Sen** and co-authors explore whether maternal perceptions of neighborhood quality affect children’s bodyweight outcomes and, moreover, whether racial and ethnic differences in such perceptions may explain any of the hitherto unexplained gap in bodyweight and obesity prevalence among whites and minorities. Their results indicate that overall neighborhood quality is not significantly related to children’s bodyweight, but one particular characteristic—whether there is enough police protection in the neighborhood—is indeed related. Lack of police protection has robust and significant effects on the children’s BMI, although it has less robust effects on the risk of becoming obese *per se*. Additionally, lack of police protection appears to be associated with chil-



dren spending more time watching television. Finally, there are differences in perceptions about adequate police protection between whites and minorities that remain after controlling for other socioeconomic factors, and these differences do explain part of the gap in bodyweight between white and minority children.

**Sandy** and his co-authors use clinical records of successive visits by children at pediatric clinics in Indianapolis to estimate the effects on their body mass of changes in the environment near their homes. The sample is limited to children who resided at the same address before and after the environmental change. The environmental factors are: fast food restaurants, supermarkets, parks, trails, and violent crimes, and 13 types of recreational amenities derived from the interpretation of annual aerial photographs. The researchers' cross-sectional estimates are quite different from their fixed-effects (FE) estimates of the impacts of amenities locating near a child. In the cross section, nearby fast food restaurants are associated with higher BMI and supermarkets with lower BMI. These results are reversed in the FE estimates. The recreational amenities that appear to lower children's BMI are baseball and softball fields, fitness areas, kickball diamonds, and volleyball courts.

Using the Consumer Expenditure Surveys for 1994–2004, **Kaushal** and **Gao** study the effect of the Food Stamp Program (FSP) on consumption patterns in families headed by low-educated single mothers in the United States. Their analysis suggests that the food stamp caseload does not have any statistically significant association with per capita expenditure on food in families headed by low-educated single mothers. The researchers find that state and federal welfare reforms during the 1990s lowered the food stamp caseload by approximately 18 percent, and the introduction of the Electronic Benefit Transfer cards and simplified reporting procedures for re-certification of food stamps increased participation by about 7 percent. However, there is no evidence that these policies had any effect on total food expenditure, nor any consistent evi-

dence that the policies affected expenditures on specific food items.

**McInnes** and **Shinogle** examine correlates and predictors of physical activity over time with emphasis on economic factors. Using data for adults from the 2000–5 Behavioral Risk Factor Surveillance System (BRFSS) survey, they analyze the characteristics of individuals and their environments that determine their level of activity. Because BRFSS includes state and county codes for each individual, the researchers are able to include additional information regarding economic variables, such as area unemployment, as well as price and supply variables. They find that certain area characteristics—such as access to gyms, parks, and other recreational facilities—increase the probability of exercise. It is possible that those people with unobserved tastes for prevention activities, such as physical activity, may choose to live in areas with better access to these facilities. Yet the results persist when the authors attempt to control for this unobserved taste with a dichotomous indicator for the receipt of a flu shot.

**Kaestner** and his co-authors investigate the association between weight and adolescent educational attainment, as measured by highest grade attended, highest grade completed, and drop out status. Data for this study come from the 1997 cohort of the National Longitudinal Survey of Youth, which contains a large, national sample of teens between the ages of 14 and 18. After controlling for a variety of observed characteristics, the researchers conclude that, in general, teens who are overweight or obese have levels of attainment that are about the same as teens with average weight.

Using data from the 1986 and 1999–2005 Panel Study of Income Dynamics, **Gregory** and **Ruhm** estimate models that allow earnings to vary with BMI in a highly flexible manner. Their results show that, for women, earnings peak at levels far below the clinical threshold of “obesity” or even “overweight.” For men, the estimates suggest a reasonably flat BMI-wage profile that peaks early in the “overweight” category. However, the results of instrumental variables (IV) models for the

men are more similar to those for women: the findings for females (and the IV estimates for males) suggest that it is not obesity but rather some other factor—such as physical attractiveness—that may be producing the observed relationship between BMI and wages. Using data from the Medical Expenditure Panel Survey, the authors also provide estimates of the association between BMI and health expenditures. These cast further doubt on the hypothesis that the wage penalties associated with increasing BMI occur because the latter serve as an index for underlying medical costs.

**Bhattacharya** and his co-authors use data from the Rand Health Insurance Experiment, in which people were randomly assigned to varying levels of health insurance, to examine the effect of insurance coverage on body weight along the intensive-coverage margin. Then, they use nonlinear IV methods to estimate the effect of type of insurance coverage (private, public, and none) on body weight, in order to examine the effects of coverage along the extensive margin in the 1989–2004 waves of the National Longitudinal Survey of Youth 1979. They find weak evidence that more generous insurance coverage increases BMI. They find stronger evidence that being insured leads to a greater body mass index and a higher probability of obesity.

**Mocan** and **Tekin** find that, among a nationally representative sample of young American adults aged 21 to 26 in 2001–2, body weight has an independent impact on self-esteem after controlling for a host of personal attributes, including education, health status, and test scores. Specifically, being overweight or obese has a negative influence on the probability of having high self-esteem for females (both white and black) and for black males. There is no evidence of an impact of body weight on self-esteem in case of white men. Wages of black men and black women are influenced by their body weight. Although not uniformly statistically significant, there is a wage penalty for being obese, and there is some evidence of a wage penalty for being underweight in case of blacks. Self-



esteem has no impact on black wages. The authors' results indicate that for both white men and women, self-esteem has an impact on wages. Having high self-esteem is associated with a 3 percent wage premium. White women's wages are also influenced by their bodyweight, while body

weight does not affect white men's wages. The results suggest that obesity has the most serious impact on white women's wages, because their wages are affected directly by obesity and indirectly through the impact of obesity on self-esteem, although the magnitude of the wage penalty that emerges

through this second channel is small.

These papers will be considered for publication in an NBER Conference Volume by the University of Chicago Press and will be posted at "Books in Progress" on the NBER's website.

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## NBER News

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### NBER Researcher Wins Nobel Prize in Economics

NBER Research Associate Paul Krugman of Princeton University is the winner of the 2008 Nobel Prize in Economics. Krugman has been affiliated with the NBER since 1979 and is a member of the Programs on International Trade and Investment and International Finance and Macroeconomics. The Prize Committee of the Royal Swedish Academy of Sciences summarized his contributions as "deepen[ing] our under-

standing of the determinants of trade and the location of economic activity. His seminal papers...were instrumental to the development of the new trade theory...and inspired the new approach to economic geography."

Krugman joins a long list of current and past NBER affiliates who have received the Prize, including: Edward C. Prescott and Finn Kydland, 2004; Robert F. Engle, 2003; George Akerlof and Joseph

E. Stiglitz (shared with Michael Spence), 2001; James J. Heckman and Daniel L. McFadden, 2000; Robert C. Merton and Myron S. Scholes, 1997; Robert E. Lucas, Jr., 1995; Robert W. Fogel, 1993; Gary S. Becker, 1992; and the late George J. Stigler, 1982, Theodore W. Schultz, 1979, Milton Friedman, 1976, and Simon Kuznets, 1971.

### Two New Directors-at-Large

The NBER's Board of Directors elected two new at-large members at its September 8 meeting: Mohamed El-Erian and John S. Reed. El-Erian is CEO of PIMCO, the world's largest bond investor; he previously worked as the investment manager of Harvard University's endowment fund. Before moving to the private sector, El-Erian spent 15 years at the International Monetary Fund. He holds a Ph. D. in Economics from Oxford University.

Reed is the former chairman and

CEO of Citicorp and Citibank. He also served as chairman of the New York Stock Exchange from September 2003 until April 2005. He holds a Master of Science degree from MIT's Sloan School.

These two new directors fill an open slot and replace Roger W. Ferguson, Jr., who resigned as a director after becoming CEO of TIAA-CREF earlier this year. NBER President James M. Poterba, a professor of economics at MIT, also becomes a director-at-large.

At the same meeting, John S. Clarkeson succeeded Elizabeth Bailey as Chairman of the Board, and Kathleen B. Cooper was elected Vice Chairman. Clarkeson is Chairman Emeritus of the Boston Consulting Group, Inc. Cooper was Undersecretary for Economic Affairs of the U.S. Department of Commerce from 2001-5 and is currently a Senior Fellow at the Tower Center for Political Studies at Southern Methodist University.

## Program and Working Group Meetings

### China Working Group Meets in Cambridge

The NBER's Working Group on China, directed by NBER Research Associate Shang-Jin Wei of Columbia University, met on October 3 and 4 in Cambridge. These papers were presented and discussed:

**Shing-Yi Wang**, New York University, "Credit Constraints, Job Mobility, and Entrepreneurship: Evidence from a Property Reform in China."  
Discussant: Lakshmi Iyer, Harvard University

**Lena Edlund**, Columbia University; **Hongbin Li**, Tsinghua University; and **Junjian Yi** and **Junsen Zhang**, Chinese University of Hong Kong, "Sex Ratios and Crime: Evidence from China's One-Child Policy"  
Discussant: Avi Eberstein, Harvard University

**Shang-Jin Wei**, and **Xiaobo Zhang**, IFPRI, "Sex Ratio Imbalances Stimulate Savings Rates: Evidence from the 'Missing Women' in China."  
Discussant: Roger H. Gordon,

University of California, San Diego and NBER

**Li Jin**, Harvard University, and **Joseph P.H. Fan** and **Guojian Zheng**, Chinese University of Hong Kong, "Internal Capital Market in Emerging Markets: Expropriation and Mitigating Financing Constraints."  
Discussant: Wei Jiang, Columbia University

**Yan-Leung Cheung**, City University of Hong Kong; **Ping Jiang**, University of International Business and Economics; and **Kai Li** and **Tan Wang**, University of British Columbia, "Privatization and Risk Sharing: Evidence from the Split Share Structure Reform in China."  
Discussant: Zhiwu Chen, Yale University

**Lakshmi Iyer**; **Xin Meng**, Australian National University; and **Nancy Qian**, Brown University, "Property Rights and Household Decisions: The Impact of China's Urban Housing Reforms."  
Discussant: Marcos Chamon, IMF

**Jie Gan**, Hong Kong University of Science and Technology; **Yan Guo**, Peking University; and **Chenggang Xu**, University of Hong Kong, "What Makes Privatization Work? The Case of China."  
Discussant: Gary Jefferson, Brandeis University

**Irene Brambilla**, Yale University and NBER; **Galina Hale**, Federal Reserve Bank of San Francisco; and **Cheryl Long**, Colgate University, "Foreign Direct Investment and Incentives to Innovate and Imitate."  
Discussant: C. Fritz Foley, Harvard University and NBER

**Kalina Manova**, Stanford University and NBER, and **Zhiwei Zhang**, IMF, "China's Exporters and Importers: Firms, Products, and Trade Partners."  
Discussant: Amit Khandelwal, Columbia University

**Li Han**, Stanford University, "Marketing Politics? Economic Reforms and the Selection of Political Elites in China."  
Discussant: Yasheng Huang, MIT

**Wang** provides new evidence on the impact of private property rights on entrepreneurship. He explores this issue in the context of a housing reform in urban China that allowed state employees renting state-owned housing the opportunity to buy their homes at subsidized prices. Using the reform as an exogenous change in the capital constraints and mobility costs that influence individuals' entry into entrepreneurship, he estimates that it increased self-employment. He develops a model of job choice to test two mechanisms that might explain how the reform increased entrepreneurship, noting that it increased the ability of individuals to finance entrepreneurial ventures by allow-

ing them to capitalize on the value of the real estate. The unbundling of housing benefits from state employment also contributed to the increase in entrepreneurship by facilitating labor mobility out of the state sector.

Sex ratios (males to females) rose markedly in China in the last two decades, and crime rates nearly doubled. In their paper, **Edlund, Li, Yi, and Zhang** examine whether the two are causally linked. High sex ratios imply fewer married men, and marriage has been conjectured to be a socializing force. The paper exploits the quasi-natural experiment generated by the Chinese one-child policy, a policy that is widely held to be behind the sur-

plus of sons. While a national policy, its implementation was local. At the provincial level, implementation was unrelated to contemporaneous economic characteristics of the province. Instead, individual characteristics of the provincial party secretary influenced the timing. Moreover, leaders were systematically rotated such that ten years on, leader characteristics were serially uncorrelated. Using annual province-level data for the period 1988–2004, the authors show that a 0.01 increase in the sex ratio raised violent and property crime rates by some 3 percent, suggesting that the rise in excess males may account for up to one-seventh of the overall rise in crime.

**Wei and Zhang** note that Chinese households save about 25 percent of their income, contributing to one of the world's highest current-account surpluses. The life-cycle theory and precautionary savings motive provide only an incomplete explanation for this. This paper proposes a new hypothesis: China's high and rising sex ratio imbalance — too many boys relative to girls at birth — attributable to a combination of a strict family planning policy, parental preference for sons, and inexpensive abortion technologies, may have induced the Chinese to postpone consumption in favor of wealth accumulation. To avoid condemning their sons to life-long bachelorhood, families with a boy raise their saving rates. Other families do not reduce their savings rates because there is a spillover channel. Across provinces, local saving rates are strongly positively associated with local sex-ratio imbalances, the authors find, after accounting for demographics and social safety nets. This effect is stronger in rural areas than in urban areas. Household-level data also support this hypothesis: families with a son tend to save more in regions with a more skewed sex ratio, holding constant various household features. Households with daughters do not reduce their savings in these regions. The increase in sex ratios accounts for about half of the increase in household savings nationally.

Using Chinese data, **Fan, Jin, and Zheng** examine the internal capital market in emerging market business groups. They focus on two aspects that are less prominent in the developed markets: cross-financing to get over severe financing constraints that are often prevalent in emerging market economies, and the rampant expropriation of minority shareholders under the weak corporate governance environment. The authors find that, from the perspective of the collection of firms affected by the internal capital market, the market is the least inefficient when weak corporate governance induces more tunneling activities and there is no big need to mitigate financing constraints. On the other hand, when corporate governance is relatively stronger, and firms have a pressing need to use the internal capital mar-

ket to mitigate financing constraints, the efficiency of the internal capital market is highest.

A fundamental question in finance is whether and how removing barriers is associated with efficiency gains. **Cheung, Jiang, Kai Li, and Wang** study this question using share issue privatization in China that took place through the split-share structure reform. Prior to the reform, domestic A-shares were divided into tradable and non-tradable shares with identical cash flow and voting rights. Under the reform, non-tradable shareholders negotiate a compensation plan with tradable shareholders in order to make their shares tradable. The key predictions are: 1) the size of compensation made by the non-tradable shareholders to the tradable share holders is negatively correlated with the bargaining power of non-tradable share holders; 2) the size of compensation is positively correlated with the gain in risk sharing; and 3) the size of compensation is negatively correlated with firm performance; results are consistent with our model's predictions. The authors conclude that better risk sharing is an important consideration in China's share issue privatization.

**Iyer, Meng, and Qian** analyze the impact of housing reforms in China. Their preliminary results indicate that urban housing reforms are associated with more households working in the private sector; households eligible for housing loans are more likely to be running private businesses after the reforms. These reforms do not increase households' access to non-housing loans, or the propensity of households to invest in housing improvements.

**Gan, Guo, and Xu** use a unique hand-collected nationwide survey to study China's privatization, the largest in human history. They find that privatization in China has improved performance, but only for firms bought out by managers (MBOs). Consistent with improved performance, MBO firms are less likely to be influenced by the state in their daily operation and are more likely to take various restructuring measures. The authors also find that city governments with stronger fiscal discipline, and with fewer politi-

cal burdens of disposing of laid-off workers, tend to use the MBO method to privatize.

**Brambilla, Hale, and Long** explore a new channel for FDI spillovers on domestic firms in the host country that operates through imitation of original products. They develop a model of heterogeneous firms and allow domestic firms to choose among three alternatives: 1) not introduce any new products, 2) introduce a new product line (innovate), or 3) develop a variety that is a very close substitute to an existing product line developed by another firm (imitate). The presence of foreign firms generates spillovers via increased incentives for imitation, as foreign firms introduce a range of original products that are vertically differentiated with respect to original domestic products. The model generates testable implications that allow the authors to distinguish empirically between the effects of FDI on true innovation and on imitation. They test the model's predictions using firm-level panel data for China and find that, consistent with the model, increased FDI presence in a given industry leads to more imitation, but not necessarily more innovation, by domestic firms.

**Manova and Zhang** provide a detailed overview of China's participation in international trade. Using newly available data on the universe of globally engaged Chinese firms over the 2003–5 period, they document the distribution of trade flows, product- and trade-partner intensity across both exporting and importing firms, and they study the relationship between firms' intensive and extensive margins of trade. They also compare trade patterns across firms of different organizational structure, distinguishing between domestic private firms, domestic state-owned firms, foreign-owned firms, and joint ventures. Exploring the variation in foreign ownership across sectors, they find results consistent with recent theoretical and empirical work on the role of credit constraints and contractual imperfections in international trade and investment.

**Han** argues that economic liberalization, by reducing the extent to which an

autocrat can directly control economic resources, induces democratization. This paper suggests that in post-reform China, the composition of the ruling Communist Party membership was altered so as to keep political and economic control aligned. National survey data show that mem-

bership increased more among educated individuals with greater private-sector opportunities. Exploiting exogenous variation in college graduates' labor market outside options reveals that such a change is driven mainly by the Party's increased demand for educated individuals working

in the growing private sector. Such a strategy, of co-opting a new economic elite, could help to increase the Party's survival probability and strengthen its commitment to economic reforms.

## Entrepreneurship Working Group

The NBER's Working Group on Entrepreneurship met in Cambridge on October 3. Group Director Josh Lerner, of NBER and Harvard University, organized the meeting. These papers were discussed:

**Luis Cabral**, New York University, and **Zhu Wang**, Federal Reserve Bank of Kansas City, "Spin-Outs: Theory and Evidence"

**Mark Doms**, Federal Reserve Bank of San Francisco; **Ethan Lewis**, Dartmouth College; and **Alicia Robb**, University of California, Santa Cruz, "Local Labor Market Endowments, New Business Characteristics, and Performance" Discussant: Bart Hamilton, Washington University

**Larry Chavis**, University of North Carolina at Chapel Hill; and **Leora Klapper** and **Inessa Love**, The World Bank, "Entrepreneurial Finance around the World: The Impact of the Business Environment on Financing Constraints"

**James E. Rauch**, University of California, San Diego and NBER, "Spinout Entrepreneurship, Crony Capitalism, and Development" Discussant: Chris Woodruff, University of California, San Diego

**Jerry G. Thursby**, Georgia Institute of Technology, and **Marie C. Thursby**, Georgia Institute of Technology and NBER, "Faculty Participation in Licensing: Implications for Research" Discussant: Lee Fleming, Harvard

University

**Ola Bengtsson**, Cornell University, and **Berk A. Sensoy**, University of Southern California, "Investor Abilities and Financial Contracting: Evidence from Venture Capital"

**Yael V. Hochberg**, Northwestern University; **Alexander Ljungqvist**, New York University; and **Annette Vissing-Jorgenson**, Northwestern University and NBER, "Informational Hold-Up and Performance Persistence in Private Equity" Discussant: Morten Sorensen, Columbia University and NBER

**Cabral and Wang** develop a passive learning model of firm entry by spin-off: a firm's employees leave their employer and create a new firm when they learn that they are good entrepreneurs (type I spin-offs), or they learn that their employer's prospects are bad (type II spin-offs). Here, the theory predicts a high correlation between spin-offs and parent exit, especially when the parent is a low-productivity firm. This correlation may correspond to two types of causality: either spin-off causes firm exit (type I spin-offs) or firm exit causes spin-off (type II spin-offs). The authors test and confirm this and other predictions of the model on a unique dataset of the U.S. automobile industry. Finally, they discuss policy implications regarding "covenant

not to compete" laws.

It is often asserted that a highly educated workforce is vital to improving the competitive position of American businesses, especially by boosting entrepreneurship. **Doms, Lewis, and Robb** evaluate this contention using population Census data and a nationally representative panel of startup firms. They examine how the education and skill level of the local labor force are related to the creation and success of new businesses. They find that areas with more skilled labor also have higher rates of self-employment and more skilled entrepreneurs, and that the education of the business owner is strongly linked to improved business outcomes. Potentially consistent with the popular

view, the authors also find that, conditional on the owner's education, higher education levels in the local market are positively correlated with improved business outcomes.

**Chavis, Klapper and Love** use a unique database that contains over 70,000 firms in over 100 countries to systematically study the use of different financing sources for new and young firms. As expected, they confirm that, in all countries, younger firms rely less on bank financing and more on informal financing. However, they also find that younger firms have better access to bank finance in countries with better rule of law and better credit information, and that the reliance of young firms on informal finance



decreases with the availability of credit information. Overall, these results suggest that improving the legal environment and availability of credit information would be disproportionately beneficial for promoting access to formal finance by young firms.

Recently collected data show that, within any manufacturing industry, vertically integrated firms tend to have larger, higher productivity plants, to account for the bulk of sales, and to sell externally most of the inputs that they produce. In a weak contracting environment that characterizes less developed countries (LDCs), vertically integrated firms are vulnerable to “spinouts” by employees who make specialized inputs (formerly provided internally) subject to hold-up and who capture the profits formerly made from external sales of generic inputs. **Rauch** shows that this vulnerability leads to inefficiently low entry and helps to explain the “missing middle” in the size distribution of LDC firms and the limited local content of LDC exports. Vertically integrated firms can fight back by hiring “cronies” to manage their input divisions: members of networks that informally sanction hold-ups, or children who keep profits “in the family” even if they spin out. This paper predicts the association of co-ethnic networks with high rates of entrepreneurship and the prominence of family-owned business groups in LDC manufacturing. The government can achieve a higher level of entry at minimum cost by directing subsidies to vertically integrated family firms, but only if families with competent children can be identified *ex ante*.

**Thursby and Thursby** exploit a unique database on disclosure of research and invention by faculty at eleven major U.S. universities over a period of 17 years to explore whether university licensing has compromised basic research. They study the relationships among disclosures to industry and federally sponsored research, publications, citations, “expected citations,” and basic publications. They find that recent disclosure activity has a positive effect on research funding by industry and the federal government. But, if faculty disclose their results multiple times, then the positive effect on federal funding can disappear and become negative. Both recent and repeated disclosures increase the faculty member’s publication count, as well as the importance of these publications in terms of citation. There is also weak evidence that disclosure activity is associated with increases in other measures of “basic” research. Finally, the authors examine life-cycle effects and find that the ability to attract funding and the rate of publication increase as the faculty member ages, but at a decreasing rate. Research also tends to be less basic as faculty members age. The authors further find that post tenure, both types of funding decrease and work becomes less basic.

**Bengtsson and Sensoy** ask how investors’ abilities to mitigate agency problems in non-contractual ways will affect contract design. Their empirical setting is the venture capital (VC) industry, in which there are substantial agency problems, considerable flexibility in contract design, and wide variation in the abilities of VCs to monitor and add value

to their portfolio companies. The analysis uses a new database of contractual provisions for investments by 646 private-partnership VCs in 1,266 startup companies over 1,534 investment rounds. The authors discover that more experienced VCs, who likely have better monitoring abilities and whose withdrawal as active, value-added investors is more costly to entrepreneurs, are less likely to use contracts that give them greater cash flow rights if company performance is poor. This result survives a battery of controls for company characteristics, including valuation, as well as specifications that control for endogenous selection effects. The relation between VC experience and downside protections is weaker when agency problems are less severe.

**Hochberg, Ljungqvist, and Vissing-Jorgenson** first propose and then test a theory of learning and informational hold-up in the VC market. Their model predicts that higher returns on the current fund increase: the probability that a VC will raise a follow-on fund, the size of the follow-on fund, and the performance fee investors are charged in the follow-on fund. If learning is asymmetric, such that incumbent investors learn more about fund managers’ skill than potential new investors do, the model also predicts persistence in returns, poor performance among first-time funds, persistence in investors from fund to fund, and over-subscription in follow-on funds raised by successful fund managers. The empirical evidence is consistent with these predictions.

## Economic Fluctuations and Growth

NBER's Program on Economic Fluctuations and Growth met on October 17 at the Federal Reserve Bank of Chicago. Organizers Janice C. Eberly, NBER and Northwestern University, and Giuseppe Moscarini, NBER and Yale University, chose the following papers to discuss:

**Robert B. Barsky**, University of Michigan and NBER, and **Eric Sims**, University of Michigan, "Information, Animal Spirits, and the Meaning of Innovations in Consumer Confidence" Critic: John H. Cochrane, University of Chicago and NBER

**Emmanuel Farhi**, Harvard University

and NBER and **Ivan Werning**, MIT and NBER, "The Political Economy of Nonlinear Capital Taxation" Critic: Narayana R. Kocherlakota, University of Minnesota and NBER

**Charles I. Jones**, University of California, Berkeley and NBER, "Intermediate Goods and Weak Links: A Theory of Economic Development" Critic: Richard Rogerson, Arizona State University and NBER

**Steven J. Davis**, University of Chicago and NBER; **R. Jason Faberman**, Federal Reserve Bank of Philadelphia; **John Haltiwanger**, University of Maryland and NBER; and **Ron Jarmin**

and **Javier Miranda**, U.S. Census Bureau, "Business Volatility, Job Destruction, and Unemployment" Critic: Ruediger Bachmann, University of Michigan

**Arvind Krishnamurthy** and **Annette Vissing-Jorgensen**, Northwestern University and NBER, "The Aggregate Demand for Treasury Debt" Critic: Henning Bohn, University of California, Santa Barbara

**Michael Woodford**, Columbia University and NBER, "Information-Constrained State-Dependent Pricing" Critic: Ariel Burstein, University of California, Los Angeles and NBER

Innovations to measures of consumer confidence convey incremental information about economic activity far into the future. **Barsky** and **Sims** compare the shape of impulse responses to confidence innovations in the data with the predictions of a calibrated New Keynesian model. They find little evidence of a strong causal channel from autonomous movements in sentiment to economic outcomes (the "animal spirits" interpretation). Rather, these impulse responses support an alternative hypothesis: that the surprise movements in confidence reflect information about future economic prospects (the "information" view). The authors conclude that confidence innovations are best characterized as noisy measures of changes in expected productivity growth over a relatively long horizon.

**Farhi** and **Werning** study efficient nonlinear taxation of labor and capital in a dynamic Mirrleesian model incorporating political economy constraints. Their main result is that the marginal tax on capital income is progressive, in the sense that richer agents face higher marginal tax rates. Per capita income in the richest countries of the world exceeds that in the poorest countries by a factor of more than 50. What explains this enormous differ-

ence? In his paper, **Jones** returns to two old ideas in development economics; he proposes that linkages and complementarity are at the heart of the explanation.

First, linkages between firms through intermediate goods deliver a multiplier similar to the one associated with capital accumulation in a neoclassical growth model. Because the intermediate goods' share of revenue is about one half, this multiplier is substantial. Second, just as a chain is only as strong as its weakest link, problems at any point in a production chain can reduce output substantially if inputs enter production in a complementary fashion. **Jones** builds a model to quantify these forces and shows that it can easily generate 50-fold aggregate differences in income.

Unemployment inflows fell from 4 percent of employment per month in the early 1980s to 2 percent or less by the mid-1990s and thereafter. U.S. data also show a secular decline in the job destruction rate and the volatility of firm-level employment growth rates. **Davis**, **Faberman**, **Haltiwanger**, **Jarmin**, and **Miranda** interpret this decline as a decrease in the intensity of idiosyncratic labor demand shocks, a key parameter in search and matching models of unemploy-

ment. According to these models, a lower intensity of idiosyncratic shocks produces less job destruction, fewer workers flowing through the unemployment pool, and less frictional unemployment. To evaluate the importance of this theoretical mechanism, the authors relate industry-level unemployment flows from 1977 to 2005 to industry-level indicators for the intensity of idiosyncratic shocks. They find strong evidence that declines in the intensity of idiosyncratic labor demand shocks drove big declines in the incidence and rate of unemployment. This evidence implies that the unemployment rate has become much less sensitive to cyclical movements in the job-finding rate.

**Krishnamurthy** and **Vissing-Jorgensen** show that the U.S. debt-to-GDP ratio is negatively correlated with the spread between corporate bond yields and Treasury bond yields. This result holds even after they control for the default risk on corporate bonds. The authors argue that the corporate bond spread reflects a convenience yield that investors attribute to Treasury debt. They show that regulatory demanders of Treasuries, including foreign central banks, have inelastic demand curves, and they estimate the effect that these buyers have on Treasury

yields. They also discuss the implications for the aggregate value of Treasury convenience, the financing of the U.S. deficit, the behavior of interest rate swap spreads, and investors' portfolio choices.

**Woodford** generalizes the standard (full-information) model of state-dependent pricing in which decisions about when to review a firm's existing price must be made on the basis of imprecise awareness of current market conditions.

He endogenizes the imperfect information using a variant of the theory of "rational inattention" proposed by Sims. This results in a one-parameter family of models, indexed by the cost of information, which nests both the standard state-dependent pricing model and the Calvo model of price adjustment as limiting cases (corresponding to an information cost of zero and an unboundedly large information cost, respectively). For inter-

mediate levels of the information cost, the model is equivalent to one proposed by Caballero and Engel, but it provides an economic motivation for the hazard function and very specific predictions about its form. For moderate levels of the information cost, the Calvo model of price-setting is a fairly accurate approximation to the exact equilibrium dynamics, except in the case of (infrequent) large shocks.

## Market Microstructure

The NBER's Working Group on Market Microstructure met on October 24 in Cambridge. Group Director Bruce Lehmann of University of California, San Diego, Eugene Kandel, Hebrew University, Jerusalem, and Avanihar Subrahmanyam, University of California, Los Angeles, jointly organized the meeting. These papers were discussed:

**Ioanid Rosu**, University of Chicago, "Liquidity and Information in Order Driven Markets"  
Discussant: Uday Rajan, University of Michigan

**Paolo Pasquariello**, University of Michigan, and **Clara Vega**, Federal

Reserve Board, "Strategic Cross-Trading in the U.S. Stock Market"  
Discussant: Bruce Mizrach, Rutgers University

**Chiraphol Chiyachantana**, Singapore Management University, and **Pankaj Jain**, University of Memphis, "The Opportunity Cost of Inaction in Financial Markets: An Analysis of Institutional Decisions and Trades"  
Discussant: Sunil Wahals, Arizona State University

**Azi Ben-Rephael** and **Avi Wohl**, Tel Aviv University, and **Ohad Kadan**, Washington University in St. Louis, "The Diminishing Liquidity Premium"

Discussant: Ronnie Sadka, Boston College

**Anna Obizhaeva**, University of Maryland, "Price Impact and Spread: Application of Bias-Free Estimation Methodology to Portfolio Transitions"  
Discussant: Charles Jones, Columbia University

**Alex Boulatov** and **Thomas George**, University of Houston, "Securities Trading when Liquidity Providers are Informed"  
Discussant: Ronald Goettler, University of Chicago

Using a dynamic model of an order-driven market, **Rosu** analyzes the interaction between liquidity traders and informed traders. Agents choose freely between limit and market orders by trading off execution price and waiting costs. In equilibrium, informed and patient traders generally submit limit orders, except when the fundamental value of the asset that they privately observe is far from the current market-inferred value, in which case they become impatient and submit a market order. As a result, a market buy

order can be seen as an unambiguously positive signal; by contrast, a limit buy order is typically a weaker positive, and in some cases even a negative, signal. Rosu's model generates a rich set of relationships among prices, spreads, trading activity, and volatility. In particular, the order flow is autocorrelated if and only if there are informed traders in the market, and the autocorrelation increases with the percentage of informed traders. Higher volatility and lower trading activity generate larger spreads while, after controlling for volatility and trading activity, a higher

percentage of informed traders surprisingly generate smaller spreads.

**Pasquariello** and **Vega** provide a theory and new empirical evidence of cross-price impact—that is, the permanent impact of informed trades in one asset on the prices of other (either related or fundamentally unrelated) assets—in the U.S. stock market. They develop a model of multi-asset trading in the presence of two realistic market frictions: information heterogeneity and imperfect competition among informed traders. In that setting, they show cross-price impact to be the

equilibrium outcome of strategic trading activity among risk-neutral speculators across many assets in order to mask their information advantage about some other assets. The authors find strong, robust evidence of cross-asset informational effects in a comprehensive sample of the trading activity in NYSE and NASDAQ stocks between 1993 and 2004.

**Chiyachantana** and **Jain** present the first comprehensive analysis of a frequently ignored component of implementation shortfall: the opportunity cost of institutional decisions that are not executed. Of total decisions made, over 8 percent are partly or wholly unfilled. The opportunity costs of this failure to trade are 24 basis points, or \$20 billion in the sample period, much higher than the price impact and five times that of commissions. There is a significant asymmetry in the opportunity cost of buy-versus-sell decisions based on whether market conditions are bullish or bearish. Opportunity costs decrease with firm size, speed of transaction, number of brokers, and exchange listing, whereas they increase with market volatility. Opportunity loss from non-execution persists and increases slightly with the passage of time. Transaction-cost risks are higher for small stocks and volatile stocks.

Previous evidence suggests that less liquid stocks yield higher average returns. Using NYSE data, **Ben-Rephael**, **Kadan**,

and **Wohl** demonstrate that both the sensitivity of returns to liquidity and the liquidity premium have declined significantly over the past four decades to levels that cannot be statistically distinguished from zero. Furthermore, the profitability of trading strategies based on buying illiquid stocks and selling liquid stocks has declined significantly over the past four decades. The authors offer possible explanations for these results related to the proliferation of hedge funds, index funds, and exchange-traded funds.

**Obizhaeva** develops a bias-free methodology for estimating the parameters of trading costs and applies it to a unique dataset of portfolio transition trades. She estimates price impact and effective spread in both traditional markets and crossing networks for the period 2001 through 2005. These estimates vary across securities: price impact increases with the stocks' overall trading volume and volatility; in contrast, effective spread decreases with these characteristics. For thinly traded securities, trading costs are almost invariant with respect to trade size, and spread-related payments account for their largest fraction. For actively traded securities, trading costs are very sensitive to trade size, and spread-related payments are less significant. The positive association between price impact and trading volume is counterintuitive and not easily explained within existing market microstructure models. **Obizhaeva** outlines

potential explanations that might underlie these patterns.

**Boulatov** and **George** study securities trading when informed agents provide liquidity, either because dealers have superior access to market information or because informed traders exploit strategies involving limit orders. The authors show that both informed dealers and informed traders can profit more at the expense of uninformed liquidity traders when markets are transparent than when markets are opaque. This is because transparency serves as a coordination device that reduces competition among informed traders. When the informed are allowed to choose whether to trade via market orders or price-contingent (limit) orders, informed traders will gravitate toward limit orders. The endogenous allocation of traders to order types maximizes competition among the informed, thereby minimizing expected losses to liquidity traders. The predictions here are consistent with recent empirical evidence: that the price impact of limit-order arrivals is greater than that of market-order executions. This suggests that the usual approach in empirical microstructure research, of measuring the impact of private information as the trade-correlated permanent component of price changes, significantly understates the true importance of private information securities markets.



## Labor Studies

NBER's Program on Labor Studies met in Cambridge on October 31. Program Director Richard B. Freeman and NBER Research Associate Lawrence F. Katz, both of Harvard University, organized the meeting and chose the following papers to discuss:

**Jesse Rothstein**, Princeton University and NBER; **Stephanie Cellinis**, George Washington University; and **Fernando Ferreira**, University of Pennsylvania and NBER, "The Value of School Facilities: Evidence from a Dynamic Regression Discontinuity Design."

**Amalia Miller**, University of Virginia,

and **Carmit Segal**, Universitat Pompeu Fabra, "Does Temporary Affirmative Action Produce Persistent Effects? A Study of Black and Female Employment in Law Enforcement"

**William Kerr**, Harvard University, and **William Lincoln**, University of Michigan, "The Supply Side of Innovation: H-1B Visa Reforms and U.S. Ethnic Invention"

**Morris M. Kleiner**, University of Minnesota and NBER, and **Alan B. Krueger**, Princeton University and NBER, "The Prevalence and Effects of Occupational Licensing" (NBER

Working Paper No. 14308)

**Douglas Almond**, Columbia University and NBER; **Joseph J. Doyle**, MIT and NBER; **Amanda Kowalski**, MIT; and **Heidi Williams**, Harvard University, "Estimating the Marginal Returns to Medical Care: Evidence from At-Risk Newborns"

**Janet Currie**, Columbia University and NBER; **Mark Stabile**, University of Toronto; and **Phongsack Manivong** and **Leslie L. Roos**, University of Manitoba: "Child Health and Young Adult Outcomes"

**Rothstein, Cellinis, and Ferreira** draw on the unique characteristics of California's system of school finance, comparing districts in which school bond referenda passed or failed by narrow margins, to estimate the impact of investments in school facilities. They find that passing a referendum causes immediate, sizable increases in home prices, implying a willingness on the part of marginal homebuyers to pay \$1.50 or more for each dollar per pupil of facility spending. These effects do not appear to be driven by changes in the income or racial composition of homeowners. While the authors find suggestive evidence that bond passage leads to increases in student test scores, this effect cannot explain more than a small portion of the housing price effect, indicating that bond passage leads to improvements in other dimensions of school output (for example, safety) that may be not captured by test scores.

**Miller and Segal** exploit the rich variation in timing and outcomes of 140 employment discrimination lawsuits brought against U.S. law enforcement agencies to estimate the cumulative employment effects of temporary, externally imposed affirmative action (AA). Using confidential administrative data on 479 of the largest state and local agencies

spanning a period of 33 years, they show that AA plans increase black employment for all ranks of police, averaging between 4.2 and 6.5 percentage points over and above any prevailing trends in the country. They find no erosion of black employment gains from AA in the decade and a half following AA termination. Nevertheless, in departments whose plans are terminated, they find a significant decrease in black employment growth relative to departments whose plans continue. In contrast to their findings for blacks, the authors find only marginal employment gains for women and none at higher ranks.

**Kerr and Lincoln** exploit large changes in the H-1B visa program. They find that fluctuations in levels of H-1B admissions significantly influence the rate of Indian and Chinese patenting in cities and firms dependent upon the program. They also find weak crowding-in effects, such that total invention increases with higher admission levels.

Using data from a specially designed Gallup survey, **Kleiner and Krueger** provide the first nation-wide analysis of the labor market implications of occupational licensing for the United States. They find that in 2006, 29 percent of the workforce was required to hold an occupational

license from a government agency; that is a higher percentage than was found in studies that rely on state-level data. Workers who have higher levels of education are more likely to work in jobs that require a license. Union workers and government employees are more likely to have a license requirement than nonunion or private sector employees. Estimates here suggest that licensing has about the same quantitative impact on wages as unions—that is about 15 percent—but unlike unions, which reduce variance in wages, licensing does not significantly reduce wage dispersion for individuals in licensed jobs.

**Almond, Doyle, Kowalski, and Williams** estimate the marginal returns to medical care for at-risk newborns by comparing health outcomes and provision of medical treatment on either side of common risk classifications, most notably the "very low birth weight" threshold of 1500 grams. First, using data on the census of U.S. births in available years from 1983–2002, they find that newborns with birth weights just below that threshold have lower one-year mortality rates than newborns with birth weights just above this cutoff—even though mortality risk in general tends to decrease with birth weight. Second, using hospital discharge records for births in five states in available

years from 1991–2006, the researchers find that newborns with birth weights just below 1500 grams have discontinuously higher charges and frequencies of specific medical inputs. They estimate a \$4,000 increase in hospital costs as birth weight approaches 1500 grams from above, relative to mean hospital costs of \$40,000 just above 1500 grams. Taken together, these estimates suggest that the cost of saving one “newborn statistical life”—that is, the cost of reducing the number of

expected newborn deaths by one—for newborns with birth weight near 1500 grams, is on the order of \$500,000 to \$650,000 in 2006 dollars.

Previous research has shown a strong connection between birth weight and a child’s future health outcome. To address some important questions not considered in that work, **Currie, Stabile, Manivong,** and **Roos** use a unique dataset based on public health insurance records for 50,000 children born between 1979

and 1987 in the Canadian province of Manitoba. These children were followed until 2006, and their records were linked to provincial registries with data on health outcomes. The authors compare children with health conditions to their own siblings born at most nine years apart, and they control for health at birth. They find that health problems in early childhood are significant determinants of outcomes linked to adult socioeconomic status.

## Political Economy

NBER’s Program on Political Economy met in Cambridge on October 31. NBER Research Associate Romain Wacziarg of University of California, Los Angeles organized the meeting. These papers were discussed:

**Pedro Dal Bó**, Brown University and NBER, and **Andrew Foster** and **Louis Putterman**, Brown University, “Institutions and Behavior: Experimental Evidence on the Effects of Democracy”  
Discussant: Alan Gerber, Yale University and NBER

**Verónica Amarante** and **Andrea Vigorito**, Universidad de la Republica, Montevideo; **Marco Manacorda**, London School of Economics;

and **Edward Miguel**, University of California, Berkeley and NBER, “Government Transfers and Political Support”  
Discussant: Rohini Pande, Harvard University

**Pol Antràs**, Harvard University and NBER, and **Gerard Padró i Miquel**, London School of Economics and NBER, “Foreign Influence and Welfare” (NBER Working Paper No. 14129)  
Discussant: Arnaud Costinot, MIT and NBER

**Alberto Alesina**, Harvard University and NBER, and **Ekaterina Zhuravskaya**, New Economic School, “Segregation and the Quality of Government in a Cross-Section of

Countries” (NBER Working Paper No. 14316)  
Discussant: Benjamin Olken, MIT and NBER

**Nathan Nunn**, Harvard University and NBER, and **Leonard Wantchekon**, New York University: “The Trans-Atlantic Slave Trade and the Origins of Mistrust within Africa”  
Discussant: William Easterly, New York University and NBER

**Adam Meirowitz**, Princeton University, and **Kenneth Shotts**, Stanford University, “Pivots Versus Signals in Elections”  
Discussant: Steven Callander, Northwestern University

**Bo, Foster,** and **Putterman** describe a novel experiment on the effect of a policy designed to encourage cooperation in a prisoner’s dilemma game. The effect of this policy on the level of cooperation is greater when it is chosen democratically by the subjects rather than being imposed exogenously. In contrast to earlier studies, their experimental design allows them to control for selection effects (for example, those who choose the policy may be affected differently by it). Their results imply that democratic institutions may

affect behavior, in addition to having an effect through the choice of policies. More generally, their findings have implications for empirical studies of treatment effects in other contexts: the effect of a treatment can differ depending on whether it is endogenous or exogenous.

**Amarante, Vigorito, Manacorda,** and **Miguel** estimate the impact of a large anti-poverty program—the Uruguayan PANES—on political support for the government that puts it in place. They find that program-beneficiary households

are 25 to 31 percentage points more likely to favor the current government (relative to the previous government). The program’s impacts on political support are larger among poorer households and for those near the center of the political spectrum, as predicted by the probabilistic voting model in political economy. The researchers estimate that the annual cost to the government of increasing their political support by 1 percent is on the order of US\$89 million, or 1.7 percent of annual government expenditures.

**Antras and Miquel** develop a model of foreign influence and apply it to the study of optimal tariffs. They show that policies end up maximizing a weighted sum of domestic and foreign welfare; foreign influence may enhance welfare, from the point of view of aggregate world welfare, because it helps to alleviate externalities arising from the cross-border effects of policies. However, foreign influence can prove harmful in the presence of large imbalances in power across countries. The researchers apply their model of foreign influence to the study of optimal trade policy, deriving a modified formula for the optimal import tariff. They show that a country's import tariff is more distorted when the influenced country is small relative to the influencing country, and when natural trade barriers between the two countries are small.

**Alesina and Zhuravskaya** produce a new compilation of data on ethnic, linguistic, and religious composition at the sub-national level for a large number of countries. They then use the data to measure segregation of different ethnic, religious, and linguistic groups within the

same country. They also attempt to correlate measures of segregation with measures of quality of the polity and policy-making, and they construct an instrument to overcome the endogeneity problem (that arises because groups move within country borders, partly in response to policies). Their results suggest that more ethnically and linguistically segregated countries, that is, those where groups live more spatially separately, have a substantially lower quality of government. In contrast, they find no relationship between religious segregation and the quality of government.

**Nunn and Wantchekon** investigate the historical origins of mistrust within Africa. Combining contemporary household survey data with historical data on slave shipments by ethnic group, they show that individuals whose ancestors were heavily threatened by the slave trade exhibit less trust in others and less trust in the government today. The researchers confirm that this relationship is causal by instrumenting the historic intensity of the slave trade by the ancestor's historic distance from the coast, controlling for

the respondent's current distance from the coast. They show that the relationship between the slave trade and an individual's level of trust cannot be explained by the slave trade's effect on factors external to the individual, such as domestic institutions, or the legal environment. Instead, the evidence shows that the effects of the slave trade work primarily through vertically transmitted factors that are internal to the individual, such as cultural norms of behavior.

**Meiowitz and Shotts** consider a two-period model of elections in which voters have private information about their policy preferences. A first-period vote can have two types of consequences: it may be pivotal in the first election, and it provides a signal that affects candidates' positions in the second election. Pivot events are exceedingly unlikely, but when they occur the effect of a single vote is enormous. In contrast, vote totals always have some signaling effect, but the effect of a single vote is small. The authors investigate which effect—pivot or signaling—drives equilibrium voting behavior in large electorates.

## Public Economics

NBER's Program on Public Economics met at Stanford University on November 6–7. Organizers Raj Chetty and Emmanuel Saez, both of the University of California, Berkeley and NBER, chose the following papers to discuss:

**Amy Finkelstein**, MIT and NBER; **Liran Einav**, Stanford University and NBER; and **Mark R. Cullen**, Yale University, “Estimating Welfare in Insurance Markets Using Variation in Prices” (NBER Working Paper No. 14436)  
Discussant: Dan Silverman, University of Michigan and NBER

**Henrik Kleven**, London School of Economics, and **Wojciech Kopczuk**, Columbia University and NBER, “Transfer Program Complexity and the Take-up of Social Benefits” (NBER

Working Paper No. 14301)  
Discussant: B. Douglas Bernheim, Stanford University and NBER

**Hanning Fang** and **Peter Arcidiacono**, Duke University and NBER, and **Esteban Aucejo**, Duke University, “Does Affirmative Action Lead to Mismatch? A New Test and Evidence”  
Discussant: Caroline M. Hoxby, Stanford University and NBER

**David Albouy**, University of Michigan and NBER, “Are Big Cities Really Bad Places to Live? Improving Quality-of-Life Estimates Across Cities” (NBER Working Paper No. 14472)  
Discussant: Patrick Kline, University of California, Berkeley

**Fernando Ferreira**, University of Pennsylvania and NBER; **Stephanie Riegg Cellini**, George Washington

University; and **Jesse Rothstein**, Princeton University and NBER, “The Value of School Facilities: Evidence from a Dynamic Regression Discontinuity Design”  
Discussant: Michael Lovenheim, Stanford University

**Raj Chetty** and **Emmanuel Saez**, “Information and Behavioral Response to Taxation: Evidence from an Experiment with EITC Clients at H&R Block”  
Discussant: J. Karl Scholz, University of Wisconsin and NBER

**Wojciech Kopczuk**, and **Roger H. Gordon**, University of California, San Diego and NBER, “The Choice of the Personal Income Tax Base”  
Discussant: Matt Weinzerl, Harvard University

**Einav, Finkelstein, and Cullen** show how standard consumer and producer theory can be used to estimate welfare in insurance markets with selection. Their key observation is that the same price variation needed to identify the demand curve also identifies how costs vary as market participants endogenously respond to price. With estimates of both the demand and cost curves, welfare analysis is straightforward. The authors illustrate their approach by applying it to the employee health insurance choices at Alcoa, Inc. They detect adverse selection in this setting, but estimate that its quantitative welfare implications are small, and not obviously remediable by standard public policy tools.

**Kleven and Kopczuk** model complexity in social programs as a byproduct of efforts to screen between deserving and undeserving applicants. More rigorous screening technology may have desirable effects on targeting efficiency, but the associated complexity introduces transaction costs into the application process

and may induce incomplete take up. The authors' model assumes a government interested in ensuring a minimum income level for as many deserving individuals as possible. It characterizes optimal programs as when policymakers can choose the rigor of screening (and associated complexity) along with a benefit level and an eligibility criterion. Optimal programs that are not universal always feature a high degree of complexity. Although the government is interested only in ensuring a minimum benefit level, the optimal policy may feature benefits higher than this target minimum. This is because benefits generically screen better than either eligibility criteria or complexity. The authors present numerical simulations with respect to budget size, ability distribution, complexity costs, and stigma and discuss their results in light of empirical findings for public programs in the United States.

**Arcidiacono, Aucejo, and Fang** argue that once they take into account the rational enrollment decisions of students,

mismatch (in the sense that the intended beneficiary of affirmative action admission policies are made worse off) could occur only if selective universities possess private information about students' post-enrollment treatment effects. This necessary condition for mismatch provides the basis for a new test. The authors propose an empirical methodology to test for private information in such a setting. They implement it using data from Campus Life and Learning Project (CLL) at Duke. Preliminary evidence shows that Duke does possess private information that is a statistically significant predictor of a student's post-enrollment academic performance, but Duke's private information only explains a very small percentage of the variation in student performance. The authors also propose strategies to evaluate more conclusively whether the evidence of Duke private information has generated mismatch.

Hedonic estimates of quality of life across cities correspond to the cost-of-living in a city relative to its local wage



level. **Albouy** adjusts this standard model to account for federal taxes, non-housing costs, and non-labor income, producing quality-of-life estimates different from those in the existing literature. This adjusted model produces city rankings that are positively correlated with those in the popular literature, and predicts how housing costs rise with wage levels, after controlling for amenities. Mild seasons, sunshine, and coastal location account for most quality-of-life differences; once these amenities are accounted for, quality of life does not depend on city size, contrary to previous findings.

**Cellini, Ferreira, and Rothstein** use the housing market to estimate the impact of investments in school facilities. Drawing on California's unique system of school finance, they compare districts in which school bond referenda passed, or failed by narrow margins. The authors account for the dynamic nature of bond referenda: the probability of future bond proposals depends on the outcomes of past elections. They show first that bond funds stick exclusively in the capital account, with no effect on current expenditures or other revenues. This suggests that the effect of referendum passage reflects the impact of improvements in the quality of school facilities. The authors find that passing a referendum causes immediate, sizable increases in home prices, implying

an elasticity of home prices with respect to school spending of 0.5. They also find suggestive evidence that passage causes higher test scores several years later, once the bond-financed projects are complete. These effects do not appear to be driven by changes in the income and racial composition of local households. Finally, the magnitude of the price effect suggests that bond passage leads to improvements in other dimensions of school output (for example, safety) that may be not captured by test scores.

**Chetty and Saez** test whether providing information about the work incentives created by the Earned Income Tax Credit (EITC) amplifies its effects on labor supply. Conducting a randomized field experiment with 43,000 EITC claimants at H&R Block in which half the clients were provided simple, personalized information about the EITC schedule, they obtain three results. First, tax filers initially in the increasing and peak ranges of the EITC in the base year are more likely to locate near the peak of the EITC schedule after receiving the information. Provision of information reduces the rate of extreme poverty (earnings below \$7,000) by 15 percent and also reduces the probability of moving into the phase-out range. Second, the bunching around the peak caused by information provision is stronger for tax fil-

ers who report self-employment income. However, there is increased bunching near the peak even among wage earners, suggesting that the information induced a real labor supply response. Third, for tax filers initially in the phase-out range, earnings are essentially unaffected by the provision of information, perhaps because tax professionals framed the work disincentive created by the EITC as being small. Overall, the changes in behavior induced by information are substantial: EITC subsidy rates would have to be increased by at least 20 percent (\$10 billion) to generate responses of the same size.

**Gordon and Kopczuk** lay out theoretically and estimate empirically how best to use available information about each individual, in addition to earnings, when solving for the optimal tax base. In contrast to most of the literature on this topic, their paper shows how equity considerations may be incorporated quantitatively in the analysis. They find that the optimal tax base should include capital income, at least to some degree. In contrast to current practice, though, property tax payments and mortgage interest payments should not be deductible, because these deductions are costly on equity grounds, and presumably on efficiency grounds as well.

## International Finance and Macroeconomics

The NBER's Program on International Finance and Macroeconomics met in Cambridge on November 7. Organizers Charles Engel, NBER and University of Wisconsin, and Linda Tesar, NBER and University of Michigan, chose the following papers to discuss:

**Cristina Arellano**, University of Minnesota, and **Ananth Ramanarayanan**, Federal Reserve Bank of Dallas, "Default and Maturity Structure in Foreign Bonds"  
Discussant: Olivier Jeanne, John Hopkins University

**Anton Korinek**, University of Maryland, "Regulating Capital Flows to Emerging Markets: An Externality

View"  
Discussant: Gita Gopinath, Harvard University and NBER

**Lukasz A. Drozd**, University of Wisconsin, and **Jaromir B. Nosal**, Columbia University, "Understanding International Prices: Customers as Capital"  
Discussant: Paolo Pesenti, Federal Reserve Bank of New York and NBER

**Ariel Burstein**, University of California, Los Angeles and NBER, and **Nir Jaimovich**, Stanford University and NBER, "Understanding Movements in Aggregate and Product-Level Real Exchange Rates"  
Discussant: David Weinstein, Columbia

University and NBER

**Hanno Lustig**, University of California, Los Angeles and NBER; **Nick Roussanov**, University of Pennsylvania; and **Adrien Verdelhan**, Boston University, "Common Risk Factors in Currency Markets"  
Discussant: Craig Burnside, Duke University and NBER

**Yan Bai**, Arizona State University, and **Jing Zhang**, University of Michigan, "Financial Integration and International Risk Sharing"  
Discussant: Vivian Yue, New York University

**Arellano** and **Ramanarayanan** study the maturity composition and the term structure of interest rate spreads on government debt in emerging markets. When interest rate spreads rise, debt maturity shortens and the spread on short-term bonds is higher than on long-term bonds. To account for this pattern, the authors build a dynamic model of international borrowing, with endogenous default and multiple maturities of debt. Short-term debt can deliver higher immediate consumption than long-term debt; large long-term loans are not available because the borrower cannot commit to save in the near future towards repayment in the distant future. However, issuing long-term debt can insure against the need to roll-over short-term debt at high interest rate spreads. The trade-off between these two benefits is quantitatively important for understanding the maturity composition in emerging markets. When calibrated to data from Brazil, the model matches the dynamics in the maturity of debt issuances and its co-movement with the level of spreads across maturities.

**Korinek** analyzes the external financing decisions of emerging market economies that are prone to collateral-depend

ent constraints. He demonstrates that most forms of capital flows into such economies impose a macroeconomic externality, leading decentralized agents to take on too much systemic risk, and making the recipient country more vulnerable to financial instability and crises. Every capital inflow entails future outflows in the form of repayments, dividends, or profit distributions. In states of the world when financing constraints in an economy become binding, capital outflows necessitate an increase in the current account and a reduction in aggregate demand. This puts pressure on the exchange rate and triggers a financial accelerator mechanism, that is a mutual feed-back cycle of depreciating exchange rates, deteriorating balance sheets, tightening financing constraints, and declining aggregate demand. Decentralized agents take prices as given and do not internalize that the capital outflows associated with their repayments contribute to the financial accelerator. As a result, they do not internalize the full social cost of such payments and take on too much systemic risk in their financing decisions. Korinek illustrates how these externalities can be quantified for different categories

of capital flows using historical data from Indonesia, and describes a pecking order of financial flows that reflects the different magnitudes of the resulting externalities. Furthermore, he defines a social pricing kernel that describes the optimal magnitude of policy measures to restore social efficiency.

**Drozd** and **Nosal** develop a new theory of pricing-to-market driven by sluggish market shares. Their key innovation is a capital theoretic model of marketing in which relations with the customers are valuable. They discipline the introduced friction using a unique prediction of the model about the low short-run and high long-run price elasticity of international trade flows, consistent with the data. The model accounts for several pricing implications that are puzzling for a large class of theories. The good performance on the quantities side is maintained.

Using wholesale price data for common products sold in Canada and United States over the period 2004–6 and information on the country of production for individual products, **Burstein** and **Jaimovich** document new facts on international relative price movements. They find that international relative prices

at the level of individual products are roughly three to four times as volatile as the Canada-U.S. nominal exchange rate at quarterly frequencies. Aggregate real exchange rates, constructed by averaging movements in international relative prices for individual goods, closely follow the appreciation of the Canadian dollar over this period. The large movements in international relative prices for traded goods are in conflict with the hypothesis of relative purchasing power parity, but point instead to the practice of pricing-to-market by exporters. In light of these findings, the authors construct a model of international trade and pricing to market that can account for the observed movements in product- and aggregate real-exchange rates for both traded and non-traded products.

Currency excess returns are highly predictable and strongly counter-cyclical. The average excess returns on low inter-

est rate currencies are about 5 percent per annum smaller than those on high interest rate currencies after accounting for transaction costs. A single return-based factor, the return on the highest minus the return on the lowest interest rate currency portfolios, explains the cross-sectional variation in average currency excess returns from low- to high-interest-rate currencies. **Lustig, Roussanov, and Verdelhan** show that the high-minus-low currency return measures the component of the stochastic discount factor innovation that is common across countries.

Conventional wisdom suggests that financial liberalization can help countries insure against idiosyncratic risk. There is little evidence, however, that countries have increased risk sharing despite recent widespread financial liberalization. According to **Bai and Zhang**, the key to understanding this puzzling observation is that conventional wisdom assumes fric-

tionless international financial markets, while actual international financial markets are far from frictionless. In particular, financial contracts are incomplete and enforceability of debt repayment is limited. Default risk of debt contracts constrains borrowing, and more importantly, it makes borrowing more difficult in bad times, precisely when countries need insurance the most. Thus, default risk of debt contracts hinders international risk sharing. When countries remove their official capital controls, default risk is still present as an implicit barrier to capital flow; the observed increase in capital flow under financial liberalization is in fact too limited to improve risk sharing. If default risk of debt contracts were eliminated, capital flow would be six times greater, and international risk sharing would increase substantially.

## Health Care

NBER's Program on Health Care met in Cambridge on November 12. Organizer Richard Frank, of Harvard Medical School and NBER, chose the following papers to discuss:

**Ming Tai-Seale**, Texas A&M University, and **Tom McGuire**, Harvard University, "Time is Up: The Increasing Shadow Price of Time in Primary Care Office Visits"

**R.D. Cebul** and **Mark Votruba**, Case Western Reserve University; **James B. Rebitzer**, Case Western Reserve University and NBER; and **Lowell**

**Taylor**, Carnegie Mellon University, "Unhealthy Insurance Markets: Search Frictions and the Cost and Quality of Health Insurance" (NBER Working Paper No. 14455)

**Jonathan Clark**, Harvard University, and **Robert Huckman**, Harvard University and NBER, "Broadening Focus: Complementarities and the Benefits of Specialization in the Hospital Industry"

**Claudio Lucarelli**, Cornell University, and **Sean Nicholson**, Cornell University and NBER, "A Quality

Adjusted Price Index for Colorectal Cancer Drugs"

**Amy Finkelstein** and **Daron Acemoglu**, MIT and NBER, and **Matt Notowidigdo**, MIT, "Income and Health Spending: Evidence from Oil Price Shocks"

**Guy David** and **Seth Richards**, University of Pennsylvania, and **Sara Markowitz**, Emory University and NBER, "The Effects of Pharmaceutical Marketing and Promotion on Adverse Drug Events and Regulation"

A physician's time is a precious resource in primary care, and the physician must constantly evaluate the gain from spending more time with the current patient versus moving on to address the health care needs of the next one. **Tai-**

**Seale** and **McGuire** formulate the physician's decision problem and characterize two rules for deciding about when to end a visit. The first rule, which is labeled "efficient," has the physician end a visit when the estimated value of more time falls

below a shadow price. Following the second "behavioral" rule, the physician terminates a visit when "time is up" and a target number of minutes have expired. The authors test for the behavioral rule against the alternative using video recordings

of 385 visits by elderly patients to their primary care physician. The researchers structure the data at the “topic” level and find evidence consistent with the behavioral rule. Specifically, time elapsed within a visit is a very strong determinant of whether the physician decides this is the “last topic” to be discussed, thereby effectively ending the visit. The authors consider whether dislodging a target-time mentality from physicians (and patients) might contribute to more productive primary care practice.

Health insurance is a complex product, which creates search frictions that can distort market outcomes. **Cebul, Rebitzer, Taylor, and Votruba** study the effect of frictions in the market for employer-based health insurance. They find that frictions are most severe in the “fully insured” part of the group health insurance market. They estimate that frictions in this market segment cause a quarter of the consumer surplus to shift from policy-holders to insurers (a transfer of \$32.5 billion in 1997). Their analysis also suggests that frictions in insurance markets reduce incentives to invest in future health.

The literature on related diversification suggests that multi-unit firms with a portfolio of related businesses outperform both single-unit firms and multi-unit firms composed of unrelated businesses. Previous explanations for this relationship have centered on economies of scope achieved by sharing common resources, such as advertising, or production capacity. **Clark and Huckman** consider another potential explanation: complementarities, or the extent to which the marginal returns to the intensity of a focal activity increase with the intensity of related activities. Using patient-level data from the hospital industry, they consider the existence of complementarities with respect to focused organizational experience. Specifically, they investigate the extent to which there are returns to focused experience in cardiovascu-

lar care, and the degree to which these returns depend on a hospital’s intensity of services that relate to cardiovascular care. The researchers find suggestive evidence of positive returns, on average, to focused experience in cardiovascular care. Moreover, these returns are contingent on the intensity with which hospitals provide clinical services that are closely related to cardiovascular care.

The average price of providing a colorectal cancer patient with a 24-week chemotherapy regimen increased from \$127 in 1993 to \$36,300 in 2005, largely because of the approval and widespread use of five new drugs between 1996 and 2004. **Lucarelli and Nicholson** ask whether the substantial increase in spending has been worthwhile. They construct a price index for colorectal cancer drugs for each quarter between 1993 and 2005 that takes into account the quality (that is, the efficacy and side effects, as reported in clinical trials) of each drug on the market and the value that oncologists place on drug quality. They find that the naive price index, which does not adjust for the changing attributes of drugs on the market, greatly overstates the true price increase. Both the hedonic price index and a quality-adjusted price index show that prices have actually remained fairly constant over this 13-year period, with slight increases or decreases depending on the model’s assumptions.

Health expenditures as a share of GDP have more than tripled over the last half century. A common conjecture is that this is primarily a consequence of rising real per capita income, which more than doubled over the same period. **Acemoglu, Finkelstein, and Notowidigdo** investigate this empirically by using the time-series variation in global oil prices between 1970 and 1990, interacted with cross-sectional variation in the oil reserves across different areas of the Southern United States, as instruments for local area income. This strategy enables them to capture both the partial

equilibrium and the local general equilibrium effects of an increase in income on health expenditures. Their central estimate is an income elasticity of 0.7, with an elasticity of 1.1 as the upper end of the 95 percent confidence interval. Point estimates from alternative specifications fall on both sides of this central estimate, but are almost always less than 1. Consistent with their finding that health spending does not appear to be a luxury good, the authors do not find a significant effect of increased income on hospital technology adoption; this suggests that there are unlikely to be substantial general equilibrium effects (which would not be estimated by their empirical strategy) of rising income on health spending via induced innovation. The overall reading of the evidence is that rising income is unlikely to be a major driver of the rising health share of GDP.

**David, Markowitz, and Richards** analyze the relationship between post-marketing promotional activity and the reporting of adverse drug events by modeling the interaction between a welfare maximizing regulator (the FDA) and a profit maximizing firm. In their analysis, demand is sensitive to both promotion and regulatory interventions. Promotion-driven market expansions enhance profitability, but may involve the risk that the drug would be prescribed inappropriately, leading to adverse regulatory actions against the firm. This model exposes the effects of the current regulatory system on consumer and producer welfare. Particularly, the emphasis on safety over benefits distorts the market allocation of drugs away from some of the most appropriate users. Using an innovative combination of commercial data on pharmaceutical promotion and FDA data on regulatory interventions and adverse drug reactions, the authors provide some evidence that increased levels of promotion and advertising lead to increased reporting of adverse medical events for certain conditions.



## Higher Education

The NBER's Working Group on Higher Education met in Cambridge on November 13. The group's Director, Charles T. Clotfelter of NBER and Duke University, chose these papers to discuss:

**Judith Scott-Clayton**, Harvard University, "On Money and Motivation: A Quasi-Experimental Analysis of Financial Incentives for College Achievement"

**Esteban Aucejo**, Duke University; and **Peter Arcidiacono** and **Hanming Fang**,

Duke University and NBER, "Does Affirmative Action Lead to Mismatch? A New Test and Evidence" (For discussion of this paper, see p. 51)

**Todd R. Stinebrickner**, University of Western Ontario and NBER, and **Ralph Stinebrickner**, Berea College, "Learning about Academic Ability and the College Drop-out Decision"

**Thomas Dee**, Swarthmore College and NBER, "Stereotype Threat and the Student-Athlete"

**Bruce A. Weinberg**, Ohio State University and NBER, "Scientific Leadership"

**Ginger Zhe Jin**, University of Maryland and NBER, and **Alexander Whalley**, University of California, Mercer, "The Power of Attention: Do Rankings Affect the Financial Resources of Public Colleges?" (NBER Working Paper No. 12941)

Programs that link substantial amounts of college financial aid to student achievement have proved increasingly popular in recent years. These programs could work either by relaxing financial constraints or by inducing additional student effort (or both). **Scott-Clayton** examines the PROMISE scholarship in West Virginia, which provides free tuition and fees to college students who maintain a minimum GPA and course load. Using an unusually comprehensive administrative database, she exploits discontinuities in both the eligibility formula and the timing of implementation to identify program effects. She finds robust and statistically significant effects on key academic outcomes, including a 6.7 percentage point increase in four-year BA completion rates among PROMISE recipients. These impacts are concentrated at the precise thresholds for annual scholarship renewal—particularly the minimum course load requirement—and disappear in the fourth year of college when students are still receiving the scholarship but no longer have the opportunity to renew. The findings suggest that the program works by establishing clear academic goals and incentives to meet them, rather than simply reducing the cost of college.

Although assumptions about how agents update subjective beliefs in response to the arrival of new infor-

mation play a central role in models of decisionmaking, there is little empirical evidence to inform these assumptions. **Stinebrickner** and **Stinebrickner** use unique data to examine how college students from low-income families update their beliefs about academic ability and to examine the role that learning about ability, and a variety of other factors, play in the college drop-out decision.

The academic underperformance of student-athletes at selective colleges and universities has motivated ongoing concern about the role of athletics in these institutions. The growing literature on the effects of social identity suggests one possible explanation for this phenomenon. Student-athletes may experience a reduction in cognitive performance in evaluative settings like classrooms where they expect to be viewed through the lens of a negative stereotype. **Dee** presents an economic model of such a "stereotype threat" that reconciles prior evidence on how student effort and performance are influenced by this social-identity phenomenon; he also presents empirical evidence from a laboratory experiment in which student-participants were randomly assigned to a treatment that primed their awareness of an athletic identity. This treatment reduced the test-score performance of athletes relative to non-athletes by 14 percent (effect size = -1.0). However, this effect was largely

concentrated among males and students with below-median SAT scores.

At the beginning of the twentieth century, Europe as a whole and Germany in particular dominated science. Today, the United States does. Using rich datasets on Nobel laureates in Chemistry, Medicine, and Physics, and highly cited publications, **Weinberg** shows that investments in science and a competitive market for science in the United States were the most important factors in the emergence of the United States as a scientific leader. In contrast to previous work, he finds here that scientists fleeing the Nazis played a relatively modest role. The evidence suggests that scientific leadership is more fluid than generally believed, highlighting the importance of investments in science and a competitive environment—both as developing countries seek to build cutting-edge scientific communities, and as the United States and Europe seek to maintain their positions.

**Jin and Whalley** investigate whether and how college quality rankings affect a key factor in the ranks measure of quality—financial resources per student—for public colleges. They show that when a public college is exogenously included in the U.S. News & World Report rankings, educational and general expenditures per student increase by 3.2 percent. To fund the additional

expenditure, state appropriations per student increase by 3.4 to 6.8 percent, while tuition is not responsive at all. The state appropriation response may be realized in two potential channels: on the one hand, U.S. News rankings may allo-

cate additional citizen attention to the issue of public college quality, and the increased attention steers more funding towards public colleges. On the other hand, college rankings may provide new information in addition to existing col-

lege guides. As the college quality beliefs of citizens are updated state governments may adjust funding accordingly. The authors find evidence in support of the first explanation.

## Education Program Meets

The NBER's Program on Education met in Cambridge on November 14. Program Director Caroline M. Hoxby of NBER and Stanford University organized the meeting. These papers were discussed:

**Richard J. Murnane**, Harvard University and NBER, and **Jennifer Steele** and **John Willett**, Harvard University, "Do Financial Incentives Help Low-Performing Schools Attract and Keep Academically Talented Teachers? New Evidence from California"

**Kirabo Jackson**, Cornell University, "Student Demographics, Teacher Sorting, and Teacher Quality: Evidence from the End of School Desegregation"

**Jonah E. Rockoff**, Columbia University and NBER, and **Lesley Turner**, Columbia University, "Short-Run Impacts of Accountability on School Quality"

**Hanley Chiang**, Mathematica, Inc., "How Accountability Pressure on Failing Schools Affects Student Achievement"

**Gauri Kartini Shastri**, University of Virginia, "Human Capital Response to Globalization: Education and Information Technology in India"

**Maria Fitzpatrick**, Stanford University, "Preschoolers Enrolled and Mothers at Work? The Effects of Universal Pre-Kindergarten"

**Fernando B. Botelho** and **Ricardo A. Madeira**, University of Sao Paulo, and **Marcos A. Rangel**, University of Chicago, "Discrimination Goes to School? Understanding Racial Differences in Non-Blind Grading"

**Murnane, Steele, and Willett** capitalize on a natural experiment that occurred in California between 2000 and 2002: in those years, the state offered a competitively allocated \$20,000 incentive, called the Governor's Teaching Fellowship (GTF), aimed at attracting academically talented, novice teachers to low-performing schools and retaining them in those schools for at least four years. Taking advantage of data on the career histories of 14,045 individuals who pursued California teaching licenses between 1998 and 2003, the authors are able to estimate the unbiased impact of the GTF on the decisions of recipients to begin and continue working in low-performing schools. They find that acquiring a GTF increased the probability that recipients entered low-performing schools within two years after licensure program enrollment by 34 percentage

points. However, on average, GTF recipients left low performing schools at a higher rate in their first year of teaching than academically talented teachers without GTFs who chose to work in low-performing schools.

**Jackson** uses the reshuffling of students caused by the end of student busing in Charlotte-Mecklenburg to investigate the relationship between changes in student attributes and changes in teacher quality that are not confounded with changes in school or neighborhood characteristics. His results suggest that the spatial correlation between teachers' residences, students' residences, and schools could lead to spurious correlation between student attributes and teacher characteristics. Re-shuffling the students led to teacher resorting, so that schools that experienced a repatriation of black students also experienced a decrease in vari-

ous measures of teacher quality (including estimated value-added). Jackson shows that this was primarily because of a labor supply response.

In November 2007, the New York City Department of Education assigned each elementary and middle school a letter grade (A to F) as part of a new accountability system. The grades were based on continuous numeric scores derived from levels and changes in student achievement and other school environmental factors such as attendance, and were linked to a system of rewards and consequences for schools and principals. **Rockoff** and **Turner** use the discontinuities in the assignment of school grades to estimate the short-run impact of accountability. Specifically, they examine student achievement in English Language Arts and mathematics (measured in January and March of 2008, respectively) using school-level

aggregate data. Although schools had only a few months to respond to the release of accountability grades, receipt of a low grade significantly increased student achievement in both subjects, with larger effects in math. The authors find no evidence that accountability grades were related to the percentage of students tested, implying that accountability systems can cause real changes in school quality that increase student achievement over even a short time horizon. Parental evaluations of educational quality improved considerably for schools receiving low accountability grades; however, these schools also experienced a larger increase in survey response rates, holding open the possibility of selection bias in these complementary results.

Although an emerging body of evidence has shown that the threat of sanctions on low-performing schools can raise student test scores in the short run, the extent to which these test score improvements are attributable to schools' manipulation of the accountability system has remained uncertain. **Chiang** provides two new strands of evidence to evaluate the relative importance of educational reforms and gaming behavior in generating test score gains by threatened schools. First, using a methodology that exploits Florida's system of imposing sanction threats on the basis of a cutoff level of performance, the author estimates medium-run effects on student test scores from having attended a threatened elementary school. Threat-induced math improvements from elementary school largely persist at least through the first one to two years of middle school, while evidence for

persistence of reading improvements is less consistent. Second, **Chiang** analyzes the effects of sanction threats on various features of educational production and finds that they increase school spending on instructional technology, curricular development, and teacher training. Both strands of evidence are consistent with a predominant role for educational reforms in generating test score gains by threatened schools.

Recent studies have shown that trade liberalization increases the skilled wage premium in developing countries. Thus globalization may benefit elite skilled workers relatively more than poor unskilled workers, increasing inequality. However, that effect may be mitigated if human capital investment responds to new global opportunities. One key question is whether a country with a more elastic human capital supply is better positioned to benefit from globalization. **Shastry** examines how the impact of globalization varies across Indian districts with different costs of skill acquisition, focusing on the cost of learning English, a relevant qualification for high-skilled export jobs. Linguistic diversity in India compels individuals to learn either English or Hindi as a lingua franca. Some districts have lower relative costs of learning English because of linguistic predispositions and psychic costs associated with past nationalistic pressure to adopt Hindi. **Shastry** demonstrates that districts with a more elastic supply of English skills benefited more from globalization: they experienced greater growth in both information technology jobs and school enrollment. Consistent with this human

capital response, these districts experienced smaller increases in skilled wage premiums.

Three states recently introduced Universal Pre-Kindergarten programs offering free preschool to all age-eligible children; policymakers in many other states are promoting similar programs. Using restricted-access data from the Census, together with year and birthday-based eligibility cutoffs, **Fitzpatrick** estimates the effects of Universal Pre-K availability on overall preschool enrollment and maternal labor supply. She finds that Universal Pre-K availability increases statewide preschool enrollment by at least 14 percent but has little effect on the labor supply of most women. The exception is women residing in rural areas, whose probability of being employed increases by 20 percent.

Recent literature suggest that observed racial differentials in labor markets are the result of lower investment in the accumulation of skills, or of pre-market factors, by individuals of African descent. If parents and children update investment decisions after extracting signals about scholastic abilities from school reports, then differential errors in perceived ability could reinforce racial gaps in the accumulation of human capital. **Botelho, Madeira, and Rangel** present evidence drawn from a unique dataset of Brazilian elementary, middle, and high-schools suggesting that teachers' grading (when compared to blindly scored tests of proficiency) suffers from cardinal and ordinal biases associated with a child's race .

## Monetary Economics

The NBER's Program on Monetary Economics met in Cambridge on November 14. Organizers Ricardo Reis and Michael Woodford of NBER and Columbia University chose these papers to discuss:

**Mark Bills**, University of Rochester and NBER; **Peter J. Klenow**, Stanford University and NBER; and **Benjamin A. Malin**, Federal Reserve Board, "Reset Price Inflation and the Impact of Monetary Policy Shocks"  
Discussant: Jon Steinsson, Columbia University and NBER

**Thomas J. Sargent**, New York University and NBER, and **Paolo**

**Surico**, Bank of England, "Monetary Policies and Low-Frequency Manifestations of the Quantity Theory"  
Discussant: James H. Stock, Harvard University and NBER

**Olivier Coibion**, College of William & Mary, and **Yuriy Gorodnichenko**, University of California, Berkeley and NBER, "What Can Survey Forecasts Tell Us about Informational Rigidities?"  
Discussant: Justin Wolfers, University of Pennsylvania and NBER

**Bernardo Guimaraes** and **Kevin D. Sheedy**, London School of Economics, "Sales and Monetary Policy"  
Discussant: Ariel Burstein, University of

California, Los Angeles and NBER

**George-Marios Angeletos**, MIT and NBER, and **Jennifer La'O**, MIT, "Dispersed Information over the Business Cycle: Optimal Fiscal and Monetary Policy"  
Discussant: Robert King, Boston University and NBER

**Alejandro Justiniano**, Federal Reserve Bank of Chicago, and **Giorgio E. Primiceri**, Northwestern University and NBER, "Potential and Natural Output"  
Discussant: Christopher Erceg, Federal Reserve Board

A standard state-dependent pricing model generates little monetary non-neutrality. Two ways of generating more meaningful real effects are time-dependent pricing and strategic complementarities. These mechanisms have telltale implications for the persistence and volatility of "reset price inflation," which is the rate of change of all desired prices (including for goods that have not changed price in the current period). Using the micro data underpinning the CPI, **Bills**, **Klenow**, and **Malin** construct an empirical measure of reset price inflation. They find that time-dependent models imply unrealistically high persistence and stability of reset price inflation. This discrepancy is exacerbated by adding strategic complementarities, even under state-dependent pricing. A state-dependent model with no strategic complementarities aligns most closely with the data.

To detect the quantity theory of money, **Sargent** and **Surico** look at scatter plots of filtered time series of inflation and money growth rates and interest rates and money growth rates. They relate those scatter plots to sums of two-sided distributed lag coefficients constructed from fixed-coefficient and time-varying vector auto-regressions (VARs) for U.S.

data from 1900–2005. They interpret outcomes in terms of population values of those sums of coefficients implied by two dynamic stochastic general equilibrium (DSGE) models. The DSGE models make the sums of coefficients depend on the monetary policy rule via cross-equation restrictions of a type that earlier authors, including Lucas and Sargent, emphasized in the context of testing the natural unemployment rate hypothesis. When the U.S. data are extended beyond Lucas's 1955–75 period, the patterns revealed by scatter plots mutate in ways that the authors want to attribute to prevailing monetary policy rules.

**Coibion** and **Gorodnichenko** use three different surveys of economic forecasts to assess both the support for and the properties of informational rigidities faced by agents. Specifically, they track the impulse responses of mean forecast errors and disagreement among agents after exogenous structural shocks. Their key contribution is to document that, in response to structural shocks, mean forecasts fail to completely adjust on impact, leading to statistically and economically significant deviations from the null of full information: the half life of forecast errors is roughly between six months and

a year. Importantly, the dynamic process followed by forecast errors following structural shocks is consistent with the predictions of models of informational rigidities. The authors interpret this finding as providing support for the recent expansion of research into models of informational rigidities. In addition, they document several stylized facts about the conditional responses of forecast errors and disagreement among agents that can be used to differentiate between some of the models of informational rigidities recently proposed.

A striking fact about prices is the prevalence of "sales"—large temporary price cuts followed by prices returning exactly to their former levels. **Guimaraes** and **Sheedy** build a macroeconomic model with a rationale for sales based on firms facing consumers with different price sensitivities. Even if firms can adjust sales without cost, monetary policy has large real effects owing to sales being strategic substitutes: a firm's incentive to have a sale is decreasing in the number of other firms having sales. Thus the flexibility seen in individual prices attributable to sales does not translate into flexibility of the aggregate price level.

**Angeletos** and **La'O** study how the



heterogeneity of information affects the efficiency of the business cycle and the design of optimal fiscal and monetary policy. They do so within a model that features a standard Dixit-Stiglitz demand structure, introduces dispersed private information about the underlying aggregate productivity shock, and allows this information to be imperfectly aggregated through certain prices and macroeconomic indicators. Their key findings are: 1) when information is exogenous to the agents' actions, the response of the economy to either fundamentals or noise is efficient along the flexible-price equilibrium; 2) the endogeneity of learning renders the business cycle inefficient: there is too little learning and too much noise in the business cycle; 3) both state-contin-

gent taxes and monetary policy can boost learning over the business cycle; 4) typically, this implies that the optimal tax is countercyclical, while the optimal monetary policy is less accommodative than what is consistent with replicating the flexible-price equilibrium; and 5) even if monetary policy were to replicate the flexible-price equilibrium, this would not mean targeting price stability. Rather, the optimal monetary policy has the nominal interest rate increase, and the price level fall, in response to a positive innovation in productivity.

**Justiniano** and **Primiceri** estimate a DSGE model with imperfectly competitive products and labor markets and sticky prices and wages. They use the model to back out two counterfactual objects:

potential output—that is, the level of output that would prevail under perfect competition; and natural output—that is, the level of output that would prevail with flexible prices and wages. They find that potential output is smooth, which results in an output gap that closely resembles traditional measures of detrended output. Meanwhile natural output is extremely volatile, because of the very high variability of markup shocks. These disturbances, however, are very similar to measurement errors because they only explain price and wage inflation at very high frequencies. Under this alternative interpretation, potential and natural output move one-to-one.

## Asset Pricing

NBER's Program on Asset Pricing met on November 21 in Cambridge. Organizers **Monika Piazzesi**, Stanford University and NBER, and **Stijn Van Nieuwerburgh**, New York University and NBER, chose the following papers to discuss:

**Eric Swanson** and **Glenn Rudebusch**, Federal Reserve Bank of San Francisco, "The Bond Premium in a DSGE Model with Long-Run Real and Nominal Risks"  
Discussant: **Stanley E. Zin**, Carnegie Mellon University and NBER

**Itamar Drechsler**, University of Pennsylvania, and **Amir Yaron**,

University of Pennsylvania and NBER, "What's Vol Got to Do With It?"  
Discussant: **Lars P. Hansen**, University of Chicago and NBER

**Akub Jurek**, Princeton University, "Crash-Neutral Currency Carry Trades"  
Discussant: **Adrian Verdelhan**, Boston University

**Santiago Bzdrech** and **Frederico Belo**, University of Minnesota, and **Xiaoji Lin**, London School of Economics, "Labor Hiring, Investment, and Stock Return Predictability in the Cross Section"  
Discussant: **Francois Gourio**, Boston University

**Martijn Cremers** and **Antti Petajisto**, Yale University, and **Eric Zitzewitz**, Dartmouth College, "Should Benchmark Indices Have Alpha? Revisiting Performance Evaluation"  
Discussant: **Lubos Pastor**, University of Chicago and NBER

**John Y. Campbell** and **Luis M. Viceira**, Harvard University and NBER, and **Adi Sunderam**, Harvard University, "Inflation Bets or Deflation Hedges? The Changing Risks of Nominal Bonds"  
Discussant: **George Tauchen**, Duke University

The term premium on nominal long-term bonds in the standard dynamic stochastic general equilibrium (DSGE) model used in macroeconomics is far too small and stable relative to empirical measures obtained from the data—an example of the "bond

premium puzzle." However, in models of endowment economies, researchers have been able to generate reasonable term premiums by assuming that investors have recursive Epstein-Zin preferences and face long-run economic risks. **Rudebusch** and **Swanson** show that

introducing Epstein-Zin preferences into a canonical DSGE model can also produce a large and variable term premium without compromising the model's ability to fit key macroeconomic variables. Long-run real and nominal risks further improve the model's abil-

ity to fit the data with a lower level of household risk aversion.

Uncertainty plays a key role in economics, finance, and decision sciences. Financial markets, and in particular derivative markets, provide fertile ground for understanding how perceptions of economic uncertainty and cash-flow risk manifest themselves in asset prices. **Drechsler** and **Yaron** demonstrate that the variance premium, defined as the difference between the squared VIX index and expected realized variance, captures attitudes toward uncertainty. The authors present conditions under which the variance premium displays significant time variation and return predictability. A calibrated, generalized Long-Run Risks model generates a variance premium with time variation and return predictability that is consistent with the data, while simultaneously matching the levels and volatilities of the market return and risk free rate. The evidence indicates an important role for transient non-Gaussian shocks to fundamentals that affect agents' views of economic uncertainty and prices.

Currency carry trades implemented within G10 currencies have historically delivered significant excess returns with annualized Sharpe ratios in excess of one. **Jurek** investigates whether these excess returns reflect compensation for exposure to crash risk by analyzing the time-series dynamics of the moments of the risk-neutral distribution extracted from currency options, and by examining returns to crash-neutral currency carry trades in which exposure to crashes has been hedged by combining positions in currencies and currency options. Risk-neutral and realized skewness move in opposite directions in response to realized currency returns, Jurek shows,

such that insurance against currency crashes is cheapest precisely when it is needed most. Although excess returns to crash-neutral strategies decline relative to their unhedged counterparts, they remain positive and highly statistically significant. These results indicate that crash risk premiums can explain 30-40 percent of the total excess return to currency carry trades. Rationalizing all of the excess return via a crash risk premium would require implied volatilities of out-of-the-money currency options to be roughly four times greater than those observed in the data.

**Bazdrech, Belo, and Lin** show that the firm-level hiring rate predicts stock returns in the cross-section of U.S. publicly traded firms, even after controlling for investment, size, book-to-market, and momentum, as well as other known predictors of stock returns. The predictability shows up in both Fama-MacBeth cross-sectional regressions and in portfolio sorts and it is robust to the exclusion of microcap firms from the sample. The authors propose a production-based asset pricing model with adjustment costs in labor and capital that replicates well the main empirical findings. Labor adjustment costs make hiring decisions forward looking in nature and thus informative about the firms' expectations about future cash-flows and risk-adjusted discount rates. The model implies that the investment rate and the hiring rate predicts stock returns because these variables proxy for the firm's time-varying conditional beta.

Standard Fama-French and Carhart models produce economically and statistically significant nonzero alphas even for passive benchmark indexes, such as the S&P 500 and the Russell 2000. **Cremers, Petajisto, and Zitzewitz** find

that these alphas primarily arise from the disproportionate weight the Fama-French factors place on small value stocks that have performed well, and from the CRSP value-weighted market index that is a downward-biased benchmark for U.S. stocks. The authors explore alternative ways to construct these factors and propose alternative models constructed from common and easily tradable benchmark indexes. Such index-based models outperform the standard models, in terms of both asset pricing tests and performance evaluation of mutual fund managers.

The covariance between U.S. Treasury bond returns and stock returns has moved considerably over time. While it was slightly positive on average in the period 1953–2005, it was particularly high in the early 1980s and negative in the early 2000s. **Campbell, Sunderam, and Viciara** specify and estimate a model in which the nominal term structure of interest rates is driven by five state variables: the real interest rate, risk aversion, temporary and permanent components of expected inflation, and the covariance between nominal variables and the real economy. The last of these state variables enables the model to fit the changing covariance of bond and stock returns. Log nominal bond yields and term premiums are quadratic in these state variables, with term premiums determined mainly by the product of risk aversion and the nominal-real covariance. The concavity of the yield curve — the level of intermediate-term bond yields, relative to the average of short- and long-term bond yields — is a good proxy for the level of term premiums. The nominal-real covariance has declined since the early 1980s, driving down term premiums.

## Behavioral Finance

The NBER's Behavioral Finance group met on November 22 in Cambridge. Brad Barber, University of California, Davis, and Terrance Odean, Hass School of Business at Berkeley, organized the meeting. These papers were discussed:

**Camelia M. Kuhnen** and **Agnieszka Tymula**, Northwestern University, "Rank Expectations, Feedback, and Social Hierarchies"  
Discussant: Shimon Kogan, University of Texas, Austin

**Han Ozsoylev**, University of Oxford, and **Johan Walden**, University of

California, Berkeley, "Asset Pricing in Large Information Networks"  
Discussant: Xavier Gabaix, New York University and NBER

**Nicola Gennaioli**, CREI, and **Andrei Shleifer**, Harvard University and NBER, "Local Thinking"  
Discussant: Drazen Prelec, MIT

**Roger M. Edelen**, University of California, Davis; **Richard Evans**, University of Virginia; and **Gregory B. Kadlec**, Virginia Tech, "What Do Soft-Dollars Buy? Performance, Expense Shifting, Agency Costs"

Discussant: Lori Walsh, Securities and Exchange Commission

**Randy Cohen**, Harvard University; and **Christopher Polk** and **Bernard Silli**, London School of Economics, "Best Ideas"  
Discussant: Clemens Sialm, University of Texas, Austin and NBER

**Harrison Hong**, Princeton University, and **Leonard Kostovetsky**, University of Rochester, "Red and Blue Investing: Values and Finance"  
Discussant: Raymond Fisman, Columbia University and NBER

**Kuhnen** and **Tymula** develop and test a theoretical model of the role of self-esteem — generated by private feedback regarding relative performance — on the behavior of agents working on a simple task for a flat wage. The authors isolate the impact on one's output of learning one's rank in the group as opposed to the effect of any reputation, strategy-updating, or peer-monitoring effects. Feedback has both ex-ante and ex-post effects on the productivity of workers and on the dynamics of social hierarchies. Agents work harder and expect to rank better when they are told they may learn their ranking, relative to cases when they are told that feedback will not be provided. After receiving feedback, individuals who learn that they have ranked better than expected decrease their output, but they expect an even better rank in the future; those told they ranked worse than expected will increase their output and at the same time lower their expectations of rank going forward. These effects are stronger in earlier rounds of the task, while subjects learn how they compare to their peers. This rank hierarchy is established early on, and remains relatively stable afterwards. Private relative rank information helps create a ratcheting effect in the group's

average output, which is mainly attributable to the fight for dominance at the top of the hierarchy. These results suggest that in environments where monetary incentives are weak, moral hazard can be mitigated by providing feedback to agents regarding their relative performance, and by optimally choosing the reference peer group. Therefore, social hierarchy effects on productivity may influence optimal team formation.

**Kogan**, **Ozsoylev**, and **Walden** study asset pricing in economies with large information networks. They derive closed-form expressions for price, volatility, profitability, and several other key variables, as a function of the topological structure of the network. The authors focus on networks that are sparse and have power-law degree distributions, in line with empirical studies of large scale human networks. This makes it possible to rank information networks along several dimensions and to derive several novel results. For example, price volatility is a non-monotonic function of network connectedness, as is average expected profits. Moreover, the profit distribution among investors is intimately linked to the properties of the information network. The authors also examine which networks are stable, in the sense that

no agent has an incentive to change the network structure. They show that if agents are ex ante identical, then strong conditions are needed to allow for non-degenerate network structures, including power-law distributed networks. If, on the other hand, agents face different costs of forming links, which are interpreted broadly as differences in social skills, then power-law distributed networks arise quite naturally.

**Gennaioli** and **Shleifer** present a theory of judgment under uncertainty based on the idea that individuals evaluate hypotheses by filling in missing data (called frames) from their memory. The researchers assume that the frames that come to mind first are those most predictive of the hypothesis being evaluated relative to its alternatives. Combining this view of frames with the assumption of limited memory yields a theory of decisionmaking that accounts for many representativeness-related findings of Kahneman and Tversky, including the Linda experiment.

**Edelen**, **Evans**, and **Kadlec** examine several hypotheses regarding mutual-fund commission payments. Consistent with an information motive, they find, relatively active funds pay higher excess commissions and these "soft dollar"

payments are associated with improved return performance. However, excess commissions are also related to an expense-shifting motive and these payments are associated with lower return performance — suggesting that agency costs arise from soft-dollar payments. The strongest evidence for expense shifting occurs with relatively controversial distribution expenses, and these payments exhibit the most severe performance degradation (agency costs). Overall, the impact of soft dollar payments on performance is negative.

**Cohen, Polk, and Silli** provide powerful evidence that mutual fund managers can pick stocks that outperform the market. They examine the performance of stocks that represent managers' "Best Ideas" and find that the stock that active managers display the most conviction towards ex-ante outperforms the market, and the other stocks in those managers' portfolios, by

approximately 39 to 127 basis points per month depending on the benchmark employed. This suggests two conclusions. First, the U.S. stock market does not appear to be efficiently priced, because even the typical active mutual fund manager is able to identify a stock that outperforms. Second, the organization of the money management industry appears to make it optimal for managers to introduce stocks into their portfolio that are not outperformers, even though they are able to pick good stocks.

Do political values influence investing? **Hong and Kostovetsky** answer this question using data on the political contributions and stock holdings of U.S. investment managers. They find that mutual fund managers who make campaign donations to Democrats hold less of their portfolios (relative to non-donors or Republican donors) in industries that are deemed socially irresponsi-

ble (for example tobacco, guns, defense, and natural resources). Although a higher fraction of Democrat-run mutual funds are socially responsible (SRI), this result holds for non-SRI funds and after controlling for other fund and manager characteristics. The effect is more than one-half of the under-weighting observed for SRI funds. Furthermore, the authors find that Democrat managers also tilt towards firms with positive social features, such as excellent employee relations and clean environmental records. They document similar results among a smaller sample of hedge fund managers, suggesting that lax corporate governance in the mutual fund industry is not the main driver of their results. Finally, they discuss how political values influence investing and the implications of their findings for the growing SRI movement and stock prices.





## Corporate Finance

The NBER's Corporate Finance Program met on November 21 in Cambridge. Organizers Holger Mueller, NBER and New York University, and Joshua Rauh, NBER and University of Chicago, chose these papers to discuss:

**Martijn Cremers**, Yale University, and **Yaniv Grinstein**, Cornell University, "The Market for CEO Talent: Implications for CEO Compensation"  
Discussant: Xavier Gabaix, New York University and NBER

**C. Fritz Foley**, Harvard University and NBER; **Dharmika Dharmapala**, University of Connecticut; and **Kristin Forbes**, MIT and NBER, "The Unintended Consequences of the Homeland Investment Act: Implications for Financial Constraints, Governance, and International Tax Policy"  
Discussant: Heitor Almeida, University

of Illinois and NBER

**Viral Acharya**, New York University; **Raghuram Rajan**, University of Chicago and NBER, and **Stewart C. Myers**, MIT and NBER, "The Internal Governance of Firms"  
Discussant: Jeremy C. Stein, Harvard University and NBER

**Josh Lerner**, Harvard University and NBER, and **Ulrike Malmendier**, University of California, Berkeley and NBER, "With a Little Help from My (Random) Friends: Success and Failure in Post-Business School Entrepreneurship"  
Discussant: Simon Johnson, MIT and NBER

**Philippe Aghion**, Harvard University and NBER; **John Van Reenen**, London School of Economics and NBER;

and **Luigi Zingales**, University of Chicago and NBER, "Innovation and Institutional Ownership"  
Discussant: David S. Scharfstein, Harvard University and NBER

**Todd Gormley**, Washington University in St. Louis, and **David Matsa**, Northwestern University, "Growing Out of Trouble? Legal Liability and Corporate Responses to Adversity"  
Discussant: Antoinette Schoar, MIT and NBER

**Gerard Hoberg**, University of Maryland, and **Gordon M. Phillips**, University of Maryland and NBER, "Product Market Synergies and Competition in Mergers and Acquisitions"  
Discussant: Paul Tetlock, Columbia University

**Cremers** and **Grinstein** study the market for CEO talent in public U.S. corporations from 1993–2005. They find large fragmentation of CEO talent pools. In particular, about 68 percent of new CEOs are former employees of their own firm ("insider CEOs") and 86 percent are former employees in firms belonging to the same industry (including insider CEOs). Talent pool structure explains several compensation practices: CEO compensation is only benchmarked against other firms, and pay-for-luck is prevalent only when the industry has a small percentage of insider CEOs. Finally, the authors study the importance of talent pools. Finding little support when incorporating the fragmentation of CEO talent pools, they offer a reinterpretation of the Gabaix-Landier results.

The Homeland Investment Act of 2004 provided for a one-time tax holiday on the repatriation of foreign earnings, thereby allowing U.S. multinationals to access earnings retained abroad at a lower cost. Firms responded to this act by

significantly increasing repatriations from foreign affiliates. **Dharmapala**, **Foley**, and **Forbes** analyze the impact of the tax holiday on firm behavior. They find that repatriations did not lead to an increase in investment, employment, or R and D—even for the firms that lobbied for the tax holiday stating these intentions. Instead, a \$1 increase in repatriations was associated with an increase of approximately \$1 in payouts to shareholders. These responses are consistent with the view that the domestic operations of U.S. multinationals were not financially constrained and that U.S. multinationals are reasonably well-governed. The results also have significant implications for understanding the impact of the U.S. corporate tax system on the behavior of multinational firms.

**Acharya**, **Myers**, and **Rajan** develop a model of internal governance where the self-serving actions of top management are limited by the potential reaction of subordinates. The authors find that internal governance can mitigate agency

problems and ensure firms have substantial value, even without any external governance. Internal governance seems to work best when both top management and subordinates are important to value creation. The authors then allow for governance provided by external financiers and find situations where external governance, even if crude and uninformed, complements internal governance in improving efficiency. Interestingly, this allows the development of a theory of dividend policy, where dividends are paid by self-interested CEOs to maintain a balance between internal and external control. Finally, the authors explore how the internal organization of firms may be structured to enhance the role of internal governance. Young firms with limited external oversight, and firms in countries with poor external governance, can have substantial value, and improving external governance may not be a panacea for all governance problems.

A central question in the entrepreneurship literature is how to encour-

age entrepreneurship and whether peers affect the decision to become an entrepreneur. **Lerner** and **Malmendier** exploit the fact that Harvard Business School assigns students into sections, which have varying representation of former entrepreneurs. They find that the presence of entrepreneurial peers strongly predicts subsequent entrepreneurship rates of their peers who did not have an entrepreneurial background, but in a more complex way than the literature has previously suggested. A higher share of students with an entrepreneurial background in a given section leads their peers to lower rather than higher subsequent rates of entrepreneurship. However, the decrease in entrepreneurship is entirely driven by a reduction in unsuccessful entrepreneurial ventures. The relationship between the shares of pre-HBS and successful post-HBS peer entrepreneurs is insignificantly positive. Sections with few prior entrepreneurs have a considerably higher variance in their rates of unsuccessful entrepreneurs. The authors argue that these results are consistent with intra-section learning, where the close ties between section-mates lead to insights about the merits of business plans.

**Aghion, Van Reenen, and Zingales** find that institutional ownership in publicly traded companies is associated with more innovation (measured as cited-weighted patents), even after they control for possible endogeneity of institutional ownership. To explore the mechanism through which this link arises, the authors

build a model that nests managerial laziness with career-concern considerations, where institutional ownership increases the incentives managers have to innovate by reducing the career risk of innovative projects. While the lazy-manager hypothesis predicts a substitution effect between institutional ownership and product market competition, the career-concern hypothesis allows for complementarity. The effect of institutional investors on innovation increases with product market competition, supporting the career-concern model. This model is also supported by the authors' finding that CEOs are less likely to be fired in the face of profit downturns when institutional ownership is higher.

**Gormley and Matsa** measure how a typical firm responds when a chemical to which its workers are exposed is newly identified to be a carcinogen. While there is no evidence of a pre-existing trend, the authors find that firms, particularly those more vulnerable to the realization of an adverse shock, tend to undertake aggressive growth and increased acquisitions after experiencing the liability shock. The acquisitions appear to be targeted at diversifying the firms' assets by acquiring large businesses with relatively high operating cash flows, recent growth, and total payouts. These deals are associated with high takeover premiums and negative abnormal returns. These findings are broadly inconsistent with the perfect capital markets model, but fit well with an agency model where managers

have career concerns. In support of the agency model, the authors find that total assets grow most among firms with weak external governance, high management ownership, or low institutional ownership, whereas firms with strong external governance, low management ownership, or high institutional ownership instead increase their payouts to shareholders. These results suggest that agency conflicts may be exacerbated when firms are closer to financial distress.

**Hoberg and Phillips** examine how product similarity and competition influences mergers and acquisitions and the ability of firms to exploit product market synergies. Using novel text-based analysis of firm 10K product descriptions, they find three key results: 1) Firms are more likely to enter restructuring transactions when the language describing their assets is similar to all other firms, consistent with their assets being more re-deployable. 2) Targets earn lower announcement returns when similar alternative target firms exist. 3) Acquiring firms in competitive product markets experience increased profitability, higher sales growth, and increased changes in their product descriptions when they buy target firms that are similar to them and different from rival firms. The authors' findings are consistent with similar merging firms exploiting synergies to create new products and increase their product differentiation relative to ex-ante rivals.

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## Bureau Books

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### Health at Older Ages: The Causes and Consequences of Declining Disability among the Elderly

*Health at Older Ages: The Causes and Consequences of Declining Disability among the Elderly*, edited by David M. Cutler and David A. Wise, is available from the University of Chicago Press this January.

Americans are living longer—and staying healthier longer—than ever before. Despite the rapid disappearance of pensions and health care benefits for retirees, older people are healthier and better off than they were twenty years ago. In *Health at Older Ages*, a distinguished team

of economists analyzes the foundations of disability decline, quantifies this phenomenon in economic terms, and discusses a number of options for accelerating future improvements in the health of our most elderly populations.

This breakthrough volume argues that educational attainment, high socioeconomic status, an older retirement age, and accessible medical care together have contributed to improved health and quality of life for seniors. A decline in disability, for example, yields economic bene-

fits that include an increased proportion of seniors in the workplace, relief for the healthcare system and care-giving families, and reduced medical expenses for the elderly themselves. *Health at Older Ages* will be an essential contribution to the debate about meeting the medical needs of an aging nation.

Both Cutler and Wise are Professors of Economics at Harvard University and members of the NBER's Programs of Research on Aging and Health Care.

### Producer Dynamics: New Evidence from Micro Data

*Producer Dynamics: New Evidence from Micro Data*, one of NBER's Studies in Income and Wealth edited by Timothy Dunne, J. Bradford Jensen, and Mark J. Roberts, is available from the University of Chicago Press this January.

The Census Bureau recently has begun releasing official statistics that measure the movements of firms in and out of business and workers in and out of jobs. The economic analyses in *Producer Dynamics* exploit this newly available data on establishments, firms, and workers,

to address issues in industrial organization, labor, growth, macroeconomics, and international trade.

This innovative volume brings together a group of renowned economists to probe topics such as: firm dynamics across countries; patterns of employment dynamics; firm dynamics in nonmanufacturing industries such as retail, health services, and agriculture; employer-employee turnover from matched worker/firm datasets; and turnover in international markets.

Dunne is a senior economic advisor in the Research Department of the Federal Reserve Bank of Cleveland. Jensen is a Research Associate in the NBER's Program on International Trade and Investment and an Associate Professor in Georgetown University's McDonough School of Business. Roberts is also an NBER Research Associate and is a Professor of Economics at Pennsylvania State University.

## The Structure of Wages: An International Comparison

*The Structure of Wages: An International Comparison*, part of the NBER's Comparative Labor Markets Series edited by Edward P. Lazear and Kathryn L. Shaw, is available from the University of Chicago Press this January.

The distribution of income, the rate of pay raises, and the mobility of employees are all crucial to our understanding of labor economics. But though there is much research on the distribution of wages across individuals in the economy, wage differentials within firms remain a mystery to economists. This volume rep-

resents a first effort to examine linked employer-employee data across countries and to analyze labor trends and their institutional background in the United States and eight European countries: Belgium, Denmark, France, Italy, The Netherlands, Norway, Sweden, and West Germany. A distinguished team of contributors reveal how a rising wage variance rewards star employees at a higher rate than ever before, how talent has become concentrated in a few firms over time, and how outside market conditions affect wages in the twenty-first century. From a compara-

tive perspective that examines wage and income differences within and between countries, this volume will be required reading for economists and those working in industrial organization.

Lazear is the Jack Steele Parker Professor of Human Resources Management and Economics at Stanford University's Graduate School of Business; Shaw is the Ernest C. Arbuckle Professor of Economics at the same institution. Both are members of the NBER's Program of Research in Labor Studies.



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