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Program Report

The Development of the American Economy

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The research interests of Development of the American Economy (DAE) program members are expansive. Temporally, their work has spanned virtually all of recorded history; geographically, it has traversed much of the globe; by economic sub-field, it can be included in each of the other NBER programs. That said, most DAE members explore the economic history of the last two centuries. Much of their work places the United States at the center, although interest in comparative economic history has grown considerably.

What is the field of economic history? Are economic historians "economists who use data from more distant periods"? Economic history is a distinctive discipline that views issues from a long-term perspective. History is a seamless cloth that can be unfolded to the present and that is regularly rewritten as the issues of the present change. In summarizing the research of DAE members, I will emphasize how the work addresses current issues and concerns. The summary includes many, but could not include all, of the Working Papers and books published in the past year or two by the more than 50 Research Associates and Faculty Research Fellows of the DAE.

The research topics of DAE members can be grouped under four broad headings: Political Economy; Labor and Population; Productivity; and Financial History and Macroeconomic Fluctuations. DAE members publish books in the *Long-term Factors in Economic Development* series, as well as NBER Working Papers and conference volumes.

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Political Economy

The area of political economy has been one of the most vibrant in the DAE Program. Corruption in the political sphere is a subject of great current interest. Was government in the United States once considerably corrupt, just as developing and transition economies are today, and did it subsequently become less corrupt as it underwent various reforms? Edward L. Glaeser and I, together with various DAE members and others, assembled a conference in July 2004 to explore these questions. The resulting volume, *Corruption and Reform: Lessons from America's Economic History* (University of Chicago Press, 2006), makes several contributions in measuring the rise and fall of corruption in the United States, examining the factors that fostered reform (for example, rules rather than discretion in New Deal, strong and independent press), and exploring interrelationships between governmental corruption and private fraud. The weight of the evidence suggests that governments at all levels in the United States were far more corrupt in the past and that a series of reforms and public awareness turned the tide.

In a series of influential papers, Stanley L. Engerman and Kenneth L. Sokoloff have explored the enduring role of initial conditions, such as colonial land-to-labor ratios and economic inequality, on later economic development. Greater inequality, which often accompanied slavery, stifled investments in education and thus lowered economic growth. The locus of government — why states, and not the federal government, were once the main spending units — has concerned John J. Wallis in several of his papers. In previous work, Wallis emphasized the fiscal angle and devised a theory of the lowest cost revenue raiser. But in a recent paper with Barry Weingast, he answers the question from a political standpoint. When government is small, the nation is geographically large, and projects are lumpy, Congress cannot agree on spending; thus the funding of projects takes place at a lower level, for example the states in the early nineteenth century. Other work in political economy includes an examination of the reasons for the adoption of state fair housing laws prior to federal legislation in 1968 by William J. Collins, and Gary D. Libecap's reassessment of the celebrated purchase of water rights by Los Angeles in the early twentieth century (shades of "Chinatown").[1]

Labor and Population

Several researchers in the DAE Program have explored long-term trends in women's economic status. The papers include my work on the career and family decisions made by college graduate women across the past century and, in a separate paper, the reasons why women were able to break through barriers in the post-1970s era and enter the most prestigious professions in large numbers. Collins and co-author Martha Bailey reexamine the significant narrowing of differences in earnings of women by race in the 1940s and find that factors observable to the researcher are less important than changes in the returns to those factors.

Dora Costa and co-author Matthew Kahn have cleverly mined the Union Army records to understand various issues of current importance to a nation at war, such as the consequences of desertion for the individual, the role of diversity in creating a cohesive fighting unit, and the treatment of prisoners of war.[2]

A significant body of work has been produced by DAE members on aspects of health, morbidity, and mortality. Werner Troesken's recent contribution, *Water, Race, and Disease,* examines the paradoxical increase in life expectation among African-Americans in the early twentieth century U.S. South at the same time that their civil rights were being eviscerated. Troesken reconciles these two divergent trends by noting that the close residential proximity of the two groups meant that clean water and sewerage separation were health issues for all in the South. In related work, Troesken and Joseph Ferrie show that clean water was responsible for the lion's share of the mortality decline in U.S. cities in the nineteenth and early twentieth centuries.[3]

In other health related research, Robert Fogel has used historical trends to predict that fully one-half of the cohorts born in the 1980s will live to be centenarians. Not only will lifetimes continue to increase, but because the onset of disabilities has risen, longer lifetimes will also be higher quality ones. Although revisionist economic history has given the 1930s New Deal little credit for ending the Great Depression, and some have even credited the policies with prolonging the downturn, the good news is that New Deal policies were beneficial to the nation's health, particularly infants, according to a study by Price Fishback, Michael Haines, and Shawn Kantor. According to work by Melissa Thomasson and co-author, the shift from home to hospital births in the early twentieth century first increased maternal mortality, and only after the introduction of sulfa drugs in 1937 were hospital births beneficial to mothers. Richard Steckel, taking a longer view of the topic of health and using information from skeletal remains, finds that Western Hemisphere populations migrated into less healthy environments during pre-Columbian times, but the reasons for the moves are not yet understood.[4]

Nineteenth century America, it is generally believed, was a meritocracy whereas much of Europe was an aristocracy. Americans were not prisoners of their family background. Rather, a person could do better (or worse) than his parents (in addition to doing far better absolutely than in Europe). Joseph P. Ferrie and co-author Jason Long confront these widely held notions about intergenerational mobility and compare economic mobility in England with that in the United States from the 1800s to the present. They find that there was greater intergenerational mobility in America until about 1900, but about the same level from 1950 to the present. Geographical mobility, however, was and still is considerably higher in the United States, even after adjusting for geographic differences in the two nations. Lee Alston and Ferrie examine social mobility among agricultural workers in the early twentieth century and find that the agricultural ladder was not as slippery and grim as generally depicted.[5]

Hundreds of riots struck major American cities in the 1960s resulting in death, injury, and often the complete razing of the poorest sections. Parts of these cities recovered rapidly but most remained urban deserts for long periods. Robert A. Margo and Collins assess the short- and long-run impacts of the riots and find that the employment opportunities for African-Americans, and thus their incomes, suffered badly even after several decades and that property values remained depressed.[6]

Productivity

Productivity as the engine of economic growth and the institutions that foster inventiveness are the subjects of B. Zorina Khan's recent volume, *The Democratization of Invention*. In it she explores the evolution of intellectual property rights and the ways in which U.S. policies and institutions, such as the patent and copyright systems, fostered the expansion of markets and the creation of national wealth. In related work, Khan and Sokoloff explore the backgrounds of great inventors to understand how the U.S. patent system fostered seemingly obscure individuals to invent.[7]

The United States did not exceed the United Kingdom in per capita income until the late nineteenth century, according to most economic history accounts. But its labor force was considerably more agricultural than was Britain's throughout the nineteenth century. These two facts raise the distinct yet ironic possibility that America was more productive in the fastest growing sector — manufacturing — than was the world's first industrial economy. That conjecture is explored by Douglas A. Irwin and co-author Stephen N. Broadberry who find that Britain led the United States in labor productivity in services, the two were about equal in agriculture, but America led in industrial labor productivity from 1840. The catch-up of the United States to Britain in per capita GNP came about mainly because of a shift out of low-productivity agriculture but also because service productivity increased relatively in the United States.[8]

If a nation at war can mobilize rapidly, then productivity and national income are less negatively affected during and immediately after the conflict. Hugh Rockoff investigates the degree to which the United States mobilized during World War I and finds, contrary to the conventional wisdom on this brief engagement, that mobilization was rapid and effective.[9]

Financial History and Macroeconomic Fluctuations

A large and growing group of researchers in the DAE have been exploring U.S. financial history and the impact of U.S. foreign policy and military action on world financial markets. One fascinating example is the demonstration by Kris J. Mitchener and Marc D. Weidenmier that the Roosevelt Corollary to the Monroe Doctrine—that the United States had the right to intervene in Central America and the Caribbean—plus gunboat diplomacy stabilized debt markets and increased trade. In a related paper the authors measure the degree to which "super-sanctions," such as the use of military action in the face of default, decreased ex ante measures of default.[10]

Does trade foster democracy? That is the question Christopher M. Meissner and co-author pose and answer in the affirmative, for the post-1895 period, using a gravity model of trade to identify the causal impact of openness on democratization. Michael Bordo and Meissner show that for 30 countries from 1880 to 1913, foreign currency debt increased debt crises and banking crises. Richard E. Sylla, John J. Wallis, and co-author explore the causes of the state defaults of the early 1840s when eight states and the Territory of Florida reneged on their bonds. Contrary to popular wisdom, the authors dismiss an explanation that blames the defaults on the recession of 1837 and advance one that emphasizes losses in land revenue and fiscal irresponsibility for the delay in raising property taxes.[11]

In work that continues one of the mainstays of NBER research, Joseph H. Davis has constructed a new (and better) pre-World War I chronology of U.S. business cycles that alters more than 40 percent of the peak and troughs. How did Joe Davis improve upon the pioneering works of Wesley Mitchell, Geoffrey Moore, Willard Thorp, and Victor Zarnowitz, among others at the NBER and elsewhere? He did it by unearthing new long-run, consistent industrial series for a lengthy list of goods. His remarkable achievement, on which the business cycle dating paper rests, can be found in the November 2004 issue of the *Quarterly Journal of Economics.*[12]

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Research Summaries

Impatience and Savings

David Laibson*

When making decisions with immediate consequences, economic actors typically display a high degree of impatience. Consumers choose immediate pleasures instead of waiting a few days for much larger rewards. Consumers want "instant gratification."

However, people do not behave impatiently when they make decisions for the future. Few people plan to break their diets next week. Instead, people tend to splurge *today* and vow to exercise/diet/save *tomorrow*. From today's viewpoint, people prefer to act impatiently right now but to act patiently later.

Data from neuroscience experiments provide a potential explanation for these observations: short-run decisions engage different brain systems from long-run decisions. Using functional magnetic resonance imaging (fMRI), Samuel McClure, George Loewenstein, Jonathan D. Cohen, and I have shown that decisions that involve at least some short-run tradeoffs recruit both analytic and emotional brain systems, whereas decisions that only involve long-run tradeoffs primarily recruit analytic brain systems.[1] These findings suggest that people pursue instant gratification because the emotional brain system — the limbic system — values immediate rewards but only weakly responds to delayed rewards.

Whatever the underlying biological mechanism, the taste for instant gratification can be incorporated into models of human behavior. Several strands of my work have attempted to do this. Chris Harris and I have proposed models in which actors place a special premium on immediate pleasures.[2] I also have developed models that assume that people have biologically conditioned motivational states: when familiar cues are presented, consumers experience a drive to consume the goods that they consumed in the presence of those cues in the past.[3] For example, a cigarette smoker will urgently want a smoke when he enters his favorite bar (where he has smoked before).

The drive for immediate gratification has many empirical consequences that my coauthors and I have studied. Marios Angeletos, Andrea Repetto, Jeremy Tobacman, Stephen Weinberg, and I have run computational simulations of consumers with a taste for instant gratification (specifically, we studied quasi-hyperbolic discount functions).[4] We find that such consumers quickly spend whatever liquid wealth they have and are only able to save in illiquid assets. These consumers live from hand to mouth in their checking accounts, but hold large stocks of illiquid assets like home equity and defined contribution pension plans. When making long-run choices – for example, when deciding how to invest during flush times – these consumers buy illiquid assets that offer a high rate of return and pay out slowly over many decades. When making short-run decisions, however, these consumers are willing to pay a high price for immediate gratification.

Repetto, Tobacman, and I show that the taste for instant gratification explains why households hold illiquid assets and also frequently borrow with credit cards that involve relatively high interest rates.[5] We also estimate the strength of the taste for immediate gratification.[6] We find that consumers have a short-run discount rate of 30 percent and a long-run discount rate of 5 percent. In other words, delaying a reward by a year reduces its value by 30 percent, but delaying the same reward an additional year only generates an additional 5 percent devaluation.

Consumers with a taste for immediate gratification will avoid immediate disutility. Such consumers will repeatedly delay finishing unpleasant tasks like enrolling in a 401(k) plan. James J. Choi, Brigitte Madrian, Andrew Metrick, and I have found signs of procrastination in a survey of employees.[7] Over two thirds of respondents say that they save too little, and none say that they save too much. Among the self-reported undersavers, over one third say that they plan to join the 401(k) plan or raise their savings rate in the next two months. Using administrative records, we find that

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almost none follow through in the next four months.

It is typically difficult to determine whether households save optimally. Even asking a respondent -— as we did above — yields ambiguous evidence, since it is not clear what it means to say, "I save too little." But in some cases, savings incentives are strong enough to make very sharp predictions about optimal 401(k) contribution rates. Choi, Madrian and I have analyzed employees who receive employer-matching contributions in their 401(k) plan and are allowed to make discretionary, penalty-free, in-service withdrawals.[8] For these employees, contributing below the match threshold is an unambiguous mistake. Nevertheless, half of employees with such clear-cut incentives *do* contribute below the match threshold, foregoing match payments that average 1.3 percent of their annual pay. In our sample, making this mistake correlates with other types of procrastination. Finally, providing these "undersavers" with specific information about the free lunch they are foregoing fails to raise contribution rates.

Such savings problems suggest that economists should think about the effectiveness of existing savings institutions. In particular, economists should ask why new employees take so long to enroll in 401(k) plans. Madrian and Dennis Shea started this literature by showing that defaults play a critical role.[9] Their original paper shows that the typical employee sticks with the default option – whether the default is enrollment or non-enrollment – for years after joining a new firm. Follow up papers have replicated these findings in a large number of firms.[10]

In a typical company with a standard default of *non-enrollment,* only about one third of employees enroll on their own during the first six months of employment. Even after a year, only half of employees enroll in the 401(k) plan. Under the *automatic enrollment* system, new employees are automatically enrolled in the 401(k) and may opt out of the plan. If employees do nothing they are enrolled at a default savings rate (typically 2 or 3 percent of their wages) and their investments are allocated to a default portfolio (typically a money market, although increasingly, automatic enrollment systems are using lifecycle funds as the default). Under automatic enrollment, about 90 percent of employees accept default enrollment, and about 75 percent of these enrollees accept the default savings rate *and* the default asset allocation.

The consequences of passivity and status quo bias affect a wide range of 401(k) outcomes. Choi, Madrian, Metrick, and I find that 401(k) plan participants follow the path of least resistance in every investment decision that they make.[11] For example, the match threshold is the maximal (employee) contribution rate at which the employer provides a match (at the margin). Most employees who enroll in 401(k) plans contribute up to the match threshold. When an employer raises the match threshold, employees who join the plan *after* the change exploit the higher match threshold, but employees hired *before* the change typically take three years to raise their savings rate.

Evidence on company stock also supports the conclusion that savers are remarkably passive.[12] In 401(k) plans with the option to invest in company stock, nearly half of the assets are invested in company stock. Moreover, this pattern of investment was unaffected by the prominent bankruptcies of Enron, Worldcom, Global Crossing, and many other firms in the aftermath of the collapse of the technology bubble. Employees who lost their entire life savings in the Enron debacle were frequently discussed in the media at the time of the Enron bankruptcy, but American workers have not generalized that message. Company stock allocations never budged. The high allocation to company stock is linked to the fact that many employer-matching contributions are automatically invested in company stock. These matched contributions stay in employer stock, even when employees have the option to reallocate the money. In contrast, when an employer asks its employees to choose their own portfolio allocation, employees invest a much lower share in company stock.

Asking employees to make their own decisions — by discouraging reliance on a default action or removing the default altogether — also provides a good system for 401(k) enrollment.[13] For example, one firm asked new employees to tell the firm their enrollment decision — including their enrollment savings rate and asset allocation — within 30 days of their hire date. Naturally, the employees can change their mind later, but they are supposed to make an initial decision within 30 days. Enforcement works the same way that the choice of a medical insurance plan works at most companies: employees who do not make the decision are reminded to do so. We call this an *active decision* enrollment system, since employees are encouraged to decide for themselves. We find that such active decision enrollment produces very good results. A few months after hire, employees hired under an active decision regime have a 70 percent enrollment rate in the 401(k). Moreover these employees seem to be making smart savings choices. In particular, the distribution of savings rate at three months of tenure under an active decision regime matches the distribution of savings rates at three years of tenure under a standard enrollment regime. However, active decisions are unlikely to work as well as defaults when people are relatively uninformed about the decision they are being asked to make.[14]

The power of defaults implies that policymakers and 401(k) plan designers should pick defaults very carefully, even though they are non-binding. My coauthors and I have developed a framework for analyzing this problem.[15] We calculate the socially optimal 401(k) enrollment regime. Three different 401(k) enrollment procedures endogenously emerge from the model. We derive conditions under which the optimal enrollment regime is: automatic enrollment (that is, default enrollment); standard opt-in enrollment (that is, default non-enrollment); or an active decision (that is, no default and compulsory choice). The active decision regime is socially optimal when consumers have a large degree of variation in their savings needs and a strong tendency to procrastinate. In this case, a single default will not work well for all consumers and households won't enroll on their own without a deadline. Default enrollment is optimal when consumers have relatively similar savings needs and a moderate tendency to procrastinate. In this case, a one-size-fits-all default is not a problem because households do not differ greatly in their savings needs. Moreover, households will not wait too long to opt out of the default if it is not right for them.

My collaborators and I continue to study the foundations of instant gratification, the consequences for savings behavior, and the implications for the design of optimal savings institutions.

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Bank Regulation and Supervision

Ross Levine*

A large body of research suggests that banks matter for human welfare. Most noticeably, banks matter when they fail. Indeed, the fiscal costs of banking crises in developing countries since 1980 have exceeded $1 trillion, and some estimates put the cost of Japan's banking problems alone over this threshold.[1] Recent research also finds that banks matter for economic growth.[2] Banks that mobilize and allocate savings efficiently, allocate capital to endeavors with the highest expected social returns, and exert sound governance over funded firms foster innovation and growth. Banks that instead funnel credit to connected parties and the politically powerful discourage entrepreneurship and impede economic development. Recent work further shows that banks matter for poverty and income distribution.[3] Well-functioning banks that extend credit to those with the best projects, rather than to the wealthy or to those with familial, political, or corrupt connections, exert an equalizing affect on the distribution of income and a disproportionately positive impact on the poor by de-linking good ideas and ability from past accumulation of wealth and associations.

The important relationship between banks and economic welfare has led researchers and international institutions to develop policy recommendations concerning bank regulation and supervision. The International Monetary Fund, World Bank, and other international agencies have developed extensive checklists of "best practice" recommendations that they urge all countries to adopt. Most influentially, the Basel Committee on Bank Supervision recently revised and extended the 1988 Basel Capital Accord.

Data

Until recently, the absence of data on bank regulation and supervision made it impossible to conduct broad cross-country studies of which regulations and supervisory practices promote sound banking. While analysts used models, country-studies, and the experiences of supervisors to make policy recommendations, there were simply insufficient data with which to conduct extensive international comparisons and to test the validity of Basel II or other proposals for reform. Clearly expert advice and evidence from individual countries should inform banking policies; but just as clearly, cross-country econometric evidence can provide a valuable input.

Consequently, James Barth, Gerard Caprio, and I assembled an international database on banking policies. We conducted two surveys. The first was conducted in 1998–9 and involved over 100 countries and included information on almost 200 regulations and supervisory practices. The second covered 2003–4 and included 50 more countries and 100 additional questions, many of which were recommended by users of the first survey.[4]

Using these data, I am working with others to assess which banking sector policies promote sound banking around the world. In terms of defining "sound banking," many take for granted that stability is the primary objective of bank regulation. While we study stability, my co-authors and I also examine the impact of banking policies on bank development, efficiency, corruption in lending, and corporate governance of banks. Banks are not simply safe places to stash funds. Banks play pivotal roles in mobilizing and allocating resources, monitoring firms, and providing liquidity and risk management services. Thus, bank regulation and supervision should be judged by more criteria than stability alone.

A Political Economy Approach

Consistent with research on the political economy of banking policies, the patterns we observe in the data suggest that countries do not choose individual regulations in isolation; rather, individual choices reflect broad approaches to the role of government in the economy.[5] Some governments choose an active, hands-on approach, where the government owns much of the banking industry, restricts banks from engaging in non-lending activities such as securities underwriting, insurance, real estate, and non-financial services, limits the entry of new banks, and creates a powerful supervisory agency that directly oversees and disciplines banks. Other countries rely substantially less on direct government control of banks. These countries place comparatively greater emphasis on forcing banks to disclose accurate information to the public as a mechanism for facilitating private sector governance of banks. Thus, some of my research can

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be viewed as using the laboratory of bank regulation and supervision to assess the historic debate about the proper role of government in the economy.

Given these observations, my coauthors and I have framed our initial international investigations of bank regulation and supervision within the context of two views of government. The public interest approach stresses that market failures — information and contract enforcement costs — interfere with the incentives and abilities of private agents to monitor and discipline banks effectively. From this perspective, a powerful supervisory agency that directly monitors and disciplines banks can improve bank operations. The public interest approach assumes that there are market failures and official supervisors have the incentives and capabilities to ameliorate those market failures by directly overseeing, regulating, and disciplining banks.

The private interest view, however, questions whether official supervisory agencies have the incentives and ability to fix market failures and enhance the socially efficient operation of banks. The private interest view holds that politicians and government supervisors do not maximize social welfare; they maximize their own welfare. Thus, if bank supervisory agencies have substantial influence over bank decisions, then politicians and supervisors may abuse this power to force banks to divert the flow of credit to ends that satisfy the private interests of politicians and supervisors, not the interests of the broader public. Thus, strengthening official oversight of banks might reduce bank efficiency and intensify corruption in lending.

According to the private interest view, most countries do not have political and legal systems that induce politicians and government officials to act in the best interests of society. Thus heavy regulation of bank activities and direct, hands-on influence over banks is unlikely to promote sound banking. Rather, the private interest view holds that the most efficacious approach to bank supervision relies on using government regulations and institutions to empower private monitoring of banks. Specifically, the private interest approach advocates effective information disclosure rules and sound contract enforcement systems so that private investors can use this information to exert sound corporate governance over banks with positive ramifications on bank operations. This is not a laissez-faire approach. To the contrary, the private interest approach stresses that strong legal and regulatory institutions are necessary for reducing information and contract enforcement costs. My research is beginning to provide cross-country empirical evidence on these different approaches to bank regulation and supervision, including analyses of the role of legal and political institutions in determining the effectiveness of different banking sector policies.

Initial Results on What Works and What Does Not

Using different cross-country, bank-level, and firm-level datasets and employing different econometric techniques, the initial results are broadly consistent with the predictions from a private interest view of bank regulation. Bank regulations and supervisory practices that force banks to disclose accurate information to the public tend to: 1) boost the development of the banking system as measured by private credit relative to Gross Domestic Product; 2) increase the efficiency of intermediation as measured by lower interest margins and bank overhead costs; and 3) reduce corruption in lending as measured by survey information from firms around the world.[6] For example, Thorsten Beck, Asli Demirgüç-Kunt, and I estimate that the probability that a firm reports bank corruption as a major obstacle to firm growth would decrease by over half if a country moved from the 25th percentile of our measure of the degree to which regulations force information disclosure and foster private sector monitoring to the 75th percentile.[7] Furthermore, information disclosure rules have a particularly strong effect on reducing corruption in lending in countries with well-functioning legal institutions. Thus, private investors need both information and legal tools to exert sound governance over banks.

Results on banking system crises also advertise the importance of the incentives facing private investors. While we do not find a relationship between information disclosure rules and bank fragility, there is a strong link between deposit insurance design and crises. The results are consistent with the view that generous insurance schemes reduce the incentives of private investors to monitor banks and this increases the ability of bank owners to take on excessive risks, increasing the probability that the country suffer a systemic crisis.[8] For example, James R. Barth, Gerard Caprio, and I estimate that if Mexico changed its very generous deposit insurance to the sample average, then its probability of suffering a systemic crisis would drop by 12 percentage points.[9]

In contrast, the results across a range of studies do not support the public interest view of regulation and raise a cautionary flag regarding reliance on direct official oversight of banks, government ownership of banks, regulations restricting bank activities, and impediments to the entry of new domestic and foreign banks. We never find that giving official supervisors greater powers (to force a bank to change its internal organizational structure, suspend dividends, stop bonuses, halt management fees, force banks to constitute provisions against actual or potential losses as determined by the supervisory agency, supersede the legal rights of shareholders, remove and replace managers and directors, obtain information from external auditors, and take legal action against auditors for negligence) enhances bank operations or reduces bank fragility. Similarly, greater government ownership of banks, regulatory restrictions on bank activities, or limitations on the entry of new banks never has positive effects. While some theories predict that strengthening direct official oversight and regulation of banks will promote social welfare in countries with well functioning political and legal institutions, we do not find support for this hypothesis either.[10]

Across the different studies that I have conducted thus far, the bulk of "hands on" government policies lowers bank development, induces less efficient banks, exacerbates corruption in bank lending, and intensifies banking system fragility. Specifically, countries that grant their official supervisors greater disciplinary powers have lower levels of bank development and greater corruption in lending. Governments that heavily regulate bank activities and restrict entry into banking have banks with bloated interest rate margins and larger overhead costs. For example, Demirgüç-Kunt, Luc Laeven, and I compute that if Mexico had the same level of restrictions on bank activities as Korea, its interest rate margins would be a full percentage point lower.[11] Furthermore, countries with greater government ownership of the banking industry have less banking system development. We also find that restricting banks from diversifying into non-lending activities and prohibiting banks from lending abroad increases banking system fragility.

Thus, the evidence is broadly consistent with the private interest prediction that regulatory restrictions on activities, impediments to entry, limits on investing abroad, government ownership, and strengthening the discretionary power of official supervisors increase cronyism, corruption, and collusion with adverse ramifications on the efficiency and effectiveness bank intermediation. In analyses, however, we find that well-functioning political and legal institutions negate the negative effects of empowering direct official oversight of banks. But even in these cases, the results do not indicate that empowering direct official oversight improves bank operations.

Basel II and Beyond

This research has implications for the three pillars of Basel II. Regarding pillar one, my coauthors and I did not find a significant impact of capital regulations on bank development, efficiency, stability, or corruption. Many factors may explain this result. The harmonization of national capital regulations makes it difficult to find a relationship between capital regulations and bank performance. Or, the lack of clear evidence on the beneficial effects of current capital regulations may reflect the inadequacy of the Basel I capital regulations and the need for implementing Basel II. Or, banks may evade capital regulations.

The findings support Basel II's third pillar, but not its second. For most countries, the data indicate that strengthening official supervisory powers will make things worse, not better. Unless the country is "top ten" in terms of the development of its political institutions, the evidence suggests that strengthening official supervisory powers hurts bank development and leads to greater corruption in bank lending without any compensating positive effects. Instead, the results advertise the efficacy of Basel II's third pillar: market discipline. Regulations that require informational transparency and that strengthen the ability and incentives of the private sector to monitor banks tend to promote sound banking.

Extensions

Finally, I have also begun to examine the determinants of bank supervisory and regulatory choices.[12] Perhaps not surprisingly, the data indicate that countries with more open, competitive, democratic political systems that have effective constraints on executive power tend to adopt an approach to bank supervision and regulation that relies more on private monitoring, imposes fewer regulatory restrictions on bank activities and the entry of new banks, and has less of a role for government-owned banks. In contrast, countries with more closed, uncompetitive, autocratic political institutions that impose ineffective constraints on the executive tend to rely less on private monitoring, impose more restrictions on bank activities and new bank entry, and create a bigger role for government banks. These findings underscore the difficulty in deriving uniform best practice guidelines for countries around the world. Much work remains, though. We have not exploited all aspects of the database on bank regulation and supervision and considerably more research is needed on designing strategies for reforming banking policies in ways that enhance the operation of banks and improve social welfare.

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Corporate Governance and Financial Globalization

René M. Stulz *

In his recent book, Thomas L. Friedman makes the case that globalization leads to a flat world.[1] By that, he means that it removes obstacles that, in the past, would have prevented firms and individuals from competing with each other across the world. Such competition improves welfare not only by insuring that goods are produced at the lowest cost but also by making sure that consumers get access to new and better goods. Assuredly, the world is not flat yet. Nevertheless, the metaphor is helpful for understanding the forces that shape our world. It is even more apt to describe the financial world than the world of trade in goods. For many countries, the most significant explicit barriers to trade in financial assets have been knocked down.

In a paper with Andrew Karolyi, I describe how the financial world would look if it were flat.[2] The most striking counter-factual is that, despite the removal of barriers to trade in financial assets, capital does not flow to countries with low-capital stocks as strongly as one would expect.[3] As Robert Lucas once pointed out forcefully, differences in the marginal product of capital between industrialized countries and emerging countries are large. In fact, over the recent past, capital has come rushing into the United States, when one would expect it instead to flow to emerging countries. Using data from the IMF, the cumulative sum of net equity flows to less developed countries from 1996 to 2004 is a negative $67.4 billion.

What then are the obstacles left that make the financial world full of ridges and mountains, so that capital does not flow where the physical marginal product of capital is highest? The answer is that poor corporate governance stands in the way of countries getting the full benefit of financial globalization. With poor governance, firms are valued less by the capital markets, so that entrepreneurs are more limited in their abilities to raise money to finance their activities. As a result, firms are smaller and growth is stymied.

An investment of $100 might be more productive in Indonesia than in the United States, but the investment will not take place in Indonesia if investors expect to receive a higher return on their investment in the United States. Poor governance prevents investors from receiving the full return on their investment, because third parties pick off the fruits of those investments before they are received. For instance, controlling shareholders in a company in Indonesia might siphon off earnings for their own profit rather than using them to provide a return to outside investors.

As I emphasized in a paper with Craig Doidge and Karolyi, corporate governance has two dimensions.[4] First, it has an external, country-level, dimension. The institutions of the country in which a firm is located affect how investors receive a return from investing in the firm. Perhaps most importantly, a country's laws specify the rights that investors have, and the enforcement of the laws determines the extent to which these rights are meaningful. Second, corporate governance has an internal, firm-level, dimension. Firms can organize themselves so that they are well governed. For instance, they can commit themselves to good disclosure, which makes it harder for corporate insiders to take advantage of other investors. The quality of a firm's governance depends both on the quality of internal, firm-level, and external, country-level, governance. There has been considerable research on these two dimensions of governance in recent years. In the following paragraphs, I discuss some of the contributions I have made with my co-authors in examining the interaction between financial globalization and corporate governance.

Lee Pinkowitz, Craig Williamson, and I provide a useful way to understand the importance of the governance problem as an obstacle to financial globalization.[5] One would expect, if governance works well, that a dollar of cash would be worth a dollar when the capital markets value a corporation. If a dollar of cash were worth less than a dollar, then it would mean that managers or controlling shareholders are wasting cash. We investigate how capital markets assess the value of cash in 35 countries from 1988 through 1998. Our sample includes more than 6,000 companies per year on average. We find that if we split the countries according to an index of corruption, the value of a dollar of cash is worth $0.91 in countries with low corruption and $0.33 in countries with high corruption. While the value of a dollar of cash inside the corporation is worth an amount not significantly different from $1 in countries

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with low corruption, it is worth significantly less in countries with high corruption. How do we know that poor governance explains this result? We also find that dividends are worth a lot more in countries with high corruption than they are in countries with low corruption. In other words, investors value cash paid out by the corporation in countries with high corruption because they have good reasons to expect that cash kept within the firm will be wasted or stolen.

In the paper just discussed, we used country indices of governance. In other words, we classified as poor-governance countries those in which investors are poorly protected, so that they are less likely to receive a return on their investment. This focus raises the question of how important countries are for corporate governance. Could it be that firms can adopt good governance practices in countries that protect investors poorly so that they would be on a level playing field with firms from countries that protect investors well? It turns out that countries have a determinant influence on governance. Doidge, Karolyi, and I investigate three corporate governance rankings.[6] One example of such rankings is S&P's Transparency and Disclosure ratings, which evaluate the disclosure practices of corporations in emerging and industrialized countries. We find that most of the variation in corporate governance rankings can be explained by country characteristics. In other words, for the corporate governance rankings we observe, just knowing a firm's country of origin explains most of the variation in rankings across firms.

An important question is why governance differs across countries. The literature has provided a number of hypotheses. La Porta et al. point to the importance of a country's legal origins.[7] Johnson et al. focus on how a country's endowments shape its institutions.[8] Rohan Williamson and I emphasize the importance of culture as a determinant of institutions. We show that a country's religion helps predict a country's shareholder rights, creditor rights, and enforcement of property rights. In particular, we find that protestant countries typically have much stronger creditor rights than catholic countries. In the paper with Doidge and Karolyi, I also show that a country's economic and financial development affect governance. At the firm level, good governance reduces a firm's cost of capital. This advantage is of limited use if capital markets are underdeveloped, however. Consequently, the incentives of firms and countries to invest in governance are limited when financial markets are poorly developed.

The evidence suggests that it is difficult for firms to find ways to offset the disadvantages resulting from being located in a country with poor institutions. However, I make the point that firms can rent institutions from countries with better institutions.[9] In particular, foreign firms that list their shares in the United States benefit from some U.S. institutions. For instance, they have to meet various disclosure requirements that U.S. firms have to meet and their investors can use the U.S. courts and benefit from U.S. laws and regulations.

Doidge, Karolyi, and I examine whether the evidence is consistent with the hypothesis that firms cross-list in the United States to take advantage of the U.S. institutions that protect investors.[10] We find strong support for this hypothesis. Our paper identifies a striking result, which we call the "listing premium." We find that foreign firms that list in the United States are worth substantially more than foreign firms that do not list in the United States. The paper examines the valuation of 712 cross-listed stocks and 4,078 non-cross-listed stocks in 1997. It finds that the valuation of cross-listed stocks were worth 16.5 percent more on average than comparable firms that were not cross-listed. This cross-listing premium was even more dramatic for firms listed on NYSE, where it was 37 percent on average. In recent work, not yet circulating as a working paper, we show that this cross-listing premium persists through time.

In the United States and a few other countries, ownership of large corporations is dispersed. In contrast, in most other countries, ownership of large corporations is concentrated and corporations have controlling shareholders. This difference in how corporations are owned across the world has much to do with differences in governance. I show that ownership is much more concentrated in countries with high corruption.[11] The reason for this is straightforward. Everything else equal, insiders would rather diversify their wealth, so that concentrated ownership is costly for them. In countries with high corruption, it is easier for corporate insiders to steal from minority shareholders. However, when corporate insiders have a large stake in the corporation, they end up stealing mostly from themselves. If stealing from minority shareholders has costs for corporate insiders, less stealing takes place when corporate insiders have a larger stake in the corporation. Consequently, in countries where governance is poor, insiders have to co-invest more with other shareholders. Since the resources of insiders are limited, it follows that firms are smaller and more levered in countries where governance is poor.

The literature has shown that capital markets are weak when investors are poorly protected. In a paper with Jean Helwege and Christo Pirinsky, I show that capital markets play a key role in how U.S. companies evolve after their IPO so that their ownership becomes dispersed.[12] In that paper, we show that the corporations whose ownership becomes dispersed quickly after their IPO benefit from a liquid market for their stock. In other words, ownership becomes dispersed only for the firms that benefit from a well-functioning market for their stock.

If the financial world were flat, we would expect investors to be more internationally diversified than they are. The home bias in equity holdings has garnered much attention from economists. Karolyi and I review much of the evidence on the home bias and report that it is still substantial.[13] Magnus Dahlquist, Pinkowitz, Williamson, and I tie the home bias to governance.[14] In small countries, foreign investors would hold most shares if the financial world were flat. We argue that a major reason why this is not the case is that in countries with poor governance, corporate insiders have to hold large stakes in their sharesfirms. The shares that corporate insiders hold cannot be held by foreign investors. With this argument, there is an upper limit to the fraction of shares that can be held by foreign investors. This upper limit is inversely related to the quality of governance in a country.

If all countries had good governance, then firms could be held by diversified investors. Since firm size would not be limited in part by the resources of the insiders, firms could be larger, more investment could take place, and consumption would be less volatile. Hence, good governance is the key to a flat financial world.

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NBER Profile: *David I. Laibson*

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Laibson received his A.B. in Economics from Harvard in 1988, his MSc from the London School of Economics in 1990, and his Ph.D. in Economics from MIT in 1994. He joined the Harvard economics department as an assistant professor in 1994 and was promoted to full professor in 2002. He was also a Fellow of the NBER's Aging Program in the academic year 1997–8.

Laibson is a member of the Russell Sage Behavioral Economics Roundtable, the MacArthur Foundation Preferences Network, the Data Monitoring Committee of the Health and Retirement Survey, the Board of the Pension Research Council, and the editorial boards of the *Journal of the European Economic Association* and the *Journal of Risk and Uncertainty.*

Laibson lives in Cambridge with his wife Nina Zipser, the Director of Institutional Research at Harvard University. Occasionally they find time to hike, snorkel, cross-country ski, and snow shoe. Laibson also plays tennis with Harvard graduate students who let him win a few games.

NBER Profile: *Ross Levine*

Ross Levine is a Research Associate in the NBER's Program on International Finance and Macroeconomics and the Harrison S. Kravis University Professor and Professor of Economics at Brown University. Also at Brown, Levine is the Paul Dupee Faculty Fellow at the Watson Institute for International Studies. He received his Ph.D. in economics from UCLA and worked for the Board of Governors of the Federal Reserve System, the World Bank, and the University of Virginia. Before moving to Brown University in 2005, Levine was the Curtis Carlson Professor of Finance at the University of Minnesota's Carlson School of Management.

Levine's research examines the determinants of economic growth and focuses on understanding the linkages between financial sector policies, the operation of financial systems, and the impact of financial arrangements on growth, poverty, income distribution, and corporate performance. His recent book with James Barth and Gerard Caprio, *Rethinking Bank Regulation: Till Angels Govern,* challenges the efficacy of many policy recommendations regarding bank supervision and regulation.

Levine lives in Providence, Rhode Island with his wife, an economist who directs the Commerce, Organization, and Entrepreneurship Program at Brown University, and two children. His hobbies include running, swimming, tennis, bicycling, and trying to make the perfect cup of coffee.

Conferences

Economic Regulation

NBER Research Associate Nancy L. Rose of MIT organized a conference on Economic Regulation that took place on September 9 and 10 in Cambridge. The following papers were discussed:

Dennis Carlton, University of Chicago and NBER, and **Randal Picker,** University of Chicago, "Antitrust and Regulation"
Discussant: Timothy Bresnahan, Stanford University and NBER

Paul Joskow, MIT and NBER, "Incentive Regulation in Theory and Practice: Electricity Distribution and Transmission Networks"
Discussant: David Sappington, University of Florida

Jerry Hausman, MIT and NBER, and **J. Gregory Sidak,** American Enterprise Institute, "Telecommunications Regulation: Current Approaches with the End in Sight"
Discussant: Joseph Farrell, University of California, Berkeley

Frank Wolak, Stanford University and NBER, "Regulating Competition in Wholesale Electricity Supply"
Discussant: Catherine Wolfram, University of California, Berkeley and NBER

Severin Borenstein, University of California, Berkeley and NBER, and Nancy L. Rose, "Regulatory Reform in the Airline Industry"
Discussant: Steven Berry, Yale University and NBER

Randall Kroszner, University of Chicago and NBER, and **Philip Strahan,** Boston College and NBER, "Regulation and Deregulation of the U.S. Banking Industry: Causes, Consequences, and Implications for the Future"
Discussant: Charles Calomiris, Columbia University and NBER

Gregory Crawford, University of Arizona, "Cable Television: Does Cable Need to be Regulated Any More?"
Discussant: Tasneem Chipty, CRA International

Patricia Danzon, University of Pennsylvania and NBER, and **Eric Keuffel,** University of Pennsylvania, "Regulation of the Pharmaceutical Industry"
Discussant: Ernst Berndt, MIT and NBER

Eric Zitzewitz, Stanford University, "Financial Regulation in the Aftermath of the Bubble"
Discussant: Jonathan Macey, Yale University

Roberton Williams, University of Texas at Austin and NBER, "Market-Based Environmental Regulation"
Discussant: Erin Mansur, Yale University

The past thirty years have witnessed an extraordinary transformation of government intervention in broad segments of the economy, both in the United States and in many other nations. Many industries historically subject to economic regulation, particularly those in multi-firm sectors such as trucking, airlines, and banking, have been largely deregulated. "Natural monopoly" industries, such as electricity and telecommunications, have been restructured, and traditional regulation or state ownership has been replaced by market-based institutions. Much of this reform movement was supported by economic analyses that highlighted the inefficiencies of historical regulatory policies and suggested the prospect of substantial gains from regulatory reform. Early studies of the aftermath of deregulation confirmed many of the anticipated benefits, particularly in structurally competitive sectors, and may have spurred extension of regulatory reform to other industries. In recent years, however, some have challenged the wisdom of those policies, even proposing the reintroduction of regulation in some sectors.

This National Bureau of Economic Research project analyzes the performance of regulatory reform and restructuring across a broad group of industries and settings. The papers at this conference provide an overview of key issues surrounding economic regulation and assessment of the economic consequences of regulatory reforms over the past three decades, and discuss some of the most significant contemporary concerns about these reforms.

More than a century ago, **Carlton** and **Picker** note, the federal government started regulating competition, first railroads through the Interstate Commerce Act and then the general economy under the Sherman Act. The former assigned primary responsibility to the Interstate Commerce Commission (ICC), while the Sherman Act relied for its implementation on federal courts. Since that time, there has been an ongoing struggle to define the appropriate substantive scope for regulating competition and to determine the right mechanism for implementing that policy. As the antitrust laws evolved and harmed certain interest groups, these groups often sought and got explicit exemptions and even legislation protecting them from entry. Other interest groups wound up with regulation as an alternative to facing antitrust liability and had to share the benefits of regulation with other interest groups. Many exemptions and regulatory agencies were formed as responses to unfavorable antitrust decisions. For example, the railroads certainly had the incentive, and perhaps even good economic reasons, to agree on rates and could do so prior to the Sherman Act without fear of federal prosecution. The Supreme Court's decision in *Trans-Missouri* changed that, as it made clear that the Sherman Act condemned private collective rate setting. But if private collective rate setting was forbidden, it was left unclear how to implement public rate setting, because the ICC lacked the power to set rates. The Interstate Commerce Act itself needed a series of amendments before the ICC received true rate-setting power. The core issue in network industries today, whether telecommunications, transportation, or electricity, is interconnection and mandatory access. The salience of these issues has increased as reform-induced restructuring has led to vertical disintegration of firms, and increased competition with incumbents in many industry segments. The tension between antitrust and regulatory solutions to these problems continues. The Supreme Court's decision in *Trinko* suggests that antitrust will not be viewed as a substitute for regulation of interconnection in network industries and that firms seeking interconnection will need to look outside of antitrust for help.

One of the most significant reforms within economic regulation has been a move away from cost-based price setting toward incentive-based mechanisms. **Joskow** first describes modern theoretical principles governing the benefits and design of incentive regulation mechanisms. Mapping these theoretical models into regulatory design in specific industry settings can be difficult, however, and Joskow identifies a number of issues associated with applying these principles in practice. His work then moves to a discussion of actual applications of incentive regulation mechanisms to the regulation of prices and service quality for "unbundled" electricity transmission and distribution networks. Joskow describes the challenges, and reviews the evidence regarding the performance of incentive regulation for electric distribution and transmission networks. Finally, he identifies issues for future research.

Early telecommunications regulatory reform moved toward incentive regulation, in part because of recognition of adverse effects of traditional regulation on innovation. During the late 1990s and the early 2000s, however, cost-based regulation has reappeared because of the necessity to set prices for unbundled network elements (UNEs) sold by incumbent firms to their competitors. **Hausman** and **Sidak** consider the outcomes so far of the new regulatory approach to unbundling the incumbents' networks. They concentrate on the outcome in three countries: the United States, the United Kingdom, and New Zealand. Their general conclusion is that in both the United States and the United Kingdom unbundling may have caused an increase in competition, if one measures competition by market share of entrants. However, adverse effects occurred in terms of investments by both incumbents and new entrants. Further, the "goals" put forward by regulators in terms of unbundling have not been met. In the last section of their paper they consider whether, with increased facilities-based competition, especially in the United States, the "end of regulation" in telecommunications should occur. They explain that in an industry with high fixed costs and low variable costs, the incumbent will not be able to increase prices above competitive levels profitably if it loses a relatively small amount of business. Thus, the entry of cable television providers offering telephone service should serve to constrain incumbents from increasing prices above competitive levels at a quite early stage. No economic reason exists for the incumbent's share to fall to, say, 50 percent before price deregulation should follow. Emerging facilities-based competition should allow the end of price regulation and the regulatory burden that it creates for both consumers and the economy.

The experience of the past ten years of electricity industry reform provides further evidence that market institutions can significantly enhance or limit the potential benefits of regulatory reform and restructuring. **Wolak** suggests that electricity industry restructuring is an evolving process that requires policymakers to choose between an imperfectly competitive market and an imperfect regulatory process to provide incentives for least-cost supply at various stages of the production process. The probability of a costly market failure in the electricity supply industry, often because of the exercise of unilateral market power, appears to be significantly higher than in other network industries, and quite sensitive to market design. There are a number of ways the regulator can limit the ability of suppliers to exercise unilateral market power: 1) alter the market structure, 2) change market rules, 3) impose penalties and sanctions on market participants for their behavior, and 4) explicitly set the prices that market participants receive for their production. Wolak uses examples from wholesale markets in industrialized and developing countries to illustrate the importance of effectively addressing each aspect of the market design process. Although there is no single optimal wholesale market design, all successful market designs appear to have adequately addressed each of these dimensions of the market design process in a manner suited to the initial conditions in the industry and the political constraints the restructuring process faced when the wholesale market was formed. He uses his framework to understand the causes of the disappointing experience with wholesale electricity restructuring in the United States. This discussion points to a number of ways to increase the likelihood of a restructuring process that ultimately benefits consumers.

In many industries, economic regulation was eliminated rather than reformed during the late 1970s and early 1980s. **Borenstein** and **Rose** describe the institutions and economic performance of the airline industry as it has evolved from restrictive government regulation to economic deregulation. They show that consumers overall have benefited not only from reduced fares, but also from increases in flight frequencies and in the number of routes that receive nonstop service. This pattern has continued even since 9/11. While deregulation yielded substantial benefits to consumers, three significant concerns confront the present industry: 1) is an unregulated competitive airline industry economically viable? 2) Is market power likely to be a persistent problem? And 3) has government-controlled infrastructure contributed significantly to the difficulties the industry has recently encountered? The authors show that market power probably peaked in the mid-1990s and has declined significantly since then, accompanied by growth in low-cost carriers that now challenge the legacy airlines in virtually all parts of the country. This surge in competition, along with adverse demand shocks, high fuel prices, and high labor costs have led to financial distress among many legacy airlines. This has been costly for shareholders and high-wage workers, though there is no indication of significant adverse consumer impact. Perhaps the greatest long-run challenge to the airline industry is the performance of government-controlled airport, air traffic control, and security infrastructure, which has not in general kept pace with the growth and changes in the industry.

The banking industry historically was subject to extensive government regulation covering what prices (that is, interest rates) they can charge, what activities they can engage in, what risks they can and cannot take, what capital they must hold, and what locations they can operate in. **Kroszner** and **Strahan** summarize the evolution of these regulations, with a focus on those put into place in the 1930s and later removed in the last part of the twentieth century. They argue that regulatory change was driven by macroeconomic, technological, and legal shocks that affected competition among interest groups. As they show, the role of both private interests and public interests are key in the analysis. They also analyze the consequences of banking regulation and deregulation for both the financial services industry and the economy. The industry adapted to the regulatory constraints imposed in the 1930s, thus partially reducing the costs of regulatory distortions. Nevertheless, banking efficiency improved following deregulation, and this improvement generated substantial real benefits for the economy as a whole.

Economic regulation has ebbed and flowed in the cable television sector over the past two decades. These experiences have highlighted the potentially important interplay between price regulation and quality provision by firms. **Crawford** surveys the empirical record on the (dismal) consequences of price regulation in cable and the more encouraging (but incomplete) evidence on the consequences of competition. In the last ten years, the market for multichannel video programming has undergone considerable change. Direct Broadcast Satellite service, spurred by 1999 legislation that leveled the playing field with cable television systems, has grown from 3 percent to 25 percent of the U.S. cable and satellite market and now accounts for virtually all net new subscribers. Crawford considers the implications of satellite competition for regulatory policy and performance in cable television markets. He concludes with a consideration of two open issues in cable markets: horizontal concentration and vertical integration in the input (programming) market and bundling by both cable systems and programmers. The latter is especially worth of attention by policymakers concerned with market power and diversity in media markets.

The conference included an analysis of sectors subject to regulations beyond the traditional economic price and entry controls. **Danzon** and **Keuffel** note that the pharmaceutical-biotechnology industry is subject to three major types of regulation. First, all industrialized countries require that new drugs, biologics, and vaccines meet regulatory requirements for safety, efficacy, and manufacturing quality as a condition of market access. In the 1990s, the adoption of user fees, fast track, and priority review have accelerated drug approval, especially for priority drugs. Basing regulatory decisions on post-launch observational data, appropriately integrated with pre-launch clinical trial data, is a high priority for regulators, payers, and consumers, as a strategy to accelerate availability of new drugs while increasing the information base for evaluating drug risks and benefits. Second, most countries with universal national health insurance regulate pharmaceutical prices, revenues, and/or profits. Danzon and Keuffel discuss the existing criteria for price regulation, including internal benchmarking, external referencing, and profit regulation. The evidence shows that these regulatory systems have controlled prices but also have contributed to delays in the launch of new drugs. Third, pharmaceutical regulation intersects with the definition of patents and criteria for generic entry. In the United States, the 1984 Hatch Waxman Act has led to some gaming by both originator firms and generic companies. Defining a regulatory framework for approving biogenerics is an important evolving regulatory concern in industrialized countries.

Potential informational failures are also significant in the regulation of many financial services. Many consumers of financial services suffer from informational disadvantages that often include not understanding the rather central concept of price. Consumer behavior gives rise to market failures, and, especially following the stock market boom and bust, there is increasing interest in refining financial regulation to address these failures. **Zitzewitz** provides an overview of the major laws and institutions regulating finance and then discusses three issues with parallels in other industries: the regulation of price, collusion and antitrust policy, and the interaction of firm boundaries and conflicts of interest. In asset management and financial advice, firms discriminate according to customer sophistication, offering low-price, high-quality products to sophisticated clients and high-price, low-quality products to the less sophisticated. Given this, the traditional side effects of downward regulatory pressure on price may be mitigated, since the regulation-induced exit of high-price, low-quality products may improve the welfare of their current consumers. As the NASDAQ market makers antitrust case, and arguably the pricing of underwriting services, illustrate, multi-market contact, price transparency, and opportunities for targeted punishments can make collusion easier to sustain in financial services than in other industries. Such collusion is often accompanied by non-price competition, which dissipates rents but often in ways that introduce distortions. Finally, the integration of financial businesses creates opportunities to tradeoff the interests of one client for another. The question of whether these conflicts can be successfully managed or whether they will call into question the 1990s trend toward convergence remains open.

Finally, **Williams** considers the penetration of market- or incentive-based regulation into environmental policy, focusing primarily on the most widely used, tradable emissions permits. Market-based regulations provide polluters with an incentive to reduce pollution emissions, while allowing far more flexibility in how to achieve those emissions reductions than do more traditional command-and-control regulations. That flexibility can substantially reduce the cost of achieving a given reduction in emissions. As a result, tradable permits have become a popular option for environmental regulation. However, practical experience has shown that the tradable permit system's design and the details of a particular pollution problem greatly influence the effectiveness of tradable permit regulation. Permit trading can produce excessive concentrations of pollution in some locations. Transaction costs and market power can reduce the cost savings from trading. And, permit allocations can produce an inefficient or inequitable distribution of the costs of regulation. Thus, tradable permits are not always the best policy options. But in many cases, careful regulatory design can limit these potential problems.

The University of Chicago Press will publish these papers and discussions in an NBER Conference Volume. Its availability will be announced in a future issue of the *NBER Reporter*. Also, the papers will be available at "Books in Progress" on the NBER's website.

Tax Policy and the Economy

The NBER's Twentieth Annual Conference on Tax Policy and the Economy, organized by James M. Poterba of NBER and MIT, took place in Washington, DC on September 15. These papers were discussed:

Jagadeesh Gokhale, Cato Institute, and **Kent Smetters,** NBER and University of Pennsylvania, "Fiscal and Generational Imbalances: An Update"

Jeffrey R. Brown, NBER and University of Illinois at Urbana-Champaign, and **James M. Poterba,** "Household Demand for Variable Annuities"

Nada Eissa, NBER and Georgetown University, and **Hilary W. Hoynes**, NBER and University of California, Davis, "Behavioral Responses to Taxes: Lessons from the EITC and Labor Supply"

Peter Tufano, NBER and Harvard Business School; **Sondra Beverly,** University of Kansas, and **Daniel Schneider,** Harvard Business School, "Splitting Tax Refunds and Building Savings: an Empirical Test"

Roger H. Gordon and **Julie Berry Cullen,** NBER and University of California, San Diego, " Tax Reform and Entrepreneurial Activity"

Alan J. Auerbach, NBER and University of California, Berkeley, "Who Bears the Corporate Income Tax? A Review of What We Know"

Gokhale and **Smetters** provide an update of the U.S. Fiscal and Generational Imbalances that they originally calculated for a 2003 paper. They find that a lot has changed in a few years. In particular, the nation's fiscal imbalance has grown from around $44 trillion dollars as of fiscal yearend 2002 to about $63 trillion dollars, mostly because of the recent adoption of the prescription drug bill (Medicare, Part D). The imbalance also grows by more than $1.5 trillion (in inflation adjusted terms) each year that action is not taken to reduce it. This imbalance now equals about 8 percent of all future GDP and could, in theory, be eliminated by more than doubling the employer-employee payroll tax from 15.3 percent of wages to over 32 percent immediately and forever — assuming, quite critically, no reduction in labor supply or national saving and capital formation. Equivalently, massive cuts in government spending would be required to achieve fiscal balance: the total federal fiscal imbalance now equals 77.8 percent of non-Social Security and non-Medicare outlays. Variable annuities have been one of the most rapidly growing financial products of the last two decades. Between 1990 and 2004, annual sales of variable annuities in the United States grew from just over $5 billion to nearly $130 billion.

Variable annuities now account for approximately half of all private market annuity sales. They resemble mutual funds, but qualify for special tax treatment as insurance products because they offer buyers an option to convert to a life annuity. **Brown** and **Poterba** describe the tax treatment of variable annuities, present summary information on their ownership patterns, and explore the importance of several distinct motives for household purchase of variable annuities. Using household data from the 1998 and 2001 waves of the Survey of Consumer Finances, they find that variable annuity ownership is highly concentrated among high income and high net wealth sub-groups of the population. Variable annuity ownership is less concentrated, however, than ownership of several other types of financial assets. Brown and Poterba find mixed evidence on the importance of tax incentives in contributing to variable annuity ownership. The probability of owning a variable annuity rises with the marginal tax rate throughout most of the income distribution, but is lower for households in the top tax bracket than for those with slightly lower tax rates.

Twenty-two million families currently receive a total of $34 billion dollars in benefits from the Earned Income Tax Credit (EITC). In fact, the EITC is the largest cash transfer program for lower-income families at the federal level. One unusual feature of the credit is its explicit goal of using the tax system to encourage and support those who choose to work. A large body of work has evaluated the labor supply effects of the EITC and has generated several important findings regarding the behavioral response to taxes. Perhaps the main lesson learned from the evidence, **Eissa** and **Hoynes** note, is the confirmation that real responses to taxes are important; labor supply does respond to the EITC. The second major lesson is related to the nature of the labor supply response. A consistent finding is that labor supply responses are concentrated along the extensive (entry) margin, rather than the intensive (hours worked) margin. This distinction has important implications for the design of tax-transfer programs and for the welfare evaluation of tax reforms.

Families are more likely to save if they can commit to savings before funds are in hand (and subject to spending temptations). For low- and moderate-income U.S. families, an important savings opportunity arises annually, during income tax season. **Beverly, Schnieder,** and **Tufano** study a group of low-income individuals in Tulsa, Oklahoma who, at the time of tax filing, were encouraged to save parts of their federal refunds. Those who agreed directed a portion of their refund to a savings account, and arranged to have the rest sent to them in the form of a check. Eligible individuals also could open low-cost savings accounts. The authors document the demand for these services, the characteristics of those who sought to participate, the savings goals of those who participated, the immediate savings generated by the program, and the disposition of savings a few months after receipt. This pilot study suggests that there may be demand among low-income families for a refund-splitting program that supports emergency needs as well as asset building, especially if a basic savings product is available to all at the time of tax filing.

Gordon and **Cullen** forecast the effects of plausible tax reforms on the extent of entrepreneurial activity in the United States. To do so, they draw on recent work they have done assessing the many routes through which the tax structure affects the amount of entrepreneurial activity, and estimating the responsiveness of behavior to these incentives. Using these estimates, the authors forecast that the effect of tax reforms on entrepreneurial activity can be very sensitive to whether current tax provisions aimed to encourage risk-taking in small firms remain part of the tax code. If they are left in place, Gordon and Cullen forecast that a shift to a Hall-Rabushka flat tax will leave the overall amount of entrepreneurial activity largely unaffected, but lead to a drop in activity among the high skilled and an offsetting increase in activity among the less highly skilled. However, if in the process of fundamental tax reform, "net operating loss" carrybacks are disallowed and section 1244 (allowing capital losses on equity in small businesses to be reclassified as ordinary losses) is repealed, then overall entrepreneurial activity could fall by more than half.

Auerbach reviews what we know from economic theory and evidence about the burden of the corporate income tax. While the ultimate incidence of the tax remains somewhat unresolved, there have been many advances over the years in thinking about how to assign the corporate tax burden. Among the lessons from the recent literature are: 1) for a variety of reasons, shareholders may bear a certain portion of the corporate tax burden. They may be unable to shift taxes attributable to a discount on "old" capital, taxes on rents, or taxes that simply reduce the advantages of corporate ownership. In the short run, they also may be unable to shift taxes on corporate capital. Thus, the distribution of share ownership remains empirically quite relevant to corporate tax incidence analysis, though attributing ownership is itself a challenging exercise. 2) One-dimensional incidence analysis — distributing the corporate tax burden over a representative cross-section of the population — can be relatively uninformative about who bears the corporate tax burden, because it misses the element of timing. 3) It is more meaningful to analyze the incidence of corporate tax changes than of the corporate tax in its entirety, because different components of the tax have different incidence and incidence relates to the path of the economy over time, not just in a single year.

These papers will be published by the MIT Press as *Tax Policy and the Economy, Volume 20*. They are also available at "Books in Progress" on the NBER's website.

Bureau News

Bernanke: Long-Time NBER Researcher

Former NBER Research Associate Ben S. Bernanke has been nominated by President George W. Bush to become the next Chairman of the Federal Reserve Board of Governors. If confirmed, he will replace Chairman Alan Greenspan when his term expires in early 2006.

Bernanke, who holds a Bachelors' degree in Economics from Harvard and a Ph.D. from MIT, was an NBER Research Associate for many years. He authored a total of 34 NBER Working Papers, the first in 1980 and the most recent in 2004.

Bernanke also co-organized the NBER's Annual Conference on Macroeconomics with Professor Julio Rotemberg of MIT from 1995–8. They served as co-editors of the Macroeconomics Annual volume, published by the MIT Press, during those years.

In the fall of 2000, Bernanke became Director of the NBER's Program of Research in Monetary Economics, succeeding N. Gregory Mankiw of Harvard University. In that capacity, he also became a member of the NBER's Business Cycle Dating Committee.

Bernanke's most recent NBER volume, *The Inflation Targeting Debate,* co-edited with Research Associate Michael Woodford, was published this year by the University of Chicago Press. Information about that volume, and Bernanke's NBER Working Papers, is available at the NBER's website.

Two NBER Research Associates to Join CEA

NBER Research Associates Katherine Baicker and Matthew J. Slaughter will join the President's Council of Economic Advisers (CEA) if confirmed by the U.S. Senate.

Baicker, an Associate Professor in Public Policy at the University of California, Los Angeles, is a member of the NBER's Program of Research in Public Economics. She served as a senior economist at the CEA in 2001–2. Baicker received her Ph.D. in Economics from Harvard University in 1998 and previously taught at Dartmouth College.

Slaughter, an Associate Professor of Business Administration at the Tuck School of Business Administration, Dartmouth College, is a member of the NBER's Program of Research on International Trade and Investment. He is also a Visiting Fellow of the Institute for International Economics. Slaughter received his Ph.D. in Economics from MIT in 1994.

Nakahara Prize Goes to Hoshi

Takeo Hoshi, an NBER Research Associate from the University of California, San Diego, won the Japan Economic Association's 2005 Nakahara Prize. The prize is awarded every year to honor one outstanding Japanese economist under the age of 45. The committee cited Hoshi's work on the Japanese banking system. They said "he has been the forefront of analyzing both theoretical and empirical issues of the Japanese banking problem in the 1990s. He analyzed how the once highly regarded bank-centered Japanese financial system has become a liability to the entire economy." Since the founding of the award in 1995, Hoshi becomes the fourth NBER economist to win it.

In 1995, Fumio Hayashi of the University of Tokyo was chosen by the committee for his work in macroeconomics, particularly for making a "major contribution to our understanding of the rational expectations hypothesis by creating new inference methods and applying them to U.S. and Japanese data on consumption." In 1997, Nobuhiro Kiyotaki of the London School of Economics was chosen for making "several outstanding contributions in the areas of macroeconomics and monetary economics by creating innovative original models and, thereby presenting new insights to old questions." In 2001, Charles Y. Horioka of Osaka University was selected for "several outstanding contributions in the areas of international capital flows and saving and consumption in Japan."

It is quite remarkable that four NBER Research Associates have won this important prize in the ten years since it began, as there are only a small number of Japanese NBER researchers who are eligible for this prize.

Twenty-sixth NBER Summer Institute Held in 2005

In the summer of 2005, the NBER held its twenty-sixth annual Summer Institute. More than 1300 economists from universities and organizations throughout the world attended. The papers presented at dozens of different sessions during the four-week Summer Institute covered a wide variety of topics. A complete agenda and many of the papers presented at the various sessions are available on the NBER's web site by clicking Summer Institute 2005 on our conference page, www.nber.org/confer.

Japan Project Meets

The NBER together with the Center for International Research on the Japanese Economy and the European Institute of Japanese Studies held a project meeting on the Japanese economy in Tokyo on September 15–16. The co-chairs of the meeting were: Magnus Blomstrom, NBER and Stockholm School of Economics; Fumio Hayashi, NBER and the University of Tokyo; Anil K Kashyap, NBER and the Graduate School of Business, University of Chicago; and David Weinstein, NBER and Columbia University. The following papers were discussed:

Nobuyuki Oda, Bank of Japan, and **Kazuo Ueda,** University of Tokyo, "The Effects of the Bank of Japan's Zero Interest Rate Commitment and Quantitative Monetary Easing on the Yield Curve: A Macro-Finance Approach"
Discussant: Lars E. O. Svensson, NBER and Princeton University

Wilbur J. Coleman, Duke University, "Structural Transformation and Growth Slowdowns: Japan in the 90s"
Discussant: Randall S. Kroszner, NBER and University of Chicago

R. Anton Braun, University of Tokyo; **Toshihiro Okada,** Kwansei Gakuin University; and **Nao Sudou,** Bank of Japan, "U.S. R&D and Japanese Medium Cycles"
Discussant: Jonathan Eaton, NBER and New York University

Hiroshi Ono, Stockholm School of Economics, "Lifetime Employment in Japan: Concepts and Measurements"
Discussant: Kenn Ariga, Kyoto University

Koji Sakai and **Tsutomu Watanabe,** Hitotsubashi University; and **Uchiro Uesugi,** Research Institute of Economy, Trade and Industry, "Firm Age and the Evolution of Borrowing Costs: Evidence from Japanese Small Firms"
Discussant: Steven J. Davis, NBER and University of Chicago

Chiaki Moriguchi, NBER and Northwestern University, and **Emmanuel Saez,** NBER and University of California, Berkeley, "The Evolution of Income Concentration in Japan, 1885–2002: Evidence from Income Tax Statistics"
Discussant: Wojciech Kopczuk, NBER and Columbia University

Douglas J. Skinner, University of Chicago, "The Rise of Deferred Tax Assets in Japan: The Case of Major Japanese Banks"
Discussant: Mitsuhiro Fukao, Keio University

Robert Dekle, Hyeok Jeong, and **Heajin Ryoo,** University of Southern California, "A Re-Examination of the Exchange Rate Disconnect Puzzle: Evidence from Japanese Firm Level Data"
Discussant: Maurice Obstfeld, NBER and University of California, Berkeley

Oda and **Ueda** empirically investigate monetary policy in Japan in the zero- interest-rate environment that has held sway since 1999. In particular, they focus on the effects of the zero-interest-rate commitment and of quantitative monetary easing on medium-to-long-term interest rates in Japan. By applying a version of the macro-finance approach, involving a combination of estimation of a structural macro-model and calibration of time-variant parameters to the yield curve observed in the market, they can decompose interest rates into expectations and risk premium components and simultaneously extract the market's perception of the Bank of Japan's (BOJ's) willingness to carry on its zero-interest-rate policy. Oda and Ueda tentatively conclude that the BOJ's monetary policy since 1999 has functioned mainly through the zero-interest-rate commitment, which has led to declines in medium- to long-term interest rates. They also find some evidence that, until the end of 2003, raising the reserve target may have been perceived as a signal indicating the BOJ's accomodative policy stance, although the size of the effect is not large. The portfolio rebalancing effect — either by the BOJ's supplying ample liquidity or by its purchases of long-term government bonds — is found to be significant.

Coleman argues that the growth slowdown in Japan in the 1990s was a consequence of a structural transformation set in motion by the emergence of lower cost producers of manufactured goods. Prior to the 1900s, Japan had achieved a significant cost advantage in producing various goods, which led to an allocation of resources towards this sector. Indeed, the fraction of resources in the manufacturing sector in Japan exceeded that of other countries in a similar stage of development. The emergence of largely populated developing countries, such as China, lowered the profitability of the manufacturing sector in Japan. This required a substantial reallocation of labor and capital resources from the manufacturing to the service sector. This process of structural transformation led to the growth slowdown in Japan during the 1990s.

In the 30-year period between 1960 and 1990, Japan saw labor productivity rise from a level of 27 percent of that of the United States to 87 percent of that of the United States. This development miracle can be explained by an initial low capital stock and measured variations in Total Factor Productivity (TFP). These facts motivate the investigation into the sources of Japanese TFP variations by **Braun, Okada,** and **Sudou**. They consider Japanese and U.S. data that is filtered to retain medium-cycle events, such as the productivity slow down in the 1970s. An investigation of Japanese medium cycles reveals an important role for the diffusion of usable ideas from the United States to Japan. U.S. research and development (R and D) leads Japanese TFP by four years and accounts for as much as 60 percent of the variation in medium-term-cycle Japanese TFP. Japanese R and D, in contrast, is coincident with Japanese TFP. Simulations designed to isolate the roles of Japanese and U.S. R and D find that the diffusion of knowledge from the United States is a key driver of Japanese medium cycles.

Ono poses three fundamental questions about lifetime employment in Japan: How big is it? How unique is it? And, how is it changing? He examines various concepts and methods of estimating lifetime employment and concludes that it covers roughly 20 percent of the Japanese labor force. Job mobility remains considerably lower in Japan than in other economies (particularly that of the United States). Evidence regarding changes in lifetime employment is mixed. While the core workforce is shrinking, the proportion of lifetime workers in the labor force is expanding. Ono's interpretation is that the population of workers who presumably are covered by the lifetime employment system may be declining, but the probability of job separations has remained stable for those who are already in the system. He also finds evidence that the incentives among workers, managers, and executives are aligned to preserve the lifetime employment system.

Sakai, Uesugi, and **Watanabe** investigate how a firm's borrowing cost evolves as it ages. Using a new dataset of more than 200,000 bank-dependent small firms in 1997–2002, these authors find that the distribution of borrowing costs tends to become less skewed to the right over time. Second, this shift in the distribution can be partially attributable to "selection" (that is, firms with lower quality and higher borrowing costs exit from markets), but is mainly explained by "adaptation" (that is, surviving firms' borrowing costs decline as they age). Third, there is an age dependence of a firm's borrowing costs, even after controlling for firm size, but no age dependence of the volatility of profits after controlling for firm size. The results suggest that age dependence of borrowing costs comes not from the (Diamond's 1989) reputation-acquisition mechanism, but rather from banks' learning about borrowers' true quality over the duration of the bank-borrower relationship.

Moriguchi and **Saez** construct the long-run series of top income shares and wage income shares in Japan using income tax statistics and investigate the evolution of income concentration in Japan from 1885 to 2002. They find that: the degree of income concentration was extremely high throughout the pre-WWII period during which the nation underwent rapid industrialization; a drastic de-concentration of income at the top had taken place during and immediately after WWII; a degree of income concentration has remained low throughout the post-1950 period despite high economic growth; and, a major component of the top income in Japan has shifted dramatically from capital income to employment income over the course of the twentieth century. They attribute the dramatic fall in income concentration primarily to the collapse of capital income attributable to wartime taxation, war destruction, hyperinflation, and to a lesser extent, postwar occupational reforms.

They argue that the fundamental change in the institutional structure after WWII made the one-time income de-concentration difficult to reverse. In contrast to the sharp increase in wage income inequality observed in the United States since 1970, the top wage income shares in Japan have remained remarkably stable over recent decades. The authors show that the change in technology or tax policies alone cannot account for the comparative experience of Japan and the United States. Instead, they suggest that institutional factors, such as corporate governance and union structure, are important determinants of wage income inequality.

Skinner describes the role of accounting for deferred taxes in the ongoing financial crisis among major Japanese banks, as dramatized most vividly by the recent collapse of Resona Bank. He argues that the Japanese government, including bank regulators, used deferred tax accounting to help give the major banks the appearance of financial well being in spite of their economic difficulties. Further, managers of these banks used deferred tax accounting to bolster their banks' regulatory capital levels when their economic circumstances deteriorated. Skinner shows that, generally consistent with these arguments, accounting has played a role in helping the Japanese government to postpone the politically difficult task of reforming the major banks.

The empirical literature that examined data at the aggregate or macroeconomic level generally has found small or insignificant effects of exchange rate fluctuations on export volumes. This lack of association between real quantities — such as export volumes — and the exchange rate is the so-called "exchange rate disconnect" puzzle. Studies using microeconomic or firm-level data, however, have been more successful in finding relationships between export volumes and exchange rates. In their paper, **Dekle, Jeong,** and **Ryoo** attempt reconciliation between the macroeconomic, aggregate evidence and the microeconomic, firm-level evidence. They estimate their consistently aggregated, microeconomic model of exports and show that an exchange rate appreciation properly reduces export volumes.

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The Chinese Economy

The NBER's Working Group on the Chinese Economy, organized by Shang-Jin Wei, NBER, University of Maryland, and International Monetary Fund, met in Cambridge on September 30. This Working Group provides a forum for discussing recent research related to various aspects of Chinese economic development, including China's macroeconomic policies, trade and financial interactions with the rest of the world, reform strategies, lessons from China for other developing and transition economies, and lessons from other countries for China. The program for this meeting was:

Xuepeng Liu, Jan Ondrich, and **Mary Lovely,** Syracuse University, "How Much Do Low Wages Matter for Foreign Investment? The Case of China"
Discussant: Lee J. Branstetter, NBER and Columbia University

Nancy Qian, Brown University, "Missing Women and the Price of Tea in China: The Effect of Sex-Specific Earnings on Sex Imbalance"
Discussant: John Giles, Michigan State University

Hongbin Cai, University of California, Los Angeles; **Hanming Fang,** Yale University; and **Colin Xu,** World Bank, "Eat, Drink, Firms and Governments: An Investigation of Corruption from Entertainment and Travel Costs of Chinese Firms" (NBER Working Paper No. 11592)
Discussant: Thomas Rawski, University of Pittsburgh

Raymond Fisman, NBER and Columbia University; **Peter Moustakerski,** Booz Allen Hamilton; and **Shang-jin Wei,** "Outsourcing Tariff Evasion: A New Explanation for Entrepot Trade"
Discussant: Mihir A. Desai, NBER and Harvard University

Marcos Chamon and **Eswar Prasad,** IMF, "Determinants of Household Savings in China"
Discussant: Chang-tai Hsieh, NBER and University of California, Berkeley

Hui Huang and **Shunming Zhang,** University of Western Ontario; **Yi Wang,** Shanghai University; **Yiming Wang,** Peking University; and **John Whalley,** NBER and University of Western Ontario, "A Trade Model with an Optimal Exchange Rate Motivated by Current Discussion of a Chinese Renminbi Float"
Discussant: Aart Kraay, World Bank

Albert Hu, National University of Singapore, and **Gary Jefferson,** Brandeis University, "The Great Wall of Patents: What is Behind China's Recent Patent Explosion?
Discussant: Wei Li, University of Virginia

Liu, Ondrich, and **Lovely** examine the provincial location choices of firms investing in China during 1993–6. First, using data on 2,884 equity joint venture (EJV) projects in manufacturing, they find strong support for the attractiveness of low wages. Their estimates indicate a downward bias of 50–120 percent in the wage coefficients estimated with standard techniques. Second, they find that low-wage locations are more attractive to unskilled-labor-intensive plants than to skill-intensive plants, although this effect is significant only for investors from OECD countries. The attraction of low wages for investors from ethnically-Chinese-economies, in contrast, is sensitive to the intensity of competition from other low-income countries for exports to the United States. This study provides the first estimates of how skill intensity and competition for export markets influence the probability a multinational firm will choose a given location.

Qian uses plausibly exogenous increases in sex-specific agricultural income caused by post-Mao reforms in China to estimate the effects of total income and sex-specific incomes on the sex ratios of surviving children. Her results show that increasing income alone has no effect on sex ratios. In contrast, increasing female income while holding male income constant increases the survival rates for girls; increasing male income while holding female income constant decreases the survival rates for girls. Moreover, increasing the mother's income increases educational attainment for all children while increasing the father's income decreases educational attainment for girls and has no effect on boys' educational attainment.

Entertainment and Travel Costs (ETC) is a standard expenditure item for Chinese firms, annually equaling about 20 percent of total wage bills. **Cai, Fang,** and **Xu** use this objective accounting measure as a basis for analyzing the composition of ETC and the effect of ETC on firm performance.

They rely on the predictions from a simple but plausible model of managerial decisionmaking to identify components of ETC, examining how total ETC responds to different environmental variables. They find strong evidence that firms' ETC consists of a mix that includes bribery to government officials, both as grease money and protection money; expenditures to build relational capital with suppliers and clients; and managerial excesses. ETC overall has a significantly negative effect on firm performance, but its negative effect is much less pronounced for those firms located in cities with low quality government service, those subject to severe government expropriation, and those who do not have strong relationships with suppliers and clients.

Traditional explanations for indirect trade carried out through an entrepot have focused on savings in transport costs and on the role of specialized agents in processing and distribution. **Fisman, Moustakerski,** and **Wei** provide an alternative perspective based on the possibility that entrepots may facilitate tariff evasion. Using data on direct exports to mainland China and indirect exports to it via Hong Kong SAR, the authors find that the indirect export rate rises with the Chinese tariff rate, even though there is no legal tax advantage to sending goods via Hong Kong SAR. The authors then undertake a number of extensions to rule out plausible alternative hypotheses.

Using a subset of the Urban Household Survey from 1986–97, **Chamon** and **Prasad** analyze the patterns and determinants of saving behavior among Chinese households. They show that young households tend to have relatively high saving rates, possibly so that they can self-finance purchases of major durables and housing — there are severe constraints (or were, until recently) in China on borrowing for these purchases. Saving rates then decline with the age of the household head until age 45 or so, when they begin to bounce back sharply, presumably as retirement approaches. The cohorts with household heads in their 40s during the 1980s tend to save the most. This group may be the most vulnerable to the market-oriented reforms that began in the early 1980s, which could have increased uncertainty about their future incomes while not yielding them as much of a benefit in terms of rising incomes as younger groups. The authors combine these results with an analysis of demographic projections to show that demographic shifts actually may contribute to higher household saving rates over the next decade or two. However, the data indicate that past savings constitute the dominant source of financing for durable goods purchases. This suggests that, as the demand for durables rises with rising income levels, and as consumer credit develops, the saving rate, especially for younger households, could decline.

Huang, Wang, Wang, Whalley, and **Zhang** combine a model of inter-spatial and inter-temporal trade between countries — recently used by Huang, Whalley, and Zhang (2004) to analyze the merits of trade liberalization in services when goods trade is restricted — with a model of foreign exchange rationing from Clarete and Whalley (1991) in which there is a fixed exchange rate with a surrender requirement for foreign exchange generated by exports. In the combined model, when services are not liberalized, there is an optimal trade intervention, even in the case of a small, open, price-taking economy. Given monetary policy and an endogenously determined premium value on foreign exchange, an optimal setting of the exchange rate can provide the optimal trade intervention. The authors suggest that this model has relevance to the current situation in China where services have not been liberalized and tariff rates are bound in the World Trade Organization. Because there is an optimal exchange rate, a move to a free Renminbi float can worsen welfare. The authors use numerical simulation methods to explore the properties of the model, because it has no closed-form solution. Their analysis provides an intellectual counter argument to those presently advocating a free Renminbi float for China.

Over the past 20 years, patenting in China has grown at an annual double-digit rate, having further accelerated since 2000. China's patent explosion is seemingly paradoxical given the country's weak record of protecting intellectual property rights. Using a firm-level data set that spans the population of China's large and medium size industrial enterprises, **Hu** and **Jefferson** seek to understand the conditions that account for China's patent boom. While the overall intensification of research and development (R and D) in the Chinese economy tracks with patenting activity, it is not the principal cause of the patent explosion. Instead, the authors find that the growing intensity of foreign direct investment at the industry level, enterprise restructuring, and a shift toward complex-product R and D are raising R and D productivity and the propensity to patent. Amendments to the patent law that favor patent holders also emerge as a significant source of China's surge in patent activity.

Entrepreneurship Working Group

The NBER's Entrepreneurship Working Group met in Cambridge on October 7. NBER Research Associate Josh Lerner, Harvard Business School, organized the meeting, at which the following papers were discussed:

Naomi Lamoreaux and **Kenneth Sokoloff,** University of California, Los Angeles and NBER, and **Margaret Levenstein,** NBER and University of Michigan, "Financing Invention during the Second Industrial Revolution: Cleveland, Ohio, 1870–1920"
Discussant: Steven Klepper, Carnegie Mellon University

David Hsu, University of Pennsylvania, and **Edward Roberts** and **Charles Eesley,** MIT, "Entrepreneurs from Technology-Based Universities: An Empirical First Look"
Discussant: David Blanchflower, Dartmouth College and NBER

Nick Bloom, Stanford University, and **John Van Reenen,** London School of Economics, "Measuring and Explaining Management Practices across Firms and Countries"
Discussant: Belen Villalonga, Harvard University

Simeon Djankov, The World Bank; **Gerard Roland** and **Ekaterina Zhuravskaya,** University of California, Berkeley; and **Yingyi Qian,** NBER and University of California, Berkeley, "Who Are China's Entrepreneurs?"

Amar Bhidé, Columbia University, "What Holds Back Bangalore Businesses?"

Esther Duflo, MIT and NBER; **Michael Kremer,** NBER and Harvard University; and **Jonathan Robinson,** Princeton University, "Understanding Technology Adoption: Fertilizer in Western Kenya"
Academic Discussant: Ray Fisman, Columbia University and NBER
Practitioner Discussant: Runa Alam, CEO, Kingdom Zephyr Africa

For those who think of Cleveland as a decaying rustbelt city, it may seem difficult to believe that this northern Ohio port was once a hotbed of high-tech startups, much like Silicon Valley today. During the late nineteenth and early twentieth centuries, Cleveland played a leading role in the development of a number of second-industrial-revolution industries, including electric light and power, steel, petroleum, chemicals, and automobiles. In an era when production and inventive activity were both increasingly capital-intensive, technologically creative individuals and firms required greater and greater amounts of funds to succeed. **Lamoreaux, Levenstein,** and **Sokoloff** explore how the city's leading inventors and technologically innovative firms obtained financing, and find that formal institutions, such as banks and securities markets, played only a very limited role. Instead, most funding came from local investors who took long-term stakes in start-ups formed to exploit promising technological discoveries, often assuming managerial positions in these enterprises as well. Business people who were interested in investing in cutting-edge ventures needed help in deciding which inventors and ideas were most likely to yield economic returns, and these authors show how enterprises such as the Brush Electric Company served multiple functions for the inventors who flocked to work there. Not only did they provide forums for the exchange of ideas, but by assessing each other's discoveries, the members of these technological communities conveyed information to local businessmen about which inventions were most worthy of support.

Hsu, Roberts, and **Eesley** provide an initial analysis of major patterns and trends in entrepreneurship among technology-based university alumni since the 1930s. They describe findings from two linked datasets joining information on MIT alumni and company founders. The rate of forming new companies by MIT alumni has grown dramatically over seven decades, and the median age of first-time entrepreneurs has declined gradually from about age 40 (in the 1950s) to about age 30 (in the 1990s). Women alumni lag their male counterparts in the rate at which they become entrepreneurs, and alumni who are not U.S. citizens enter entrepreneurship at different (often higher) rates than their American classmates. New venture foundings over time are correlated with measures of the changing external entrepreneurial and business environment, suggesting that future research in this domain may wish to more carefully examine such factors.

Bloom and **Van Reenen** use an innovative survey tool to collect *management practice* data from 732 medium-sized manufacturing firms in the

United States and Europe (France, Germany, and the United Kingdom). Their measures of managerial best practice are strongly associated with superior firm performance in terms of productivity, profitability, Tobin's Q, sales growth, and survival. They also find significant inter-country variation, with U.S. firms on average better managed than European firms, but a much greater intra-country variation with a long tail of extremely badly managed firms. This presents a dilemma – why do so many firms exist with apparently inferior management practices, and why does this vary so much across countries? The authors find that this is because of a combination of: low product-market competition and family firms passing management control down to the eldest sons *(primo geniture)*. European firms in the sample report facing lower levels of competition and substantially higher levels of *primo geniture*. These two factors appear to account for around half of the long tail of badly managed firms and half of the average U.S.-Europe gap in management performance.

Social scientists studying the determinants of entrepreneurship have emphasized three distinct perspectives: the role of institutions, the role of social networks, and the role of personal characteristics. **Djankov, Qian, Roland,** and **Zhuravskaya** conduct a survey from five large developing and transition economies to better understand entrepreneurship in view of these three perspectives. Using data from a pilot study with over 2,000 interviews in seven cities across China, they find that entrepreneurs are much more likely than non-entrepreneurs to have family members who are also entrepreneurs, and childhood friends who became entrepreneurs. This suggests that social networks play an important role in entrepreneurship. Entrepreneurs also differ strongly from non-entrepreneurs in their attitudes towards risk and their work-leisure preferences: they are more willing to take risks and are more greedy.

In underdeveloped economies as in the United States, the number of small low-growth enterprises is large. But what about the developing economy counterparts of U.S. high-growth businesses? In what way do differences in technological, institutional, and cultural factors matter? Do they make high-growth businesses more or less numerous in under-developed economies than in the United States? How, if at all, do they lead to differences in characteristics, growth rates, and the economic role of high growth businesses? **Bhidé** focuses on businesses operating in the city of Bangalore, India. Data compiled from statutory regulatory filings suggest that the number and proportion of businesses that expand rapidly are much lower than in the United States. In-depth interviews with over 100 entrepreneurs in Bangalore suggest that deficiencies in the performance of basic governmental functions (such as in collecting taxes and the maintaining land records) play a significant role in discouraging businesses from starting at or expanding to an economically efficient scale of operation.

In developing countries outside of Africa, the use of fertilizer has been estimated to account for 50–75 percent of the increase in crop yields since the mid-1960s. Yet the usage of fertilizer in Busia and Teso districts in Western Kenya remains quite low: only about 20 percent of farmers in the area use fertilizer in a given year. **Duflo, Kremer,** and **Robinson** attempt to explain this low level of usage by analyzing the results of a set of randomized experiments that allow farmers to experiment with a small amount of fertilizer on their own farms or to commit to save their harvest income towards the purchase of fertilizer. The main results from these interventions are that: 1) fertilizer is profitable even in the farmer's conditions; 2) providing information about the costs and benefits of fertilizer goes part of the way towards increasing fertilizer adoption; and 3) programs that help farmers to commit their harvest income towards the purchase of fertilizer have a large impact on adoption. Preliminary evidence on spillovers through geographical and social networks does not indicate diffusion, however.

Market Microstructure Meeting

The NBER's Working Group on Market Microstructure, directed by Research Associate Bruce Lehmann of University of California, San Diego, met on October 7 in Cambridge. The meeting was organized by Lehmann; Duane Seppi of Carnegie Mellon University; and Avanidhar Subrahmanyam, University of California, Los Angeles. The following papers were discussed:

Robert Bloomfield, Maureen O'Hara, and **Gideon Saar,** Cornell University, "The Limits of Noise Trading: An Experimental Analysis"
Discussant: Shimon Kogan, Carnegie Mellon University

Ekkehart Boehmer, Texas A&M University; **Charles Jones,** Columbia University; and **Xiaoyan Zhang,** Cornell University, "Which Shorts are Informed?"
Discussant: Amy Edwards, U.S. Securities & Exchange Commission

Karl Diether, Kuan-hui Lee, and **Ingrid Werner,** Ohio State University, "Can Short-Sellers Predict Returns? Daily Evidence"
Discussant: David Musto, University of Pennsylvania

Allaudeen Hameed and **Wenjin Kang,** National University of Singapore, and **S.Viswanathan,** Duke University, "Asymmetric Comovement in Liquidity"
Discussant: Ioanid Rosu, University of Chicago

Elizabeth Odders-White and **Mark Ready**, University of Wisconsin, Madison, "The Probability and Magnitude of Information Events"
Discussant: Lei Yu, University of Notre Dame

Asani Sarkar, Federal Reserve Bank of New York, and **Robert Schwartz** and **Avner Wolf,** Baruch College, "Inter-Temporal Trade Clustering and Two-Sided Markets"
Discussant: Eugene Kandel, Hebrew University

Bloomfield, O'Hara, and **Saar** report the results of a laboratory market experiment that allows them to determine not only how noise traders fare in a competitive asset market with other traders, but also how the equilibrium changes if a securities transactions tax ("Tobin tax") is imposed. The authors find that noise traders lose money on average: they do not engage in extensive liquidity provision, and their attempt to make money by trend chasing is unsuccessful because they lose most in securities whose prices experience large moves. Noise traders adversely affect the informational efficiency of the market: they drive prices away from fundamental values. The further away the market gets from the true value, the stronger this effect becomes. With a securities transaction tax, noise traders submit fewer orders and lose less money in those securities that exhibit large price movements. The tax is associated with a decrease in market trading volume, but informational efficiency remains essentially unchanged and liquidity (as measured by the price impact of trades) actually improves. The authors find no significant effect, however, on market volatility, suggesting that at least this rationale for a securities transaction tax is not supported by their data.

Boehmer, Jones, and **Zhang** use proprietary system order data from the New York Stock Exchange to examine the incidence and information content of various kinds of short sale orders. For the average stock, 12.9 percent of NYSE volume involves a short seller. As a group, short sellers are extremely well informed. Stocks with relatively heavy shorting underperform lightly shorted stocks by an average of 1.07 percent in the following 20 days of trading (over 14 percent on an annualized basis). Large short sale orders are the most informative. In contrast, when more of the short sales are small (less than 500 shares), stocks tend to rise in the following month, indicating that informed short sellers tend to submit large orders. The authors partition short sales by account type: individual, institutional, member firm proprietary, and other, and can distinguish between program and non-program short sales. Institutional non-program short sales are the most informative. Compared to stocks that are lightly shorted by institutions, a portfolio of stocks most heavily shorted by institutions on a given day underperforms by 1.36 percent in the next month (over 18 percent annualized). These alphas do not account for the cost of shorting, and they cannot be achieved by outsiders, because the internal NYSE data that the authors use are not generally available to market participants. But these gross excess returns to shorting indicate that institutional short sellers have identified and acted on important value-relevant information that has not yet been impounded into price. The results are strongly consistent with the emerging consensus in financial economics that short sellers possess important information, and their trades are important contributors to more efficient stock prices.

Diether, Lee, and **Werner** test whether short-sellers in Nasdaq-listed stocks are able to predict future returns based on new SEC-mandated data for the first quarter of 2005. There are a tremendous number of short-term trading strategies involving short sales in the sample: short sales represent 25 percent of Nasdaq share volume, while monthly short interest is 3.3 percent of shares outstanding (4.7 days to cover). Short sellers are on average contrarian: they sell short following positive returns. Increasing short sales predict future negative returns, and the predictive power comes primarily from small trades. A trading strategy based on daily short-selling activity generates significant returns, but incurs costs large enough to wipe out any profits. More binding short-sale constraints result in reduced short selling, but there is only a significant effect on future returns among low priced stocks.

Recent theoretical work suggests that commonality in liquidity and variation in liquidity levels can be explained by supply side shocks affecting the funding available to financial intermediaries. Consistent with this prediction, **Hameed, Kang,** and **Viswanathan** find that liquidity levels and commonality in liquidity respond asymmetrically to positive and negative market returns. Stock liquidity decreases while commonality in liquidity increases following large negative market returns because the collateral value of the aggregate market-making sector falls. The authors show that a large drop in aggregate value of securities creates greater liquidity commonality because of inter-industry spillover effects of the capital constraints. They also show that the commonality is higher for high volatility stocks.

Models of adverse selection risk generally assume that market makers offset expected losses to informed traders with expected gains from the uninformed. **Odders-White** and **Ready** recognize that the expected loss captures a combination of two effects: 1) the *probability* that some traders have private information, and 2) the likely *magnitude* of that information. They use a maximum-likelihood approach to separately estimate the probability and the magnitude of private information and then test their procedure on a simulated dataset. Then they estimate the parameters for NYSE-listed stocks from 1993 through 2003, and show that their estimates can be used to predict future extreme returns. Finally, they examine the time-series and cross-sectional properties of the probability and magnitude of information. Their results shed light on the price discovery process and have implications for many areas of finance.

Sarkar, Schwartz, and **Wolf** show that equity markets are two-sided and that trades cluster in certain half-hour periods for both NYSE and Nasdaq stocks under a broad range of conditions: news and non-news days, different times of the day, and a spectrum of trade sizes. By "two-sided," the authors mean that the arrivals of buyer-initiated and seller-initiated trades in half-hour intervals are positively correlated; by "trade clustering" they mean that trades tend to bunch together in certain half-hour intervals with greater frequency than would be expected if their arrival was a random process. Controlling for trading volume, news, and other microstructure effects, the authors find that two-sided clustering leads to higher volatility but lower trading costs. Their analysis has implications for trader behavior, market structure, and the process by which new information is incorporated into market prices.

Economic Fluctuations and Growth Research Meeting

NBER Research Associates Susanto Basu of Boston College and Miles S. Kimball of the University of Michigan organized the fall research meeting of NBER's Program on Economic Fluctuations and Growth. It took place on October 21 at the Federal Reserve Bank of Chicago. The following papers were discussed:

Michael Kremer, Harvard University and NBER, and **Stanley Watt,** Harvard University, "The Globalization of Household Production"
Discussant: Valerie Ramey, University of California, San Diego and NBER

David N. Weil, Brown University and NBER, "Accounting for the Effect of Health on Economic Growth" (NBER Working Paper No. 11455)
Discussant: Hoyt Bleakley, University of Chicago

Raquel Fernández, New York University and NBER, and **Alessandra Fogli,** New York University, "Culture: An Empirical Investigation of Beliefs, Work, and Fertility"
Discussant: Casey Mulligan, University of Chicago and NBER

Mark Bils, University of Rochester and NBER, "Deducing Markup Cyclicality from Stockout Behavior"
Discussant: Robert E. Hall, Stanford University and NBER

Robert J. Barro, Harvard University and NBER, "Rare Events and the Equity Premium"
Discussant: Lars Hansen, University of Chicago and NBER

Daron Acemoglu, MIT and NBER, "Politics and Economics in Weak and Strong States"
Discussant: Scott Page, University of Michigan

Immigration restrictions are arguably the largest distortion in the world economy and the most costly to the world's poor. Yet, these restrictions seem firmly in place because of fears in rich countries that immigration would exacerbate inequality among natives, fiscally drain the welfare state, and change native culture. Many "new rich" countries are creating a new form of immigration that **Kremer** and **Watt** argue may help overcome these obstacles. Foreign private household workers, primarily female, constitute more than 6 percent of the labor force in Bahrain, Kuwait, Hong Kong, Singapore, and Saudi Arabia, and about 1 percent in Taiwan, Greece, and Israel. Providing temporary visas for these workers can potentially allow high-skilled native women to enter the market labor force. This increased labor supply by native high-skilled workers can increase the wages of low-skilled natives and provide a fiscal benefit by correcting distortions toward home production created by income taxes. The welfare gains to natives from a Hong Kong-style program may be equivalent to those from a 2 percent increase in income. However, multicultural societies with a norm of extending citizenship to long-term residents may find this type of migration inconsistent with ethical norms. Programs with temporary, non-renewable visas may be more acceptable in these countries.

Weil uses microeconomic estimates of the effect of health on individual outcomes to construct macroeconomic estimates of the proximate effect of health on GDP per capita. He uses a variety of methods to construct estimates of the return to health, which he combines with cross-country and historical data on several health indicators including height, adult survival, and age at menarche. His preferred estimate of the share of cross-country variance in log income per worker explained by variation in health is 22.6 percent, roughly the same as the share accounted for by human capital from education, and larger than the share accounted for by physical capital. He presents alternative estimates ranging between 9.5 percent and 29.5 percent. His preferred estimate of the reduction in world income variance that would result from eliminating health variations among countries is 36.6 percent.

Fernández and **Fogli** study the effect of culture on important economic outcomes by examining the work and fertility behavior of U.S.-born women 30-40 years old whose parents were born elsewhere. The authors use past female labor force participation and total fertility rates from the country of ancestry as their cultural proxies. In addition to past economic and institutional conditions, these variables should capture the beliefs commonly held about the role of women in society, that is their culture. Given the different time and place, only the beliefs embodied in the cultural proxies should be potentially relevant to women's behavior in the United States in 1970. The authors show that these cultural proxies have positive and significant explanatory power for individual work and fertility outcomes, even after controlling for possible indirect effects of culture (for example, education and spousal characteristics). Further, they show that unobserved human capital — at the individual level or embodied in the ethnic network — does not explain the correlations. Also, the effect of these cultural proxies is amplified as the tendency for ethnic groups to cluster in the same neighborhood increases.

In models with a stockout constraint on sales, stockouts bear an important relation to the price markup. **Bils** examines stockout behavior for 63 durable goods using CPI microdata. The behavior of stockouts over goods' shelf lives requires relatively small markups, on the order of 10-15 percent. For the past 17 years, stockouts have been extremely acyclical. This suggests that markups have been acyclical, which runs directly counter to explanations for cyclicality of employment based on countercyclical price markups, including sticky-price models.

Barro notes that the allowance for low-probability disasters, suggested by Rietz (1988), explains a lot of asset-pricing puzzles, including the high equity premium, low risk-free rate, and the volatility of stock returns. Another mystery that may be resolved is why expected real interest rates were low in the United States during major wars, such as World War II. The rare-disasters framework achieves these explanations while maintaining the tractable framework of a representative agent, time-additive and iso-elastic preferences, and complete markets. The results hold with i.i.d. shocks to productivity growth in a Lucas-tree type economy and also when capital formation is considered.

While much research in political economy points out the benefits of "limited government," political scientists have long emphasized the problems created in many less developed nations by "weak states" that lack the power to tax and regulate the economy and to withstand the political and social challenges from non-state actors. **Acemoglu** constructs a model in which the state apparatus is controlled by a self-interested ruler, who tries to divert resources for his own consumption, but who also can invest in socially productive public goods. Both weak and strong states create distortions. When the state is excessively strong, the ruler imposes such high taxes that economic activity is stifled. When the state is excessively weak, the ruler anticipates that he will not be able to extract rents in the future and underinvests in public goods. Acemoglu shows that the same conclusion applies in the analysis of both the economic power of the state (that is, its ability to raise taxes) and its political power (that is, its ability to remain entrenched from the citizens). He also discusses how, under certain circumstances a different type of equilibrium, which he refers to as "consensually strong state equilibrium," can emerge whereby the state is politically weak but is allowed to impose high taxes as long as a sufficient fraction of the proceeds are invested in public goods. The consensually strong state might best correspond to the state in OECD countries where taxes are high despite significant control by the society over the government.

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International Finance and Macroeconomics

The NBER's Program on International Finance and Macroeconomics met in Cambridge on October 21. NBER Research Associates Charles M. Engel, University of Wisconsin, and Linda Tesar, University of Michigan, organized this program:

Gita Gopinath, Harvard University and NBER, and **Roberto Rigobon,** MIT and NBER, "Sticky Borders"
Discussant: Ariel Burstein, University of California, Los Angeles

Fernando E. Alvarez, University of Chicago and NBER; **Andrew Atkeson,** University of California, Los Angeles and NBER; and **Patrick Kehoe,** University of Minnesota and NBER, "Time-Varying Risk, Interest Rates and Exchange Rates in General Equilibrium"
Discussant: David Backus, New York University and NBER

Philippe Bacchetta, University of Lausanne, and **Eric Van Wincoop**, University of Virginia and NBER, "Rational Inattention: A Solution to the Forward Discount Puzzle"
Discussant: Nelson Mark, University of Notre Dame and NBER

Yan Bai, Arizona State University, and **Jing Zhang,** University of Michigan, "Can Financial Frictions Account for the Cross-Section Feldstein-Horioka Puzzle?"
Discussant: Vivian Yue, New York University

Anusha Chari, University of Michigan, and **Nandini Gupta,** Indiana University, "The Political Economy of Foreign Entry Deregulation"
Discussant: Galina Hale, Yale University

Irina Tytell, IMF, and **Shang-jin Wei,** IMF and NBER, "Global Capital Flows and National Policy Choices"
Discussant: Simon Johnson, MIT and NBER

Gopinath and **Rigobon** use a novel dataset to present evidence on price stickiness at the U.S. border. Using unpublished microdata on import and export prices collected by the Bureau of Labor Statistics for the United States for 1994–2005, they find a tremendous amount of dollar price stickiness in both imports and exports. The weighted average price duration is 12.26 months for imports and 14.11 months for exports. These numbers are about three times the Bils-Klenow (2004) estimates for consumer prices. Goods traded on organized markets and reference priced goods have less sticky prices. However, there is little evidence that the price stickiness of goods traded intra-firm differ from those goods traded at arms-length. Finally, the authors explore the relationship between exchange rate movements and the probability and size of price change in imports.

Time-varying risk is the primary force driving nominal interest rate differentials on currency-denominated bonds. This finding is an immediate implication of the fact that exchange rates are roughly random walks. **Alvarez, Atkinson,** and **Kehoe** show that a general equilibrium model with an endogenous source of risk variation and a variable degree of asset market segmentation can produce many of the features of interest rates and exchange rates. The endogenous segmentation arises from a fixed cost for agents to exchange money for assets. As inflation varies, the benefit of asset market participation varies, and that changes the fraction of agents participating. These effects lead the risk premium to vary systematically with the level of inflation. One attractive feature of this model is that it produces variation in the risk premium even though the primitive shocks have constant conditional variances.

The uncovered interest rate parity equation is the cornerstone of most models in international macroeconomics. However, this equation does not hold empirically because the forward discount, or interest rate differential, is negatively related to the subsequent change in the exchange rate. This forward discount puzzle is one of the most extensively researched areas in international finance and implies that excess returns on foreign currency investments are predictable. **Bacchetta** and **Van Wincoop** propose a new explanation for this puzzle based on rational inattention. They develop a model in which investors face a cost of collecting and processing information. Investors with low information processing costs trade actively, while other investors are inattentive and trade infrequently. The authors calibrate the model to the data and show that: 1) inattention can account for most of the observed predictability of excess returns in the foreign exchange market; 2) the benefit from frequent trading is relatively small so that few investors choose to be attentive; 3) average expectational errors about future exchange rates are predictable in a way that is consistent with survey data for market participants; and, 4) the model can account for the puzzle of delayed overshooting of the exchange rate in response to interest rate shocks.

Bai and **Zhang** study the famous Feldstein-Horioka finding that long period averages of savings and investment rates are highly correlated across countries. The authors first confirm the Feldstein-Horioka finding with a more recent dataset and then show that a calibrated complete-markets model generates a cross-section savings-investment correlation that is close to zero. Thus, further research is needed to account for Feldstein-Horioka's cross-section finding. The authors explore the role of financial frictions, but find that the most popular incomplete markets model — the bond model with natural borrowing constraints — cannot account for the cross-section Feldstein-Horioka puzzle. Next, the authors propose the bond model with enforcement constraints in which uncontingent debt contracts are enforced by the threat of permanent exclusion from the markets. This model generates endogenous borrowing constraints, which capture the incentives of countries to repay their debts instead of their abilities to repay under natural borrowing constraints. It accounts for the cross-section Feldstein-Horioka puzzle.

Chari and **Gupta** investigate the influence of incumbent firms on the policy decision to allow foreign direct investment. Using firm-level data from India, the authors find that the likelihood of barriers to foreign entry being reduced in an industry is inversely related to its concentration. The least concentrated industry in their sample faces an 80 percent probability of being opened to foreign entry in comparison to a 10 percent probability for a monopoly. The results also suggest that politicians are more receptive to the interests of some incumbent firms over others. Industries that are state-owned monopolies face a 13 percent probability of being opened to foreign entry in comparison to a 52 percent probability for industries with no state-owned firms. When foreign entry is allowed in an industry, incumbent firms experience a significant decline in market share and profits. The results are consistent with the hypothesis that incumbent firms oppose foreign entry to protect monopoly profits.

Tytell and **Wei** study whether changes in global financial environment have induced governments to pursue better policies (the "discipline effect"). The evidence indicates that financial globalization has induced countries to pursue lower inflation rates, but not to succeed in lowering budget deficits. So, the strength of the discipline effect varies across different public policies.

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Public Economics Program Meeting

The NBER's Public Economics Program met in Cambridge on October 27–28. NBER Faculty Research Fellow Raj Chetty and NBER Research Associate Emmanuel Saez, both of the University of California, Berkeley, organized the program. These papers were discussed:

Alan J. Auerbach, University of California, Berkeley and NBER, "Budget Windows, Sunsets, and Fiscal Control" (NBER Working Paper No. 10694)

Kevin S. Milligan and **Thomas Lemieux,** University of British Columbia and NBER, "Incentive Effects of Social Assistance: A Regression Discontinuity Approach"

Esther Duflo, NBER and MIT; **William Gale** and **Peter Orszag**, Brookings Institution; **Jeffrey Liebman,** Harvard University and NBER; and **Emmanuel Saez,** "Savings Incentives for Low- and Middle-Income Families: Evidence from a Field Experiment with H&R Block" (NBER Working Paper No. 11680)

Francine D. Blau, Cornell University and NBER, and **Lawrence M. Kahn,** Cornell University, "Changes in the Labor Supply Behavior of Married Women: 1980–2000" (NBER Working Paper No. 11230)

Daron Acemoglu, MIT and NBER; **Michael Golosov**, MIT; and **Aleh Tsyvinski,** Harvard University, "Markets Versus Governments: Political Economy of Mechanisms"

Hanming Fang, Yale University and NBER; **Hongbin Cai,** University of California, Los Angeles; and **Lixin Xu,** World Bank, "Eat, Drink, Firms and Government: An Investigation of Corruption from Entertainment and Travel Costs of Chinese Firms" (NBER Working paper No. 11592, September 2005 — see "The Chinese Economy" earlier in this issue for a description of this paper.)

Roger Gordon, NBER and University of California, San Diego, and **Wei Li,** University of Virginia, "Tax Structures in Developing Countries: Puzzle and Possible Explanations"

Susan Dynarski, Harvard University and NBER, "Building the Stock of College-Educated Labor" (NBER Working Paper No. 11604)

Governments around the world have struggled to find the right method of controlling public spending and budget deficits. In recent years, the United States has evaluated policy changes using a ten-year budget window. The use of a multi-year window is intended to capture the future effects of policies, the notion being that a budget window that is too short permits the shifting of costs beyond the window's endpoint. But a budget window that is too long includes future years for which current legislation is essentially meaningless, and gives credit to fiscal burdens shifted to those whom the budget rules are supposed to protect. This suggests that there may be an optimal budget window, and seeking to understand its properties is one of **Auerbach's** main objectives. Another objective is to understand a phenomenon that has grown in importance in U.S. legislation: the sunset. Auerbach argues that, with an appropriately designed budget window, the incentive to use sunsets to avoid budget restrictions will evaporate, so that temporary provisions can be taken at face value. His analysis also has implications for how to account for long-term budget commitments.

Before 1989, childless social assistance recipients in Quebec under age 30 received much lower benefits than recipients over age 30. **Lemieux** and **Milligan** use this sharp discontinuity in policy to estimate the effects of social assistance on various labor market outcomes using a regression discontinuity approach. They find strong evidence that more generous social assistance benefits reduce employment. The estimates exhibit little sensitivity to the degree of flexibility in the specification, and perform very well when the authors control for unobserved heterogeneity using a first difference specification. Finally, they show that commonly used difference-in-differences estimators may perform poorly with inappropriately chosen control groups.

Duflo, Gale, Liebman, Orszag, and **Saez** analyze the effects of a large randomized field experiment carried out with H&R Block, offering matching incentives for IRA contributions at the time of tax preparation. About 14,000 H&R Block clients, across 60 offices in predominantly low- and middle-income neighborhoods in St. Louis, were randomly offered a 20 percent match on IRA contributions, a 50 percent match, or no match (the control group). The evaluation generates two main findings. First, higher match rates significantly raise IRA participation and contributions. Take-up rates were 3 percent for the control group, 8 percent in the 20 percent match group, and 14 percent in the 50 percent match group. Average IRA contributions (including non-contributors, excluding the match) for the 20 percent and 50 percent match groups were 4 and 7 times higher than in the control group, respectively. Second, several additional findings are inconsistent with the full information, rational-saver model. In particular, the authors find much more modest effects on take-up and amounts contributed from the existing Saver's Credit, which provides an effective match for retirement saving contributions through the tax code; they suspect that the differences may reflect the complexity of the Saver's Credit as enacted, and the way in which its effective match is presented. Taken together, these results suggest that the combination of a clear and understandable match for saving, easily accessible savings vehicles, the opportunity to use part of an income tax refund to save, and professional assistance could generate a significant increase in contributions to retirement accounts, including among middle- and low-income households.

Using March Current Population Survey (CPS) data, **Blau** and **Kahn** investigate married women's labor supply behavior from 1980 to 2000. They find that the labor supply function for annual hours shifted sharply to the right in the 1980s, with little shift in the 1990s. In an accounting sense, this is the major reason for the more rapid growth of female labor supply observed in the 1980s, with an additional factor being that husbands' real wages fell slightly in the 1980s but rose in the 1990s. Moreover, a major new development was that, during both decades, there was a dramatic reduction in women's own wage elasticity. And, continuing past trends, women's labor supply also became less responsive to husbands' wages. Between 1980 and 2000, women's own wage elasticity fell by 50 to 56 percent, while their cross wage elasticity fell by 38 to 47 percent in absolute value. These patterns hold up under virtually all alternative specifications correcting for: selectivity bias in observing wage offers; selection into marriage; income taxes and the earned income tax credit; measurement error in wages and work hours; and omitted variables that affect both wage offers and the propensity to work; as well as when education groups and mothers of small children are analyzed separately.

Acemoglu, Golosov, and **Tsyvinski** investigate the political economy of (centralized) mechanisms and compare these mechanisms to markets. In contrast to the standard approach, they assume that the mechanism is operated by a self-interested agent (ruler/government) who can misuse the resources and information he or she collects. The main contribution of the paper is an analysis of the form of mechanisms that insures idiosyncratic (productivity) risks, as in the classical Mirrlees setup, but in the presence of a self-interested government. The authors construct sustainable mechanisms whereby the government is given incentives not to misuse resources and information. One important result of their analysis is that there will be truthful revelation along the equilibrium path; this shows that truth-telling mechanisms can be used despite the commitment problems and the different interests of the government and the citizens. Using this tool, the authors characterize the best sustainable mechanism. A number of features are interesting to note. First, under fairly general conditions, the best sustainable mechanism is a solution to a quasi-Mirrlees problem, defined as a problem in which the ex ante utility of an agent is maximized subject to incentive compatibility constraints, as well as two additional constraints on the total amount of consumption and labor supply in the economy. Second, the authors characterize the conditions under which the best sustainable mechanism will lead to an asymptotic allocation where the highest type faces a zero marginal tax rate on his or her labor supply as in the classical Mirrlees setup and there are no aggregate capital taxes as in the standard dynamic taxation literature. In particular, if the government is sufficiently patient (typically as patient as the agents), the Lagrange multiplier on the sustainability constraint of the government tends to zero, and marginal distortions arising from political economy disappear asymptotically. In contrast, when the government has a small discount factor, the authors show that aggregate distortions remain, and there is both positive marginal labor tax on the highest type and positive aggregate capital taxes even asymptotically. The authors also investigate when markets are likely to be less desirable relative to centralized mechanisms.

Tax policies in developing countries are puzzling on many dimensions, given the sharp contrast between these policies and both those seen in developed countries and those forecast in the optimal tax literature. In their paper, **Gordon** and **Li** explore how forecasted policies change if firms can successfully evade taxes by conducting all business in cash, thus avoiding any use of the financial sector. The forecasted policies that result are much closer to those observed.

Half of college students drop out before completing a degree. These low rates of college completion among young people should be viewed in the context of slow future growth in the educated labor force, as the well-educated baby boomers retire and new workers are drawn from populations with historically low education levels. **Dynarski** establishes a causal link between college costs and the share of workers with a college education. She exploits the introduction of two large tuition subsidy programs, finding that they increase the share of the population that completes a college degree by 3 percentage points. The effects are strongest among women, with white women increasing degree receipt by 3.2 percentage points and the share of nonwhite women attempting or completing any years of college increasing by 6 and 7 percentage points, respectively. A cost-benefit analysis indicates that tuition reduction can be a socially efficient method for increasing college completion. However, even with the offer of free tuition, a large share of students continue to drop out, suggesting that the direct costs of school are not the only impediment to college completion.

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Tax Policy and the Economy, Volume 19

Tax Policy and the Economy, Volume 19, edited by James M. Poterba, will be available this fall from the MIT Press for $25.00 in paperback and $58.00 clothbound. Volume 19 of this NBER series continues the tradition of addressing issues that are relevant to current policy debates as well as to questions of longer-term interest. The papers included provide important background information for policy analysts in government and the private sector without making specific policy recommendations.

The topics discussed in this volume include: a comparison of federal, state, and local pre-kindergarten educational programs; the cost-effectiveness of different health insurance reform proposals; economic growth in countries with low marginal corporate income tax rates; the disparity between corporate income as reported to investors and as calculated for corporate tax liability; and the relationship between pyramidal structures and the taxation of intercorporate dividends.

Poterba directs the NBER's Program on Public Economics and is the Mitsui Professor of Economics and the Associate Head of the Economics Department at MIT.

The following volumes may be ordered directly from the University of Chicago Press, Order Department, 11030 South Langley Avenue, Chicago, IL 60628-2215; 1-800-621-2736. Academic discounts of 10 percent for individual volumes and 20 percent for standing orders for *all* NBER books published by the University of Chicago Press are available to university faculty; orders must be sent on university stationery.

Measuring Capital in the New Economy

Measuring Capital in the New Economy, edited by Carol Corrado, John C. Haltiwanger, and Daniel E. Sichel, is available now from the University of Chicago Press for $99.

In this NBER Study of Income and Wealth, the contributors — including both academic economists and former government officials — offer new approaches for measuring capital in an economy that is increasingly dominated by high-technology capital and intangible assets. They consider, among other topics, the valuation of intangible capital, the relationship of human capital and productivity to market value, and how R and D in the National Income and Product Accounts affects Gross Domestic Product. This book should be of interest to economists, policymakers, and members of the financial and accounting communities.

Haltiwanger is an NBER Research Associate in the Program on Productivity and Technological Change and a professor of economics at the University of Maryland. Corrado is Chief of the Industrial Output Section, and Sichel is Assistant Director of the Division of Research and Statistics, of the Federal Reserve Board of Governors.

A History of Corporate Governance around the World: Family Business Groups to Professional Managers

A History of Corporate Governance around the World: Family Business Groups to Professional Managers, edited by Randall K. Morck, will be available from the University of Chicago Press in November 2005. This NBER Conference volume costs $90.

The book includes historical studies of the patterns of corporate governance in several countries, including the large industrial economies of Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States; larger developing economies like China and India; and alternative models such as those of the Netherlands and Sweden. In this volume, leading research economists present new empirical research that suggests that free enterprise and well-developed financial systems produce growth in those countries that have them. The research also suggests that in some other capitalist countries, arrangements concentrate corporate ownership in the hands of a few wealthy families.

Morck is an NBER Research Associate and a member of the Faculty of Business at the University of Alberta (Canada).

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