

URC Conference on Innovation and Accumulation

The spring 1997 NBER-Universities Research Conference took place on May 2 and 3 and was organized by NBER Priority Research Fellow Jeffrey R. Campbell of the University of Rochester and NBER Research Associate Paul M. Romer of Stanford University. The conference theme was "Innovation and Accumulation in Firms, Industries, and Nations." The program was:

Andrew Toole, Laurits R. Christensen Associates, "The Impact of Federally Funded Basic Research on Industrial Innovation: Evidence from the Pharmaceutical Industry." Discussant: Frank R. Lichtenberg, NBER and Columbia University.
Michael Kremer, NBER and MIT, "A Mechanism for Encouraging Innovation." Discussant: Phil Haile, University of Wisconsin.

Suzi Kerr, University of Maryland, College Park, "Timing of Technology Adoption in a Tradeable Permit Market: Empirical Evidence from the U.S. Lead Phasedown." Discussant: Matthew White, Stanford University.

Eric A. Hanushek, NBER and University of Rochester, and **Dongwook Kim**, "Schooling, Labor Force Quality, and the Growth of Nations." Discussant: Julie Berry Cullen, MIT.

Shane Greenstein, NBER and University of Illinois, and **Pablo Spiller**, University of California, Berkeley, "Estimating the Welfare Effects of Digital Infrastructure." Discussant: Mehmet Yorukoglu, University of Chicago.

Anita N. Srivastava, Columbia University, "Impact of Trade Liberalization on Domestic Output,

Technical Efficiency, and Profitability." Discussant: Matthew Slaughter, Dartmouth College.

Andrew Atkeson and **Patrick Kehoe**, NBER and University of Pennsylvania, "Industry Evolution and Transition: A Neoclassical Benchmark." Discussant: Richard Eason, Columbia University.

Douglas Gollin, Williams College, "Nobody's Business but my Own: Self-Employment and Small Enterprise in Economic Development." Discussant: Boyan Jovanovic, NBER and New York University.

Marco Da Rin, IGIER, and **Thomas Hellmann**, Stanford University, "Banks as Catalysts for Industrialization." Discussant: Ross Levine, University of Virginia.

Toole explores the direct productivity impact of U.S. government-funded basic biomedical research on the discovery of new chemical entities in the pharmaceutical industry. He finds that public basic research is a significant contributing factor, which influences pharmaceutical innovation roughly 17 years prior to Food and Drug Administration approval and increases the effectiveness of industry expenditure on R and D. His study suggests that a decline in the real growth rate of overall federal funding for basic research may lead to lower productivity in other industries that rely on it, fields traditionally supported by the U.S. government.

Kremer proposes a mechanism under which the private value of patents would be determined in an auction. Governments then would offer to buy out patents at this pri-

vate value, with a fixed markup that would roughly cover the difference between the private and social values of inventions. Most patents would be placed in the public domain, but in order to provide auction participants with an incentive to honestly reveal their valuations, a few patents would be sold to the highest bidder. The system is well-suited to the pharmaceutical industry, Kremer concludes.

Kerr uses a unique dataset from the United States lead phasedown which began in 1983. She estimates the investment response to the regulation of lead in gasoline by 154 refineries over 11 years. The regulation took the form of a permit market followed by a performance standard. In addition, using a subsample of 78 refineries, she considers the relationship between trading in the permit market and the decision to adopt

"isomerization capacity" as a response to the severity of regulation. She also estimates how the adoption decision depends on the characteristics of each refinery. These characteristics affect their costs of adjustment and their valuation of the new technology.

Hanushek and **Kim** analyze the importance of the quality of the labor force, as measured by cognitive skills in mathematics and science. By linking international test scores across countries, they develop a direct measure of quality, and this proves to have a strong influence on growth. One standard deviation in measured cognitive skills translates into a one percent difference in average annual real growth rates — an effect much stronger than changes in average years of schooling, which is the more standard measure of labor force skills. Cognitive skill differences are not, however, the same as differences

in resources devoted to schools. Thus, the importance of quality implies a policy dilemma, because estimates indicate that simple resource approaches to improving cognitive skills appear generally ineffective.

Much economic policy presumes that investment in frontier digital technologies yields high economic returns. **Greenstein** and **Spiller** examine the magnitude of returns associated with investment in fiber optic cable and other digital technology in local telephone companies. Using a model that accounts for differences across the country in regulatory environments and demand conditions, they show that more and better digital technology expands the demand for telephone services. Their estimates imply that investment in better technology is responsible for a substantial fraction of recent growth in consumer use of, and business revenue from, telephone service.

It has long been believed that intensified international competition forces domestic firms to behave more competitively and improve productivity. **Srivastava** examines the impact of trade policy on heterogeneous firms' behavior in imperfectly competitive markets to make inferences about the output adjustment of firms within industries and the consequent changes in technical efficiency and profitability. Her model predicts that large firms are more

likely to expand output (and small firms contract), and that small firms undergo greater percentage adjustment in output (as compared to large firms). Using a dataset spanning the course of the dramatic trade reforms undertaken in India in 1991, she finds a shift in market share towards larger, low marginal cost firms, and thus a rationalization in the industry structure. Her results also suggest that increases in import penetration have a significant restraining effect on price-cost margins in the Indian manufacturing industries.

Recently, a large number of countries have undertaken major reforms that have led to a large increase in the number of new enterprises. After these reforms, however, it has taken a number of years before output and productivity have begun to grow. **Atkeson** and **Kehoe** ask what the path of transition looks like in a reforming economy for which the process governing the growth of new enterprises looks like it does in the United States, a well-functioning market economy. They find that it takes 5–7 years until measured output and productivity begin to grow rapidly following reform. This suggests that, even if all other aspects of the economy are perfect, the transition following economy-wide reforms should take a substantial amount of time.

Gollin investigates cross-country patterns of self employment and

small enterprise. It appears that relative factor prices account for most of the differences in establishment size and self employment. Moreover, relatively small exogenous changes in productivity can have relatively large effects on aggregate output, since productivity increases are amplified by increasing concentration of entrepreneurial activities among high-skill managers. This suggests that establishment-level models may offer valuable insights into growth as well as into the changing structure of production and employment.

Da Rin and **Hellmann** examine the role of banks as “catalysts” for industrialization. When there are limits to contracting, and complementarities exist among investments of different firms, banks can act as catalysts provided that: they are sufficiently large to mobilize a critical mass of firms; and they possess sufficient market power to make profits from coordination. The costs of coordination depend critically on the contracting instruments available to banks. In particular, allowing banks to hold equity reduces and sometimes eliminates the cost of coordination. Early industrialization in Belgium, Germany, and Italy in the late 19th century occurred quickly because of the active involvement of large and powerful universal banks which engaged in both debt and equity finance.



Frontiers in Health Policy Research

Nearly 100 representatives of foundations, government agencies, the U.S. Congress, and the corporate sector gathered in Washington on June 5 for the NBER's first annual conference on "Frontiers in Health Policy Research." Alan M. Garber, director of the NBER's Health Care Program and a professor at Stanford University, chose the following NBER research studies for discussion.

David M. Cutler, NBER and Harvard University, and **Louise Sheiner**, Council of Economic

Advisers, "Managed Care and the Growth of Medical Expenditures."

Alan M. Garber, **Mark B. McClellan**, and **Thomas R. McGuire**, NBER and Stanford University, "Medicare Beneficiaries with Persistently High Expenditures: Identification and Policy Implications."

David M. Cutler, and **Richard J. Zeckhauser**, NBER and Harvard University, "Adverse Selection in Health Insurance."

Ernst R. Berndt, NBER and MIT, **Iain Mc Cocksburn**, NBER and University of British Columbia, **Douglas L. Cocks**, Eli Lilly and Company, **Arnold Epstein**, M.D., Harvard Medical School, and **Zvi Griliches**, NBER and Harvard University, "Is Drug Price Inflation Different for the Elderly?"

Laurence C. Baker, NBER and Stanford University, and **Sharmila Shankarkumar**, "Managed Care Spillovers in Medicare, 1990-94."

Cutler and **Sheiner** examine the relation between HMO enrollment and medical spending. They find that managed care reduces the growth of hospital costs. While some of this effect is offset by increased spending on physicians, there is generally a significant reduction in total spending as well. Second, preliminary evidence shows that managed care has reduced the diffusion of medical technologies. States with high enrollment in managed care were technology leaders in the early 1980s; by the early 1990s, those states were only average in their acquisition of new technologies. This suggests that managed care may have a significant effect on the long-run growth of medical costs.

Garber and his coauthors present information about the distribution of Medicare expenditures among beneficiaries in specific years, along with new evidence on the extent to which Medicare payments for the care of individual beneficiaries persist over long time periods. Their analysis is based on a longitudinal population of Medicare enrollees from 1987 to 1995. They find that high-cost users accounted for a disproportionate share of the growth of Medicare Part A (hospital) payments during this

period, but that changes in Medicare Part B payments were driven largely by increases in the number of beneficiaries using covered services. Few beneficiaries are in the highest-cost categories for multiple years; the high mortality rates of individuals who use medical services heavily, whether the expenditures occur in one year or repeatedly, limits the extent of expenditure persistence. Even among survivors, it is unusual to remain in a high-cost category for multiple years. Nevertheless, individuals with high expenditures in one year are likely to have high expenditures in other years, and expenditures are highly skewed even over a period of nine years.

Individual choice over health insurance policies may result in risk-based sorting across plans. The resulting adverse selection will induce three types of losses: efficiency losses from individuals being allocated to the wrong plans; risk sharing losses; and losses from insurers distorting their policy options to improve their mix of insureds. **Cutler** and **Zeckhauser** discuss the potential for these losses and present empirical evidence on adverse selection in two groups of employees: Harvard University; and the Group

Insurance Commission (GIC) of Massachusetts (serving state and local employees). In both groups, adverse selection is severe. At Harvard, the university's decision to contribute an equal amount to all insurance plans led to the disappearance of the most generous policy within 3 years. At the GIC, adverse selection has been contained by managing the most generous policy very tightly. A combination of prospective or retrospective risk adjustment, coupled with reinsurance for high cost cases, seems promising as a way to provide appropriate incentives for enrollees and to reduce losses from adverse selection.

Berndt and his co-authors analyze changes in the price of pharmaceutical products destined for consumption by Americans aged 65 or older: the elderly have quite different patterns of drug consumption from the under-65 population. At the first point in the distribution chain — sales by manufacturers to wholesalers — the authors find essentially no age-specific difference in the rate of inflation between 1990 and 1996. Moving to the next level of the distribution chain — sales from wholesalers to drugstores — they find some small but significant differences in the rates of inflation experienced by elderly

and non-elderly consumers. For antidepressants, the authors' price index for the elderly grows less quickly than that for the non-elderly: 3.37 percent annual average growth rate between 1990 and 1996 as opposed to 4.17 percent for the under 65 age group. They attribute this difference to greater use by the elderly of older and generic drugs, and slower growth in their use of newer (and more expensive) products. By contrast, their price index for antibiotic drugs destined for use by the elderly grows at a faster rate than that for the non-elderly: 2.67 percent versus 2.34 percent between 1990 and 1996, with the biggest differences occurring after 1993; the elderly price index growing at 2.2 percent per year compared to 0.41 percent for the non-elderly. They attribute this to the disproportionate use by the elderly of newer (and patented) antibiotics, for which bacterial resistance has not yet developed, making them more effective for treatment of life-threatening infec-

tions, such as pneumonia. They find no difference between elderly and non-elderly inflation rates for a third class of drugs, calcium channel blockers. Preliminary investigation of the final point in the distribution chain — sales from drugstores to customers — suggests that, at least for antidepressants, younger consumers have experienced somewhat slower growth in prices, reflecting the dramatic increase in third party payment for prescriptions and a larger impact of managed care providers on the prices of branded products.

Baker and his coauthor investigate the relationship between HMO market share and Medicare expenditures. They find that increases in Medicare HMO market share are associated with increases in Part A expenditures. This is consistent with the view that Medicare HMO enrollment is subject to substantial selection bias, and with the view that spillover effects are small. However, increases in system-wide HMO market share (which

includes both Medicare and non-Medicare enrollment) are associated with declines in expenditures, which suggests that managed care activity generally may have broad effects on health care markets. For Part B, increases in both Medicare and system-wide market share are associated with small declines in expenditures, suggesting that there may be some spillover effects for Part B expenditures associated with Medicare HMO market share. For Medicare policy discussions, these findings imply that previous results that seemed to show the existence of large spillover effects associated with increases in Medicare HMO market share, as opposed to system-wide managed care activity, overstated the magnitude of actual Medicare spillovers.

These papers will be published by the MIT Press in a paperback volume, similar to the NBER's *Tax Policy and the Economy* series. Its availability will be announced in a future issue of the *NBER Reporter*.

Fiscal Institutions And Fiscal Performance

On June 27-29, the NBER and the Zentrum für Europäische Integrationsforschung (Center for European Integration) at the University of Bonn co-sponsored a conference on "Fiscal Institutions and Fiscal Performance." The program, which was organized by James M. Poterba of NBER (and MIT) and Jürgen von Hagen of the University of Bonn, included thirteen papers addressing a range of questions relating to the economic effects of fiscal institutions. The conference was partly motivated by current debate surrounding the development of the European Monetary Union (EMU). One of the requirements that EMU members must meet is a limitation

on the central government's deficit; a key issue is how such an anti-deficit rule would practically affect fiscal policy in EMU member nations.

The conference presentations took three forms: new conceptual insights on the political economy of budget rules; new empirical evidence on the effect of these rules; and case studies on the development of budgetary institutions in various nations. Some researchers presented new theoretical models of the political incentives for government deficits, or of how fiscal institutions might affect fiscal outcomes. Other participants in the meeting reported new empirical findings on the links among budgeting rules, political circumstances,

and fiscal outcomes in Europe, North and South America, and Australia. Finally, several research papers presented case studies of the effects of budget rules in particular countries, notably Australia, Canada, and Japan, with emphasis on the link between these rules and fiscal deficits.

The papers presented at the conference, and the discussants who commented on these papers, were:

Alberto F. Alesina, NBER and Harvard University; and **Roberto Perotti**, Columbia University, "Budget Deficits and Budget Institutions."

Discussant: **Robert P. Juman**, NBER and University of Pennsylvania.

Continued on next page

Oved Yosha, Tel Aviv University and **Bent Sorensen**, Brown University, "International Risk Sharing and European Monetary Unification"

Discussant: Manfred Neumann, University of Bonn

Roberto Perotti and **Yianios Konfopoulos**, Merrill Lynch, "Fragmented Fiscal Policy"

Discussant: Gian Maria Milesi-Ferretti, IMF

James M. Poterba and **Kim Rueben**, Public Policy Institute of California, "State Fiscal Institutions and the U.S. Municipal Bond Market"

Discussant: Anne Case, NBER and Princeton

Andres Velasco, NBER and New York University, "A Model of Endogenous Fiscal Deficits and Delayed Fiscal Reforms"

Discussant: Henning Bohn, University of California, Santa Barbara

Thomas Courchene, Queens University, "Subnational Budgetary and Stabilization Policies in Canada and Australia"

Discussant: Bernhard Spahn, University of Frankfurt

Ernesto Stein, **Ernesto Talvi**, and **Alejandro Grisanti**, Inter American Development Bank, "Institutional Arrangements and Fiscal Performance: The Latin American Experience"

Discussant: Andrew Samwick, NBER and Dartmouth

Mariano Tommasi, Universidad de San Andres, **Mark Jones**, Michigan State University, and **Pablo Sanguinetti**, Universidad T. Di Tella, "Politics, Institutions, and Fiscal Performance in the Argentine Provinces"

Discussants: Jorge Braga de Macedo, NBER and Universidade Nova de Lisboa, and Arik Levinson, NBER and University of Wisconsin

Eduardo Campos and **Sanjay Pradhan**, World Bank, "Budgetary Institutions and the Levels of Expenditure Outcomes in Australia and New Zealand"

Discussant: Lars Feld, University of St. Gallen

Gebhard Kirchgassner, University

of St. Gallen, and **Lars Feld**, "Public Debt and Budgetary Procedures: Top-Down or Bottom-Up? Some Evidence from Swiss Municipalities"

Discussant: Mark Crain, George Mason University

Juergen von Hagen and **Mark Hallerberg**, Georgia Institute of Technology, "Electoral Institutions, Cabinet Negotiations, and Budget Deficits in the European Union"

Discussant: Jorn Rattso, Norwegian University of Science and Technology

Maurice Wright, University of Manchester, "Coping with Fiscal Stress: Illusion and Reality in Central Government Budgeting in Japan, the UK, and Canada, 1974-97"

Discussant: Roland Sturm, University of Erlangen

Jacob de Haan and **Bjorn Volkerink**, University of Groningen, and **Wim Moessen**, Catholic University of Leuven, "Budgetary Procedures: Aspects and Changes: New Evidence for Some European Countries"

Discussant: Kim Rueben

Alesina and **Perotti** survey existing theoretical and empirical literature on the determinants of fiscal policy, and conclude that budget procedures and budget institutions influence budget outcomes; these institutions include both procedural rules and balanced budget laws. They critically assess the theoretical contributions in this area and suggest several open and unresolved issues. They also examine the empirical evidence drawn from studies on samples of OECD countries, Latin America, and U.S. states.

Sorenson and **Yosha** explore risksharing patterns in European Community countries, OECD nations, and U.S. states. They find that for OECD countries as well as for EC

countries, about 40 percent of shocks to GDP are smoothed at the one-year frequency, with about half of that smoothing achieved through national government budget deficits and half by corporate saving. At the three year differencing frequency, only about one quarter of the shocks to GDP are smoothed, with all of that smoothing achieved via government lending and borrowing. These findings have implications for the design of fiscal unions, and the degree to which risk-sharing is feasible in such unions.

Perotti explores the effects of political factors, procedural factors (such as the budget process), and ideology in shaping the fiscal outcomes for OECD countries throughout the 1960-95 period. His paper

begins with a theoretical model of how fragmentation, the degree to which individual participants in the fiscal policy process internalize the costs of any dollar of aggregate expenditures, affects the budget process. Fragmentation can arise either when there are many actors in the budget process, or when the process in which these actors interact diffuses power. The empirical analysis suggests that fragmentation, particularly when measured by cabinet size (the number of participants in the deliberations that ultimately determine the budget), has an important effect on fiscal policy outcomes. It also indicates that ideology, as measured by the position of the ruling party on a liberal/conservative spectrum, is a

substantively important determinant of fiscal policy.

Poterba and Rueben present new evidence on the effect of state fiscal institutions, particularly balanced budget rules and restrictions on state debt issuance, on the yields on state general obligation bonds in the United States. They examine a longer sample period, and a broader range of fiscal institutions, than previous studies of how fiscal rules affect the bond market. The results suggest that states with tighter anti-deficit rules, and states with more restrictive provisions on the authority of state governments to issue debt, face lower borrowing costs. The interest rate differential between a state with a very strict anti-deficit constitution and one with a lax constitution is between 10 and 15 basis points. States with binding revenue limitation measures tend to face higher borrowing rates by approximately the same amount. These results provide evidence that bond market participants consider fiscal institutions in assessing the risk characteristics of tax-exempt bonds, and further support the view that fiscal institutions have real effects on fiscal outcomes.

Velasco develops a political-economic model of fiscal policy in which government resources are a "common property" out of which interest groups can finance expenditures on their preferred items. This set-up has striking macroeconomic implications. First, fiscal deficits and debt accumulation occur even when there are no reasons for intertemporal smoothing. Second, those deficits can be eliminated through a fiscal reform, but such a reform may only take place after a delay during which government debt is built up.

Courchene focuses on the relationship between institutional structures and subnational fiscal/budgetary processes in Canada and Australia. He describes the institutional ar-

rangements that have led the Australian government to be more centralized and egalitarian than its Canadian counterpart. These arrangements have also made the Canadian provinces more fiscally autonomous than the Australian states. He then focuses on the implications of government structure for the magnitude and structure of intergovernmental grants, for the degree of subnational fiscal stabilization policy, for subnational borrowing autonomy, and for the extent of economic and budgetary coordination between the national and subnational governments. He also considers the recent shift toward "hard budget constraints" in the Canadian provinces, and presents some information on the credit ratings of Australian states and Canadian provinces.

Stein, Talvi, and Grisanti explore the links between electoral systems, budget institutions, and fiscal performance in Latin America. They consider four measures of fiscal performance, namely, the level of government expenditures, the size of the deficit and public debt, and the response of fiscal policy to business cycle fluctuations. They find that electoral systems characterized by a high degree of proportionality (that is, proportional representation) tend to have larger governments, larger deficits, and a more procyclical response to the business cycle. They also find that more transparent and centralized budgetary procedures lead to lower deficits and debt. Furthermore, strengthening budget procedures for the central government can weaken the effect of proportional representation on fiscal policy outcomes.

Tommasi and his coauthors study the behavior of provincial public finances since Argentina's return to democracy in 1983. They use a "common pool" model of budget deficits to analyze fiscal policies in different

provinces. They find that the tax-sharing mechanism, "coparticipacion fiscal," by which the national government devolves taxes to the provinces, is an important determinant of provincial fiscal behavior. Budget procedures and other institutions are also crucial for fiscal performance. Party affiliation of the provincial governors in relation to most of the national executive is a key factor in ameliorating or exacerbating the incentive for provinces to "free ride" on the common pool.

Campos and Pradhan extend previous research suggesting that key budgetary institutions are important in controlling aggregate spending. They look beyond the issue of fiscal discipline, and argue that aggregate fiscal discipline is necessarily linked to the issues of allocative and technical efficiency. Hence, in identifying the impact of budgetary institutions, they suggest taking a broader and more systemic perspective. Based on the reform experiences of New Zealand and Australia, they argue that these linkages embody transactions costs that could lead one country to adopt one set of institutions, and another a different (though overlapping) set. Specifically, they show that New Zealand sought to control aggregate spending by focusing on improving technical efficiency, while Australia sought to do so by introducing mechanisms to facilitate strategic prioritization and enhance allocative efficiency.

Feld and Kirchgassner investigate the impact of referendum approval of budget deficits, a form of direct democracy, on the level of public debt in a cross section of the 131 largest Swiss municipalities. They develop a new database on fiscal institutions and fiscal outcomes in Swiss municipalities, and use it to explore an important question in the link between institutional structure and fiscal outcomes. Their results

suggest that municipalities with direct democracy provisions for the approval of new debt issues exhibit lower levels of debt per capita than those municipalities without such provisions.

Hallerberg and **von Hagen** argue that electoral institutions have an important effect in restricting the type of budgetary institutions at the government's disposal. In states where one-party governments are the norm, spending ministers can delegate agenda-setting powers. These states usually have plurality electoral systems. In contrast, in multi-party governments that are common in proportional representation systems, the institutional solution to the "common pool" problem is a commitment to negotiated targets. The empirical section of this paper presents evidence from the European Union states for 1980-94.

Wright focuses on how the Japanese government has coped with conditions of almost continuous fiscal

stress, including budget deficits, accumulated debt, and increasing costs of debt servicing, during the last two and one half decades. He makes brief comparisons with Canada and the United Kingdom during this period. He argues that policy choices were largely unsuccessful in achieving their fiscal objectives. An illusion of discipline and control was created through manipulation of the budgetary system and the exploitation of the rules of the game on the part of budget makers. In reality, the central government was either unable or unwilling to control the growth of government spending over this period.

de Haan and his coauthors address two potential problems in the empirical literature on the link between procedures that lead to the formulation, approval, and implementation of the budget, and fiscal policy outcomes. First, they consider which features of budget institutions are most important in influencing fis-

cal policy outcomes, using data from nations in the European Union. The position of the finance minister in the budget process, and the presence or absence of binding constraints, appear most important in determining the level of budget deficits. In addition, they consider the evolution of budget rules in some countries, to explore the causes of procedural changes. In one case, Sweden, changes in the budgetary process were precipitated by an acute financial crisis. In several other nations that are the subjects of case studies, it is more difficult to identify the motivation for reform.

These papers and discussions will be published in an NBER conference volume by the University of Chicago Press. Its availability will be announced in a future issue of the *NBER Reporter*.

This article was prepared in large part by conference organizer James M. Poterba.

New Market Microstructure Group Meets

On July 17th, the NBER's newly launched Market Microstructure Research Group, organized by Andrew Lo of MIT and NBER, held its first meeting in Cambridge. The seeds of this new research group were planted three years ago at the NBER's Conference on the Industrial Organization and Regulation of the Securities Industry which engaged economists, legal scholars, regulators, and professionals from the securities industry in lively debate and discussion. This conference confirmed a strong and growing interest in economic, legal, and policy issues surrounding the securities industry, and so formed the group to pursue this interest.

The meeting included six papers and a luncheon speaker. Commis-

sioner Steven Wallman of the U.S. Securities and Exchange Commission (SEC). Commissioner Wallman described some of the inner workings of the SEC, including some of the recent SEC rule changes that affect stock market price increments, and he exhorted economists to take a more active role in shaping the SEC's rulemaking activities. In particular, he encouraged economists to respond to the SEC's "concept releases" and assured audience members that such responses would be heard at the SEC.

The following papers also were discussed:

Robert Battalio, University of Notre Dame; **Jason Greene**, Georgia State University, and

Robert Jennings, Indiana University. "Order Flow, Trade Quality, and Liquidity Costs: Merrill Lynch's Decision to Cease Making Markets on the Regional Stock Exchanges." Discussant: James J. Angel, Georgetown University.

Bruno Biais, University of Toulouse; **Thierry Foucault**, Pompeu Fabra University, Barcelona; and **Francoise Salanie**, INRA, Toulouse. "Implicit Collusion on Wide Spreads."

Discussant: Larry Glosten, Columbia University.

Stephen Foerster and **G. Andrew Karolyi**, University of Western Ontario. "The Effects of Market Segmentation and Illiquidity on

Continued on next page

Asset Prices: Evidence from Foreign Stocks Trading in the U.S.

Discussant: Ananth Madhavan, University of Southern California

Takatoshi Ito, NBER and

Hirotsubishi University

Richard K. Lyons, NBER and University of

California, Berkeley, and **Michael**

J. Melvin, Arizona State University

Is There Private Information in the

FX Market? The Tokyo Experiment (NBER Working Paper No. 5936)

See "Japan Working Group Meets" in the Bureau News section of this issue for a description of this paper.

Discussant: Martin Evans,

Georgetown University

Dimitri Vayanos, Stanford

University "Strategic Trading in a

Dynamic Noisy Market

Discussant: Matthew Spiegel,

University of California at Berkeley

Eric R. Sirri, **Lois E. Lightfoot**,

Peter G. Martin, and **Mark A.**

Peterson, all of the U.S. Securities

and Exchange Commission

"Preferencing and Market Quality

on U.S. Exchanges

Discussant: Robert A. Wood,

University of Memphis

Battalio et al. identify a natural experiment to test whether order flow across trading venues affects the cost of providing liquidity by affecting the costs of marketmaking. In October 1995, Merrill Lynch announced that it would cease routinely routing small retail orders for NYSE-listed securities to affiliated specialists on regional stock exchanges. Their action is associated with substantial changes in market share across trading venues: the NYSE gains share at the expense of the affected regionals. The authors find that the average quoted spread does not decrease after order flow is redirected, though. However, execution costs in the affected securities decrease, supporting the claim that Merrill captures better prices for its customers in New York.

Blaiss et al. ask whether price competition among risk-averse marketmakers leaves room for implicit collusive behavior. They compare the spread and risk-sharing efficiency that arise in several market structures which differ in terms of the priority rule followed in the case of ties and the type of schedules that marketmakers may use (that is, general schedules, linear schedules, or limit orders). In general, competitive pricing does not arise in equilibrium, and

there is a conflict between risksharing efficiency and the tightness of the spread. This conflict can be mitigated by an appropriate design for market structure. The limit order market is the only structure in which the competitive equilibrium is the unique equilibrium.

Foerster and **Karolyi** document the effect on share value of non-U.S. firms listing on U.S. exchanges. Their sample consists of over 150 firms from 11 countries that listed their shares for the first time in the United States as ordinary listings or as American Depositary Receipts (ADRS) from 1976 to 1992. These stocks earned a significant average excess return of 0.38 percent per week during the year before listing, an additional 1.20 percent during the listing week, but incurred a significant average loss of 0.27 percent per week during the year following listing. Also, local market risk exposure of these stocks decreases with the listing while global market risk exposure does not change. The pattern in abnormal returns and global risk exposure is significantly related to an increase in the shareholder base and to the exchange on which the shares are listed.

Vayanos models a financial market with a large trader who in each period receives a privately observed

stock endowment, and trades with competitive marketmakers in order to share dividend risk. When the time between trades diminishes to zero, the trading process consists of two phases. During the first very short phase, the large trader sells a fraction of his endowment and is identified by the marketmakers. Then during the second longer phase, he completes his trades.

Sirri and his coauthors analyze the quality of retail order executions on the primary and the regional U.S. equity exchanges. Brokers have an obligation to provide "best execution" for customers' orders and must route orders received to venues that satisfy this obligation. Differing market structures and pricing practices among venues create an incentive for brokers to include other factors in addition to "best execution" in their routing decision. The authors use a matched sample of retail market and limit orders on the New York, Boston, Chicago, Cincinnati, Philadelphia, and the Pacific Stock Exchanges to assess the variation of execution quality and examine to what extent orders routed to various exchanges are consistent with brokers' fiduciary duties.

Bureau News

Kremer Wins MacArthur Grant

Michael Kremer, an NBER Faculty Research Fellow in the Economic Fluctuations and Growth Program, won a MacArthur Fellowship of \$215,000 in June. These awards, sometimes called "genius grants,"

come with "no strings attached." Kremer, also an associate professor of economics at MIT, expects to spend his award on research, possibly on health care and education in developing countries.

Kremer received his BA and Ph.D. in economics from Harvard University. He has been affiliated with the NBER since 1993.

International Trade and Investment

The NBER's Program on International Trade and Investment, directed by Robert C. Feenstra of NBER and University of California, Davis, held its spring meeting in Cambridge on April 4-5. The discussion centered on the following papers and topics:

Jonathan Eaton and **Samuel Kortum**, NBER and Boston University, "Technology and Bilateral Trade."

Robert C. Feenstra, and **Gordon H. Hanson**, NBER and University of Texas, "Productivity Measurement and the Impact of Trade and Technology on Wages: Estimates for the United States, 1972-99."

James Harrigan, Federal Reserve Bank of New York, and **Rita A.**

Balaban, University of Pittsburgh, "U.S. Wages in General Equilibrium: Estimating the Effects of Trade, Technology, and Factor Supplies, 1964-94."

Alessandra Casella, NBER and Columbia University, and **James E. Rauch**, NBER and University of California, San Diego, "Anonymous Market and Coethnic Ties in International Trade."

Donald R. Davis, NBER and Harvard University, "The Home Market and Economic Geography With Globalization De-industrialize Small Countries."

Research Plans Focusing on the United States: **J. David Richardson**, NBER and Syracuse

University; **Matthew J. Slaughter**, NBER and Dartmouth College; **Linda S. Goldberg** and **Joseph Tracy**, Federal Reserve Bank of New York; **Lori Kletzer**, University of California, Santa Cruz; **Andrew Bernard**, MIT; and **Bradford Jensen**, Carnegie-Mellon University. Research Plans Focusing on Global Impacts: **Robert C. Feenstra**, **Gordon H. Hanson**, and **James Harrigan**; **Robert Z. Lawrence**, NBER and Harvard University; **Paul R. Krugman**, NBER and MIT; **Edward E. Leamer**, NBER and University of California, Los Angeles; and **Daniel Treffer**, NBER and University of Toronto.

Innovative activity is concentrated in a small number of countries, but the benefits of innovation are experienced broadly. **Eaton** and **Kortum** develop a model of technology and trade to explore the role of trade in spreading the benefits of innovation. Their estimates imply an underlying elasticity of substitution among labor from different countries of around 3.5.

Feenstra and **Hanson** find that both foreign outsourcing and expenditures on high-technology equipment can explain a substantial amount of the relative increase in

nonproduction wages that occurred during the 1980s. Comparatively, foreign outsourcing has a greater impact on the relative nonproduction wage than high-technology capital, but this result is somewhat sensitive to the specification that is used. Surprisingly, expenditures on high-technology capital other than computers are most important. Taken together, foreign outsourcing and expenditures on high-technology capital explain more than the observed increase in the relative nonproduction wage, which suggests that in their absence

the relative wages of skilled workers could have fallen.

Wage inequality in the United States has increased in the past two decades, and most researchers believe that the main causes are changes in technology, international competition, and factor supplies. In this paper, **Harrigan** and **Balaban** view wages as arising out of a competitive general equilibrium where goods prices, technology, and factor supplies jointly determine outputs and factor prices. Treating final goods prices as being partially determined

in international markets, and using data on trends in the international economy as instruments for U.S. prices, they find that changes in relative factor supply are more important than changes in relative price in explaining the growing return to skill. In particular, capital accumulation accounts for much of the increase in the skill differential.

Casella and **Rauch** model trade between two economies in which output is generated through bilateral matching of agents spanning a spectrum of types. Domestic matching is perfect — every trader knows the type of all others and can approach whomever he chooses — but international matching is random — every

trader lacks the information to choose his partner's type. However, coethnic ties allow perfect matching abroad to those members of an ethnic minority who choose to use them.

In recent decades, because of changes in both policy and technology, there has been growing international economic integration. With declining barriers to trade, some analysis has suggested that countries with small markets may lose a distinctive component of their manufacturing base: goods produced under increasing returns to scale when the producers have some monopoly power. With lower barriers, producers of these goods may be tempted to

locate in large markets and to serve the smaller markets by export. The small countries would be left to produce more homogeneous and competitive goods. However that analysis was premised on an assumption of convenience — transport costs only for the goods produced with scale economies — that indeed matters.

Davis shows that in a focal case with equal transport costs for both classes of goods, small countries need not fear loss of this distinctive component of manufactures. He also discusses the available evidence, which indicates that total trade costs for these two classes of goods do not differ significantly.

Public Economics Program Meeting

Members of the NBER's Program on Public Economics, directed by James M. Poterba of MIT, met in Cambridge on April 10 and 11. They discussed the following papers:

Rosanne Altshuler, NBER and Rutgers University, and **Jason G. Cummins**, New York University, "Tax Policy and the Dynamic Demand for Domestic and Foreign Capital by Multinational Corporations."

Discussant: Douglas Shackelford, University of North Carolina.

Kenneth L. Judd, NBER and Stanford University, "Optimal Taxation and Spending in General Competitive Growth Models."

Discussant: Rodolfo Manuelli, NBER and University of Wisconsin.

Steven D. Levitt, NBER and Harvard University, and **Ian Ayres**, Yale University, "Measuring Positive Externalities from Unobservable Victim Precaution: an Empirical Analysis of Lojack." (NBER Working Paper No. 5928).

Discussant: Edward Glaeser, NBER and Harvard University.

Olivia S. Mitchell, NBER and University of Pennsylvania, **James M. Poterba**, and **Mark J. Warshawsky**, FIAA-CREF, "New Evidence on the Money's Worth of Individual Annuities." (NBER Working Paper No. 6002).

Discussant: Benjamin Friedman, NBER and Harvard University.

John B. Shoven, NBER and Stanford University, and **David A.**

Wise, NBER and Harvard University, "The Taxation of Pensions: A Shelter Can Become a Trap." (NBER Working Paper No. 5815).

Discussant: Daniel Halperin, Harvard University.

David F. Bradford, NBER and Princeton University, "Fixing Realization Accounting: Symmetry, Consistency, and Correctness in the Taxation of Financial Instruments." (NBER Working Paper No. 5754).

Discussant: William M. Gentry, NBER and Columbia University.

Joel B. Slemrod, NBER and University of Michigan, "Tax Compliance: New Evidence from Minnesota."

Discussant: Ann D. Witte, NBER and Florida International University.

Altshuler and **Cummins** use firm-level panel data on Canadian multinational corporations that invest solely in the United States and find that domestic and foreign capital are greater-than-unit-elastic substitutes in the production process, and that

there is a statistically significant coordination cost to domestic and foreign investment. They also simulate the effect of various tax policies on the dynamics of investment and on the steady-state values of the Canadian and U.S. capital stock. Their simula-

tions show the importance of interrelated production and adjustment costs in the analysis of tax policy towards multinational corporations.

Judd examines the optimal taxation of capital and the provision of public goods. He points out that

many "consumption" tax proposals, such as the Flat Tax and the VAT, are not consumption taxes. He instead proposes a tax system biased against human capital and in favor of physical capital investment.

Levitt and Ayres find that the presence of Lojack is associated with a sharp fall in auto theft in central cities and a more modest decline in the remainder of the state. Rates of other crimes do not change appreciably. Their estimates suggest that, at least historically, the marginal social benefit of an additional unit of Lojack has been as much as 15 times greater than the marginal social cost in high crime areas. Those who install Lojack in their cars, however, obtain less than 10 percent of the total social benefits of Lojack, causing Lojack to be undersupplied by the free market. Current insurance subsidies for the installation of Lojack appear to be well below the socially optimal level.

Mitchell, Poterba, and Warshawsky present new information on the expected present discounted value of payouts on individual life annuities. They examine the single premium immediate life annuity, an insurance product that pays out a nominal level sum as long as the covered person lives, in exchange for an initial lump-sum premium. This annuity offers protection against the risk of someone outliving his saving, given uncertainty about longevity. They calculate that individual annuities currently are priced so that retirees without be-

quest motives should find them of substantial value in configuring their portfolios to smooth retirement consumption. They also find that the expected present discounted value of payouts, relative to the initial cost of the annuity, has increased over the last decade.

Shoven and Wise show that, at least for large pension accumulations, pension distributions can face marginal tax rates as high as 61.5 percent; pension assets passing through an estate can face marginal tax rates between 92 and 99 percent. This paper shows the circumstances under which these extraordinarily high marginal tax rates will be encountered. They are not limited to the rich. In fact, people of modest incomes who participate in a pension plan over a long career may face such rates.

Bradford sets forth the requirements for income measurement rules based on realization that are "linear," in the sense that doubling a person's transactions will double the taxable income and adding one set of transactions to another will result in the sum of the associated income. Under present realization conventions, the tax law cannot be linear because then there would be no limit on tax arbitrage profit via variations on borrowing with deductible interest and lending tax exempt. To focus on the principles, Bradford assumes that transactions are costless. In that case, dealing with the intertemporal aspect

of the problem requires virtually universal imputation of taxable interest income to basis (the taxpayer's cost of an asset). To deal with the risk aspect of the problem (lock-in and cherry picking) requires simply that the effective rate of tax on gains and losses be the same (not necessarily equal to the rate on intertemporal returns).

In 1995 the Minnesota Department of Revenue conducted a series of randomized, controlled income tax compliance experiments to test alternative strategies for improving compliance. Among them was sending taxpayers a letter informing them that their return would be examined. Under certain assumptions, the response of reported income to this experiment will be a measure of the extent of tax noncompliance. **Slemrod** finds that, compared to a control group of taxpayers, the average increase (over the previous year) in taxes paid for low- and middle-income members of the treatment group was 3 percent of tax liability, and much higher for those taxpayers who have greater opportunities for evasion. However, no significant positive effect was observed for high-income taxpayers; this may reflect the reduced incentive for the treated taxpayers to reduce the probability of an audit by reporting more than otherwise, combined with the perception that in practice an audit is a negotiation process for which an initial "low bid" may be optimal.



The Well-Being of Children

The NBER's Program on the Well-Being of Children met in Cambridge on April 17. Program Director Jonathan Gruber, also of MIT, organized the meeting, at which these papers were discussed:

Kevin Lang, Boston University, and **Jay L. Zagorsky**, Ohio State University, "Does Growing Up with a Parent Absent Really Hurt?"

Stephen Cameron, Columbia University, and **James Heckman**, NBER and University of Chicago, "Dynamics of Educational

Attainment for Blacks, Hispanics, and Whites"

Thomas J. Kane, NBER and Harvard University, "Racial and Ethnic Preference in College Admissions"

Janet Currie, NBER and University of California, Los Angeles, and **Jonathan Gruber**, "The Technology of Birth: Health Insurance, Medical Intervention, and Infant Health" (NBER Working Paper No. 5985)

Sherry A. Glied, NBER and

Columbia University, and **A. Bowen Garrett**, University of California, Berkeley, "The Effect of U.S. Supreme Court Ruling *Sullivan v. Zebley* on Child SSI and AFDC Enrollment: A Natural Experiment"

Gary Solon, University of Michigan, **Marianne Page**, University of California, Davis, and **Greg J. Duncan**, Northwestern University, "Correlation Between Neighboring Children in their Socioeconomic Status as Adults"

Children who grow up without one of their biological parents in the home do worse, on average, than other children. However, having a single parent is highly correlated with lots of other socioeconomic disadvantages. In their analysis, **Lang** and **Zagorsky** find little evidence that absence of a parent affects income or wealth. For men, father's presence has a notable impact on whether one marries. For women, mother's presence is most important for cognitive ability.

Cameron and **Heckman** present a careful accounting of the role of family background, family income, labor market opportunities, and college tuition in explaining educational differences among black, white, and Hispanic males. Three main conclusions emerge from their research: 1) family income and family background influence schooling choices beginning at early stages of schooling; 2) tuition levels explain nothing of the difference among black, white, and Hispanic college enrollment patterns; 3) family income and family background operate on schooling choices primarily through long-term influences and not through short-run restrictions in the credit market.

Kane uses data from the High

School and Beyond survey of the class of 1982 to study the extent of racial preference at different types of four-year colleges, by comparing the likelihood of admission for black, Hispanic, and white students with similar SAT scores and high school grades applying to the same colleges. Despite large differences in mean SAT scores by race in most four-year colleges, he finds little evidence of racial or ethnic preference in admissions outside of the top quintile of colleges. Kane also evaluates the likely effectiveness of "class-based" admission policies in producing similar racial balance on elite campuses. Given that black and Hispanic youth are a minority of the population and a very small minority of high-scoring youth, they represent a small minority of most subsets of low-income disadvantaged youth. Thus colleges likely would have to impose very large penalties on those from middle income families or those with college-educated parents in order to replicate the current racial balance on campus without using race explicitly. Simple demographics imply that preferences for low-income students would be a very blunt instrument for maintaining racial balance on elite college campuses.

Using Vital Statistics data on every birth in the United States from 1987-92, and information on the tremendous variation in eligibility for public insurance coverage under the Medicaid program during that period, **Currie** and **Gruber** find that among teen mothers and high school dropouts, who were largely uninsured before being made eligible for Medicaid, there were significant increases in the use of a variety of obstetric procedures. On average, this more intensive treatment only resulted in marginal changes in the health of infants, as measured by neonatal mortality. The effect of eligibility on neonatal mortality is sizeable among children born to mothers whose closest hospital had a Neonatal Intensive Care Unit, though. This suggests that insurance-induced increases in the use of "high tech" treatments can have real effects on outcomes. Among women with more education who moved from more generous to less generous insurance coverage of pregnancy and neonatal care, the movement was accompanied by reductions in the use of high-tech procedures without any discernable change in neonatal mortality.

In 1990, in *Sullivan v. Zebley*, the U.S. Supreme Court substantially

relaxed the criteria whereby children became eligible for Supplemental Security Income (SSI). **Glied** and **Garrett** examine the extent of spillovers between the SSI and the AFDC (Aid to Families with Dependent Children) programs. They show that growth in child SSI participation over the period affected by the *Zebley* decision is likely to be highest in states with low AFDC payments and high state SSI supplemental payments. They then estimate that about 57 percent of new SSI child participants would not have qualified otherwise for cash payments or

Medicaid benefits, while the remaining 43 percent are children who were already eligible for cash and Medicaid benefits under AFDC. In five states with the lowest AFDC payments, at least 53 percent of new SSI cases are children who were already eligible for AFDC. These results suggest that increased government expenditures on SSI have been offset partially by reduced expenditure on AFDC.

Solon, Page, and Duncan investigate the socioeconomic impact of community origins by studying children in the same neighborhood and

their later socioeconomic status as adults. Based on data from the Panel Study of Income Dynamics, they find that the correlation among neighboring children in educational attainment is far smaller than among siblings. Given that neighborhoods reflect the influence of similar family background as well as of shared community backgrounds, these results suggest that neighborhood characteristics explain only a modest portion of the population-wide inequality in educational attainment.

Program Meeting on Labor Studies

Members of the NBER's Program on Labor Studies met in Cambridge on April 18 to discuss recent research. Organizers Richard B. Freeman and Lawrence E. Katz, both of the NBER and Harvard University, selected the following papers for discussion:

Steven D. Levitt, NBER and Harvard University, "Juvenile Crime

and Punishment"

George Baker, NBER and Harvard Business School; **Robert Gibbons**, NBER and Cornell University; and **Kevin J. Murphy**, University of Southern California, "Implicit Contracts and the Theory of the Firm"

William L. Dickens, The Brookings

Institution, "Neighborhoods and Networks"

Michael Kremer, NBER and MIT, "Should Taxes be Independent of Age?"

Alan B. Krueger, NBER and Princeton University, "Experimental Estimates of Education Production Functions"

Over the last two decades the punitiveness of the juvenile justice system has declined substantially relative to that of the adult courts. During that same time period, juvenile violent crime rates have grown almost twice as quickly as adult crime rates. **Levitt** finds that juvenile offenders are at least as responsive to criminal sanctions as adults are. Moreover, sharp changes in criminal involvement with the transition from the juvenile to the adult court suggest that deterrence plays an important role. Changes in relative punishment account for 60 percent of the differential growth rates in juvenile and adult violent crime between 1978 and 1993. There does not appear to be a strong relationship between the punitiveness of the juvenile justice system

and the extent of criminal involvement later in life.

Baker, Gibbons, and Murphy analyze the role of "implicit contracts" (that is, informal agreements supported by reputation rather than law) both within firms, for example in employment relationships, and between them, for example as hand-in-glove supplier relationships. They find that the optimal organizational form is determined largely by what implicit contracts it facilitates. Among other things, they also show that vertical integration is an efficient response to widely varying supply prices. Finally, their model suggests why "management" (that is, the development and implementation of unwritten rules and codes of conduct) is essential in organizations.

Dickens presents a model of a labor market in which workers come from either a high rent or a low rent neighborhood. Employed people prefer to live in the high rent neighborhood, and can help unemployed people in their "network" (neighborhood) to find jobs. He shows that complete segregation of workers by employment status lowers the level of employment: beyond some point, making it easier for employed people to leave the low rent neighborhood begins to reduce employment. The level of mobility at which this change takes place is higher for populations with lower unemployment rates. Thus decreased racial housing segregation that has allowed affluent blacks to leave depressed inner city neighborhoods may have hurt black

employment levels overall. And, because increasing mobility is detrimental at lower levels for populations that have more of a tendency to be unemployed, the same level of mobility that is helpful to whites could be harmful to blacks who face discrimination in finding a job and who on average are not as well prepared for work as whites.

Raising marginal tax rates at a given level of income reduces work incentives for people with that amount of income and increases tax revenues collected from people with higher incomes. **Kremer** finds that the number of people for whom work incentives are distorted per dollar of revenue raised in this way is typically more than five times greater for 17-to-21 year-olds than for 31-to-

64 year-olds, and typically more than twice as large for 22-to-26 year-olds as for 31-to-64 year-olds. Reductions in marginal tax rates for youth, coupled with revenue-neutral increases in marginal tax rates for prime-age workers, will equalize the distribution of lifetime income, **Kremer** concludes, since income when one is young is almost uncorrelated with lifetime income.

Krueger analyzes data from Project STAR, an experiment in which 11,600 Tennessee kindergarten students and teachers were assigned randomly to one of three types of classes beginning in the 1985-6 school year: small (13-17 students); regular-size (22-25 students); and regular-size with a teacher's aide. Students in regular-size classes were

re-assigned randomly at the end of kindergarten, and about 10 percent of students moved between class types in second and third grade. Attrition was also common. **Krueger** finds that: 1) on average, performance on standardized tests increases by about 4 percentile points the first year that students are assigned to a small class, irrespective of the grade in which the student first attends a small class; 2) after initial assignment to a small class, student performance increases by about one percentile per year relative to those in regular-size classes; 3) teacher aides have little effect on student achievement; 4) class size has a larger effect on test scores for minority students and those who receive free lunches.

Japan Working Group Meets

The NBER's Japan Working Group, directed by Anil K. Kashyap, University of Chicago, met in Cambridge on April 19. Members discussed the following papers:

Brian J. Hall and **David E. Weinstein**, Harvard University

"Do Banking Relationships Reduce Corporate Myopia? Evidence from Japan"

Discussant: David Scharfstein, NBER and MIT

Albert Ando, NBER and University of Pennsylvania, **John Hancock**, University of Pennsylvania, and **Gary Sawchuk**, Industry Canada

"Cost of Capital for the United

States, Japan, and Canada: An Attempt at Measurement Based on Individual Company Records and Aggregate National Accounts Data" (NBER Working Paper No. 5884)

Discussant: Dale Jorgenson, Harvard University

Lee G. Branstetter, NBER and Dartmouth College, and **Mariko Sakakibara**, University of California, Los Angeles

"Japanese Research Consortium: A Microeconomic Analysis of Industrial Policy" (See "Program Meeting on Productivity" earlier in this issue for a description of this paper.)

Discussant: Sara Ellison, MIT

Takatoshi Ito, NBER and Hirosubashi University

Richard K. Lyons, NBER and University of California, Berkeley, and **Michael J. Melvin**, Arizona State University

"Is there Private Information in the FX Market? The Tokyo Experiment" (NBER Working Paper No. 5936)

Discussant: Silverio Foresi, New York University

Kenji Ariga, Kyoto University

Yasushi Ohkusa, Osaka City University, and **Giorgio Brunello**, Udine University

"Fast Track: Is it in the Genes? The Promotion Policy of a Large Japanese Firm"

Discussant: Canice Prendergast, NBER and University of Chicago

Hall and **Weinstein** compare Japanese firms with and without strong relationships to banks to determine whether strong banking relationships enable firms to behave less myopically. They conjecture that if banking relationships do reduce

corporate myopia, this benefit will be most pronounced during episodes of financial distress, when concerns about the current bottom line are most pronounced. Using R and D as a proxy for long-term investment, they find no evidence that unaffili-

ated Japanese firms cut back on R and D more than firms with strong banking relationships during periods of financial distress. Nor do firms with strong banking relationships receive more loan assistance during periods of financial distress. This

casts doubt on the main mechanism through which bank relationships are thought to reduce financial-friction induced myopia.

Ando, Hancock, and Sawchuk lay out a conceptual basis for measuring the cost of capital for corporations from data typically available in such countries as the United States, Canada, and Japan. They attempt to carry out the measurement based both on the accounting records of individual companies and on the aggregate National Accounts data, supplemented by market information on the price of equity shares. For the United States, they find a consistent pattern from both sets of data: the real cost of capital after depreciation and before taxes fluctuates around a point between 10 and 11 percent, without a persistent trend. For Canada, the individual company data cover too few companies for too short a period, and it does not seem possible to obtain any reliable estimate from this set of data. The aggregate National Accounts data for Canada supplemented by some unpublished data supplied by Statistics Canada, suggest that the cost of capital in Canada is equal to or somewhat lower than that in the United States. For Japan, the National Ac-

counts data has critical defects for the purpose of estimating the cost of capital, and there are problems in the individual company accounts data as well, the authors believe. They do not estimate the cost of capital using the National Accounts data; their estimate is in the range of roughly 5 to 6 percent using the company accounts. This very low estimate is largely due to an extremely high depreciation rate reported in these accounts. Ando and his coauthors believe, nevertheless, that the cost of capital there may have been lower than in the United States during the period they study.

Ito, Lyons, and Melvin provide evidence against the view that private information in the foreign exchange market does not exist. The evidence comes from the introduction of trading in Tokyo over the lunch hour. Lunch return variance doubles with the introduction of trading, which cannot be attributable to public information, since its flow did not change with the trading rules. Having eliminated public information as the cause, the authors exploit recent results from the market microstructure literature to discriminate between two alternatives, private information and pricing errors. Three key results support the predictions of

private-information models, specifically their predictions about how the pattern of return volatility should change with the lunch opening. (This pattern tends to be "U-shaped" within a trading period: high at the beginning and end relative to the middle.) First the volatility U-shape flattens: greater revelation over lunch leaves a smaller share for the morning and afternoon. Second, the U-shape tilts upward, an implication of information whose private value is transitory. Finally, the morning exhibits a clear U-shape when Tokyo closes over lunch, and it disappears when trading is introduced, exactly as the private information models predict.

Ariga, Ohkusa, and Brunello study the promotion policy of a large high-tech Japanese firm. They find that: there is little evidence in support of the common view of Japanese career development that promotions based on merit are unduly delayed; there are multiple ports of entry and a substantial number of hires have significant previous job experience; and, there are significant fast track effects across ranks and different cohorts.



Asset Pricing Program

The NBER's Asset Pricing Program met in Cambridge on April 25. Stanley F. Zin, NBER and Carnegie Mellon University, organized the session and chose the following papers for discussion:

David Backus, NBER and New York University; **Silverio Foresti**, **Abon Mozumdar**, and **Liuren Wu**, New York University, "Predictable Changes in Yields and Forward Rates"

Discussant: Elzo Lutmer, Northwestern University

William T. Roberds, Federal Reserve Bank of Atlanta, and **Charles H. Whiteman**, University of Iowa, "Endogenous Term

Premia and Anomalies in the Term Structure of Interest Rates: Explaining the Predictability Smile"

Discussant: Robert J. Hodrick, NBER and Columbia University

Qiang Dai, Stanford University, and **Kenneth J. Singleton**, NBER and Stanford University, "Specification Analysis of Affine Term Structure Markets"

Discussant: David Marshall, Federal Reserve Bank of Chicago

Wayne E. Ferson, NBER and University of Washington, and **Andrew F. Siegel**, University of Washington, "The Efficient Use of Conditioning Information in Portfolios"

Discussant: John C. Heaton, NBER and Northwestern University

William Fung, Paradigm LLC, and **David A. Hsieh**, Duke University, "Empirical Characteristics of Dynamic Trading Strategies: the Case of Hedge Funds"

Discussant: Andrew W. Lo, NBER and MIT

W. Brian Arthur, **John H. Holland**, **Richard Palmer**, and **Paul Tayler**, Santa Fe Institute, and **Blake D. LeBaron**, NBER and MIT, "Asset Pricing Under Endogenous Expectations in an Artificial Stock Market"

Discussant: Bryan Routledge, Carnegie Mellon University

The first three papers study the behavior of long-term bond yields in relation to short-term interest rates — that is, the term structure of interest rates. Recent studies have explored the ability of spreads between long and short yields to forecast subsequent movements in interest rates, and have found that spreads do forecast interest rate movements over short horizons up to about three months, and over long horizons beyond about two years, but do not forecast interest rate movements at intermediate horizons. This pattern is sometimes called a "predictability smile," because a graph of interest rate predictability has the shape of a smile. One explanation for this pattern is that long yields are influenced not only by interest rate movements, but also by changes in risk premiums on long-term bonds.

The papers by **Backus** et al. and by **Roberds** and **Whiteman** ask whether simple models with endogenous time-varying risk premiums can explain the predictability smile. Roberds and Whiteman explore a single-factor model proposed in a

well-known paper by Cox, Ingersoll, and Ross; in this model the volatility and level of the short-term interest rate move together and drive the movements of the whole term structure. Roberds and Whiteman argue that this model has the potential to explain the predictability smile; Backus et al. respond that it can fit the smile or the average levels of yield spreads, but cannot explain both the smile and average spreads at the same time.

Backus et al. and Dai and Singleton explore more complicated multifactor models in which the level, long-run mean, and volatility of the short rate can move independently. For tractability, they consider "affine" models in which bond yields are related to each other linearly. **Dai** and **Singleton** provide a general framework in which to analyze such models, and they fit several models to the joint distribution of short- and long-term interest rates. Backus et al. find that these models have the potential to explain both the predictability smile and other properties of interest rates, although there are

some remaining empirical difficulties at long maturities.

Dynamic trading strategies are increasingly popular in financial markets, and the next two papers on the program study the returns on such strategies. **Ferson** and **Siegel** ask what portfolio allocation rules produce the highest possible unconditional expected returns given their unconditional variances of returns, when the portfolio weights can be adjusted dynamically in response to conditioning information. They provide closed-form solutions for these unconditionally mean-variance efficient portfolios.

Fung and **Hsieh** present some new results on an unexplored dataset on hedge fund performance. Hedge funds are unregulated, private investment pools. Their trading strategies are dramatically different from mutual funds, and their returns have low correlation to the major asset markets. Yet most hedge funds use the same asset markets as mutual funds to generate returns, which supports the claim that hedge fund strategies are highly dynamic. The

authors find five dominant investment styles in hedge funds, which can account for only 43 percent of their cross-sectional variance. This means that hedge funds use many different dynamic trading strategies to generate returns.

Arthur et al. propose a theory of asset pricing based on heterogeneous agents who continually adapt their

expectations to the market that these expectations aggregatively create. They explore the implications of this theory computationally using a simulation of an artificial stock market. They show that within a regime where investors explore alternative expectational models at a low rate, the market settles into the rational-expectations equilibrium of the effi-

cient-market literature. Within a regime where the rate of exploration of alternative expectations is higher, the market self-organizes into a complex pattern. It acquires a rich psychology, technical trading emerges, temporary bubbles and crashes occur, and asset prices and trading volume show statistical features characteristic of actual market data.

Behavioral Finance Group Meets

Robert J. Shiller, NBER and Yale University, and Richard H. Thaler, NBER and University of Chicago, organized an April 26 meeting on "behavioral" explanations of financial market activity in conjunction with the April 25 meeting of the Asset Pricing Program. The following papers were discussed:

Kent Daniel, Northwestern University; **David Hirshleifer**, University of Michigan; and **Ayanidhar Subrahmanyam**, University of California, Los Angeles, "A Theory of Overconfidence, Self-Attribution, and Security Market Under- and Over-Reaction." Discussant: **Weiner De Bondt**,

University of Wisconsin.
Nicholas Barberis, University of Chicago; **Andrei Shleifer**, NBER and Harvard University; and **Robert Vishny**, NBER and University of Chicago, "A Model of Investor Sentiment."

Discussant: **Drazen Prelec**, MIT.
H. Albert Wang, Columbia University, "Overconfidence, Delegated Fund Management, and Survival."

Discussant: **Fernando Odean**, University of California, Berkeley.
Hersh Shefrin and **Meir Statman**, Santa Clara University, "Comparing Expectations About Stock Returns to Realized Returns."

Discussant: **Kenneth Froot**, NBER and Harvard University.

Charles Lee, Cornell University; **James Myers**, University of Washington, Seattle; and **Bhaskaran Swaminathan**, Cornell University, "What is the Intrinsic Value of the Dow?"

Discussant: **Robert J. Shiller**.
Francois Degeorge, HEC, School of Management; **Jayendu Patel**, Boston University; and **Richard J. Zeckhauser**, NBER and Harvard University, "Earnings Manipulation to Exceed Thresholds."

Discussant: **Shlomo Benartzi**, University of California, Los Angeles.

Daniel and his coauthors propose a theory based on investor overconfidence and biased self-attribution to explain several of the patterns in securities returns that seem anomalous from the perspective of efficient markets with rational investors. The theory is based on two premises derived from evidence in psychological studies. The first is that individuals are overconfident about their ability to evaluate securities, in the sense that they overestimate the precision of their private information signals. The second is that investors' confidence changes in a biased fashion as a function of the outcomes of their decisions. The first premise im-

plies overreaction to the arrival of private information and underreaction to the arrival of public information. This is consistent with post-corporate event and post-earnings announcement stock price "drift"; negative long-lag autocorrelations; and excess volatility of asset prices. Adding the second premise leads to positive short-lag autocorrelations; short-run post-earnings announcement drift; and negative correlation between future stock returns and long-term measures of past accounting performance.

Recent empirical research in finance has uncovered two families of pervasive regularities: underreaction of stock prices to news such as earn-

ings announcements; and overreaction of stock prices to a series of good or bad news. **Barberis**, **Shleifer**, and **Vishny** present a parsimonious model of investor sentiment — that is, of how investors form beliefs — that is consistent with the empirical findings. The model is based on psychological evidence and produces both underreaction and overreaction for a wide range of parameter values.

Wang examines Friedman's [1953] "natural selection" argument, that market forces favor the survival of rational economic agents in the context of delegated fund management. The principals of large funds regularly hire and fire individual man-

agers, who make actual portfolio and trading decisions. Wang shows that although overconfident managers buy high and sell low, they can outperform their rational opponents in an efficient market. He concludes that Friedman's "natural selection" argument may not hold in a market with imperfect competition, even if the market is efficient.

There are three explanations for the association between realized returns and stock characteristics (size, book-to-market, past returns, and past sales growth): 1) data mining among stock characteristics; 2) association between stock characteristics and risk; and 3) association between stock characteristics and cognitive errors by investors. It is virtually impossible to distinguish among these competing explanations with realized returns alone since they are very noisy. **Shefrin** and **Statman** distinguish among the explanations with data on expectations about returns from stock recommendations tracked by First Call Corporation in 1994 and 1995, and from ratings of stocks by analysts and executives in the annual Fortune Magazine surveys

conducted from 1982 through 1995. They reject the data mining hypothesis because characteristics related to realized returns also are related to expectations about returns. They also reject the risk hypothesis, because the signs of the relationships between characteristics and realized returns are the opposite of the signs of the relationship between characteristics and expectations about returns. Both findings are consistent with the cognitive errors hypothesis.

Lee, Myers, and Swaminathan use a residual income valuation model to compute a measure of the intrinsic value for the 30 stocks in the DJIA. They show that superior empirical estimates of value will not only track price more closely, but also will be better predictors of subsequent returns. They find that, since 1978, traditional indicators of market value have had little predictive power for subsequent returns. In contrast, a value-to-price (v/p) ratio based on the residual income model reliably can predict overall market returns over as short a time interval as one month. Both time-varying discount rates and forward-looking earnings

information are important to the success of v/p.

Investors are keenly interested in financial reports of earnings because they provide important information for investment decisions. Thus, managers who are monitored by investors and directors face strong incentives to manipulate earnings. **DeGeorge, Patel, and Zeckhauser** introduce consideration of behavioral/institutional thresholds for earnings in this mix of incentives and governance. They illustrate how thresholds induce specific types of earnings manipulations. Their explorations find clear support for manipulation to exceed each of three thresholds that they consider: avoid red ink; sustain recent performance; and meet market expectations. The thresholds are ranked hierarchically. The future performance of firms that possibly boost earnings to just cross a threshold appear to be poorer than that of less suspect control groups. The special saliency of a firm's fiscal-year performance induces extra noisiness in fourth quarter earnings that varies with the need to "borrow" earnings to meet thresholds.

Health Care Program Meeting

Members of the NBER's Program on Health Care, led by Alan M. Garber of NBER and Stanford University, met in Cambridge on May 15 to discuss the following papers:

Laurence C. Baker, NBER and Stanford University, and **Martin L. Brown**, National Cancer Institute, "Effect of Managed Care on Health Care Providers: Evidence from

Mammography"

David M. Cutler, NBER and Harvard University, and **Elizabeth Richardson**, Harvard University, "Measuring the Health of the U.S. Population"

David M. Blau and **Charles Shushe**, University of North Carolina, and **Donna B. Gilleskie**, NBER and University of North Caro-

lina, "The Effect of Health on Employment Transitions of Older Men"; **Jonathan Gruber**, NBER and MIT, **Philip Levine**, NBER and Wellesley College, and **Douglas O. Staiger**, NBER and Harvard University, "Abortion Legalization and Child Living Circumstances: Who is the Marginal Child?" (NBER Working Paper No. 6034)

Baker and **Brown** investigate the effect of managed care on the health care system, focusing on the effects it could have on the number and types of health care providers and their efficiency. In particular, they examine

the relationship between managed care activity and mammography providers. They find that increases in HMO activity are associated with changes in the number of providers, the volume of services produced by

each provider, and the prices they charge. This is consistent with the view that HMOs can have broad effects on health care providers.

Cutler and **Richardson** discuss an economic framework for the mea-

surement of health and present estimates of the health of the population over the past 30 years. They begin by introducing the notion of "health capital," which they define as "the present value of the utility resulting from a person's lifetime health." They identify the set of diseases a person can have and measure the prevalence of these diseases over time; then they estimate quality-of-life for a person with each disease or combination of diseases. Next, they value those quality-adjusted lifeyears in dollars. Their results show that health has been improving over time: over the past two decades, health has increased by about \$300,000 for the average person, and more than that for new-borns. Much of improved health is a result of reduced mortality from cardiovascular disease and increased physical functioning, conditional on having a disease.

The Health and Retirement Survey (HRS) offers newly collected data that are very detailed and useful for reexamining the effect of health on the labor force behavior of older individuals. **Blau, Gilleskie, and Slusher** combine the rich measures of health available in the HRS to create a multidimensional measure that includes both subjective self-reported status and objective diagnosed conditions. They use their measure to explain employment decisions over time. Their preliminary estimates suggest three important qualitative conclusions: First, self-reported measures of general health and disability are the most consistently important health measures used in the employment transition models. Second, there is no evidence to support the common practice of using a single measure of health to explain employment. Third, jointly estimating the

health measures and the employment transitions reduces the estimated impact of the measures of health, although their impact remains quite large in some cases.

Legalization of abortion in five states around 1970, followed by legalization nationwide because of the Roe v. Wade decision, generates natural variation which can be used to estimate the effect of access to abortion. **Gruber, Levine, and Staiger** estimate that the "marginal child" who was not born because of legalization would have been 70 percent more likely to live in a single parent family, 40 percent more likely to live in poverty, 50 percent more likely to receive welfare, and 35 percent more likely to die as an infant. These effects imply that the legalization of abortion saved the government over \$14 billion in welfare expenditures through 1994.

Higher Education

The NBER's Project on Higher Education, directed by Charles T. Clotfelter of NBER and Duke University, organized a meeting in Cambridge on May 16 to discuss recent research in the field. The program was:

John Pencavel, Stanford University, "The Response of Employees to Severance Pay Incentives: The Faculty of the University of California 1991-4"; Discussant: Ronald G. Ehrenberg, NBER and Cornell University; **Caroline M. Hoxby**, NBER and

Harvard University, "Does College Tuition Reflect the Changing Nature of Competition in the Market for Higher Education";

Discussant: Sandra Baum, Skidmore College;

Wilbert van der Klaauw, New York University, "A Regression-Discontinuity Evaluation of the Effect of Financial Aid Offers on College Enrollment";

Discussant: Thomas J. Kane, NBER and Harvard University;

Paula Stephan, Georgia State University, "Capitalizing the Human

Capital of University Professors: The Case in Biotechnology";

Discussant: Irwin Feller, Pennsylvania State University;

Richard J. Murnane, NBER and Harvard University, and **John B. Willett** and **Kathryn P. Boudett**, Harvard University, "Do School Dropouts Benefit from Obtaining a CED? From Post-Secondary Education and Training: The Answers are Related";

Discussant: William F. Becker, Jr., Indiana University.

In the early 1990s, the University of California (UC) faced a serious budget problem. To respond to it, UC used funds from the retirement system to induce older faculty to quit. **Pencavel** analyzes the three waves of early "retirement" programs in the

UC system. He discusses the severance incentives made available to UC faculty, and then analyzes the pattern of "quits" in terms of the monetary inducements that existed. Since UC had a defined benefit program, the severance incentives took the form of

additional pension benefits. Pencavel finds a consistent and unambiguous relationship between the severance probabilities and the replacement ratio (that is, the ratio of the annual pension benefits upon acceptance of the early "retirement" program to the

faculty member's salary). On average, a 10 percent higher severance incentive is associated with about a 7 percent higher severance probability. Unfortunately, this sensitivity varies materially across the three early retirement programs, so the behavior revealed in one program does not provide a very reliable guide to severance in the next program.

The market for college education changed a great deal over the twentieth century, particularly from 1950 to the present. What was once a collection of small, local markets is now a market that is integrated nationally and regionally. These changes in market structure have important implications for tuition pricing, financial aid and scholarships, the distribution of high ability students among colleges, faculty salaries, college endowments, and the distribution of research activities. **Hoxby** illustrates the changes in market structure and the causes of those changes, including: long-distance transportation and telecommunication costs; the GI bill; standardized admissions testing; the information system generated by National Merit Program; standardized financial aid analysis; and tuition reciprocity agreements among states. She concludes by discussing the implications of the changes in the college market.

Van der Klaauw shows how idio-

syncratic features of an East Coast college's financial aid offer process, particularly the simple formula used to rank students into a few groups on the basis of several continuous measures of academic ability, can be used to estimate the effects of financial aid on college enrollment. More generally, he illustrates how more detailed knowledge of the selection mechanism can aid in obtaining reliable estimates of a program's effect.

Stephan asks whether the value of biotech firms that go public is related to the human capital embodied in the university-based scientists affiliated with the firm. Two measures of reputation of the scientists serve as proxies for human capital: number of citations to articles, and receipt of the Nobel Prize. Stephan studies virtually all pharmaceutical biotechnology firms that made initial public offerings in the United States in the early 1990s. She finds a strong, positive relationship between the offer price and the reputation of the scientists. The proceeds raised by going public also are related strongly to reputation, implying that underwriters are not able to offset low offer prices by selling more shares. The market value of the firm also turns out to relate to the reputation of the scientists, and this relationship persists for some time. Stephan concludes that the firms capitalize on the human

capital of university scientists affiliated with the firm in order to raise the resources required for research and development.

Murnane, Willett, and Boudett use data from the National Longitudinal Survey of Youth for the period 1979-91 to address three related questions: 1) Do male school dropouts benefit from obtaining post-secondary education and training? 2) Do male school dropouts benefit from obtaining a GED? 3) How much of the labor market benefits of the GED come from improving access to post-secondary education and training? They find that post-secondary education and training provided by employers does result in wage increases for school dropouts. "Non-company training," provided by both proprietary schools and government-funded programs, does not. Acquisition of a GED results in a modest increase in the wages of school dropouts, with the gain coming in two parts: a small initial increase in wages, followed by a small increase in the rate of wage growth. Those dropouts who use the GED to obtain access to post-secondary education or company training receive sizable increases in wages. However, less than one-quarter of male dropouts who obtain a GED receive company training or complete at least one year of college by age 26.



Meeting on Not-for-Profit Hospitals

The NBER held a discussion of not-for-profit hospitals, organized by David M. Cutler of NBER and Harvard University, at its Cambridge office on May 16. The agenda was:

Frank A. Sloan, NBER and Duke University, "Research on Not-for-Profit and For-Profit Hospitals"

Richard Frank, NBER and Harvard University, "Making Investment Decisions in Not-for-Profit Hospitals"

Martin Gaynor, NBER and Carnegie-Mellon University, "The Changing Structure of Health Care Markets and Antitrust Policy"

Thomas Lee, Partners' Health Care, "Organization, Incentives, and Medical Practice: Partners' Health Care Panel: Measuring the Quality of Care in Hospitals?"

Arnold Epstein, Harvard University, and **Howard Hiatt**, Brigham and Women's Hospital

The first three speakers at the meeting focused on the differences between for-profit and not-for-profit hospitals. **Frank Sloan** and **Richard Frank** discussed why we have both for-profit and not-for-profit hospitals, and asked whether being for-profit versus not-for-profit leads to any difference in behavior. **Martin Gaynor** extended the discussion to the issue of antitrust and consolidation among hospitals. Again, if there is a difference between for-profits and not-for-profits, should the government regulate mergers differently depending on the financial structure of the hospitals involved? In the end, the speakers agreed that on most dimensions, there is very little difference between for-profit and not-for-profit hospitals. To the extent that differences exist, they are in the areas of financing and location choice. In the areas of patient care, access, and abuse of market power, there is little economic evidence suggesting a significant difference.

The consensus among the participants at the meeting was that for-profit and not-for-profit hospitals act in essentially the same way in today's market. They are similar in their provision of care, quality of care, and technology offered. (Public hospitals are a different entity: they provide charity care. For-profit hospitals tend to locate where they will not have to provide charity care.) One major difference, though, is that not-for-profit hospitals cannot raise capital as eas-

ily as for-profits: they are forced to rely on philanthropy as their major source of new capital.

Doctors

The last three speakers at the meeting were physicians invited to discuss how the changes in the medical industry were affecting the ways that doctors provide care and interact with hospitals and insurers. **Dr. Thomas Lee** helped to describe the organizational structure of Partners' Health Care, an organization that contains the two major Boston downtown teaching hospitals, Massachusetts General and Brigham and Women's, as well as a network of smaller hospitals, ambulatory care clinics, and doctors. The new economic reality in health care is that there is less money to be distributed to the various levels in the industry. Hospitals consolidated, partly in order to increase their bargaining power with insurers. Doctors also began to consolidate and form doctors' groups designed to increase their control and to maintain economic rents. The doctors' groups actually serve two purposes. First, they help the doctors in their negotiations over rates they pay to hospitals when they admit their patients. Second, by forming larger groups, doctors can pool their patients and take on more of the risk that had previously been held by the insurance companies, in exchange for more control over the care they provide.

The doctors can monitor themselves within these groups to make sure excessive care is not provided. The movement of doctors into these groups is helping to put the control over deciding what care is excessive into the hands of those best equipped to know.

Quality of Care

Dr. Howard Hiatt examined the question of medical care quality. He presented results from the Harvard Malpractice Study, in which doctors had re-examined the medical charts of about 4 million New York patients. The doctors were looking for patients that had suffered an adverse event during their stay at the hospital in order to determine whether the event was the result of negligence. They then matched malpractice claims data with the hospital data, to see whether those patients who suffered negligent events were suing and, if so, whether they were winning their suits. The results showed great inefficiency on two levels. First, there were far more negligent events than claims paid: roughly 17 negligent events for every successful lawsuit. That suggests too little litigation. However, only 17 percent of the malpractice claims were cases where a negligent event had occurred. That suggests too much litigation. The relevance for health care quality is that litigation, if it operated properly, could be an important check on bad doctors. The current system suggests that many bad doctors are

avoiding punishment, while many good doctors are being wrongly sued.

The last speaker, **Dr. Arnold Epstein**, also was concerned about health care quality, particularly the issue of whether patients take advantage of all of the information available to them regarding the quality of their doctors and hospitals. In New York, doctors and hospitals are ranked annually for performance. The performance rating is the best of its kind, in that it takes patient mix into account when ranking doctors. The consensus among doctors is that the rankings are mostly accurate. The rankings are available to patients,

and are, in fact, publicized in *The New York Times* every year. The surprising results is that patients do not seem to use the information before choosing their doctor. Dr. Epstein pointed out the irony that consumers use all available data before purchasing a car, but not before choosing a heart surgeon. Even many patients who had read the available data often did not know the ranking of the doctor they had chosen. Most participants at the meeting agreed that they would use the rankings, at least to ensure that they did not use any doctor near the bottom of the list. It was also agreed that most peo-

ple would not use the rankings alone. Most people would use other resources as well, such as word of mouth and recommendations from friends and other doctors, and then choose where all of the sources tend to agree. Consumers that choose their doctors on the basis of quality, just as consumers that sue doctors following poor care, would be a powerful check maintaining high quality in medical care. The fact that consumers do not seem to take advantage of all of the resources available to them is therefore troubling.

Jason Barro assisted in the preparation of this article.

Additional Papers

Additional Papers are not official NBER Working Papers but are listed here as a convenience to NBER researchers and prospective readers. Additional Papers are free of charge to Corporate Associates. **For all others there is a charge of \$5.00 per Additional Paper requested. (Out-**

side of the United States, add \$10.00 for postage and handling.) Advance payment is required on all orders. Please do not send cash. Request Additional Papers by name, in writing, from: Additional Papers, NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138-5398.

"Foreign Direct Investment, Political

Resentment, and the Privatization Process in Eastern Europe," by **Hans-Werner Sinn** and **Alfons J. Weichenrieder**.

"Wherefore a Prudent Fiscal Policy?" by **Herschel I. Grossman**.

"Election Goals and Income Redistribution: Recent Evidence from Albania," by **Anne Case**.

NBER Book Catalog Available On-Line

NBER Books, 1924-96, an updated catalog, is now available on-line at the NBER's web site ([HTTP://www.nber.org](http://www.nber.org)). If you would prefer a hard copy, please request by writing to: Book Catalog, Publications Department, NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138-5398.

Bureau Books

The following volumes may be ordered directly from the University of Chicago Press, Order Department, 11030 South Langley Avenue, Chicago, IL 60628-2157. E-mail: order@uchicago.edu. 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.

The Welfare State in Transition

The Welfare State in Transition, edited by NBER Research Associates Richard B. Freeman and Robert H. Topel, and Birgitta Swedenborg, is available from the University of Chicago Press for \$74.00. This volume is the result of a 1995 conference held in Stockholm which brought together Swedish and U.S. economists to discuss the changing Swedish economy. Once heralded as offering a new way of operating a capitalist system, through reliance on state unions and employer associations and the use of massive welfare redistributions, the Swedish economy plunged into crisis in the 1990s. Now Sweden is reassessing its welfare state and supporting economic institutions in the face of huge budget deficits after its most severe economic downturn since the 1930s.

The papers in this volume cover a wide range of topics, including economic growth and productivity, public employment, tax and wage policy, unemployment, and international competitiveness. At bottom, they

concern whether Sweden can preserve the successes of the welfare state while reducing its excesses. Thus, this volume should be of interest not only to economists, but also to sociologists and political scientists, and to U.S. policymakers who may use the Swedish experience as a lesson for our own country.

Freeman is a professor of economics at Harvard University and director of the NBER's Program on Labor Studies; Topel is a member of that program and a professor at the University of Chicago's Graduate School of Business. Swedenborg is deputy director of SNS, the Center for Business and Policy Studies, in Stockholm.

Regionalism versus Multilateral Trade Arrangements

Volume 6 in the NBER-East Asia Seminar on Economics series, *Regionalism versus Multilateral Trade Arrangements*, will be available from the University of Chicago Press in August for \$59.00. The editors of the volume, both members of the NBER's Program in International Finance and Macroeconomics, are seminar co-organizers Takatoshi Ito of Hitotsubashi University and Anne O. Krueger of Stanford University.

Until the 1980s, the conventional wisdom was that an open multilateral trading system was the wave of the future. However, in the 1980s, preferential trading agreements began to emerge as significant factors affecting world trade. This volume addresses such questions as: will regional arrangements lead to more open multilateral trade, or will they hobble

further multilateral liberalization? What factors are conducive to further strengthening, versus detracting from, the multilateral system?

This volume should appeal not only to academic economists, but also to policymakers involved in trade issues, and to those whose businesses depend on international trade and its regulation.

Health and Welfare during Industrialization

Health and Welfare during Industrialization, edited by NBER Research Associates Richard H. Steckel and Roderick Floud, is now available from the University of Chicago Press for \$72.00. This volume, the result of a 1995 conference held in Cambridge, includes an introductory and a concluding chapter and ten papers that examine evidence on health and welfare during and after industrialization in the United States, England, Sweden, the Netherlands, France, Germany, Japan, and Australia. It seeks to place the standard-of-living debate in comparative international perspective by examining several indicators of the quality of life, including income, health wages, education and inequality. The authors use not only traditional measure of health but also recently collected data on stature, which measure nutritional status.

This volume should be of interest to both economists and historians. Its editors are well known in this field, and have assembled a distinguished group of international scholars to contribute to the book. Floud is a professor at London Guildhall University in England, and Steckel is at Ohio State University.

Current Working Papers

NBER Working Papers On-Line

The NBER is pleased to announce that the full texts of Working Papers issued since September 1994 are now available over the Internet. Access to these texts is currently available free of charge to anyone who is located at a university or other organization that subscribes to the (hard copy) Working Paper series. We also expect to make this service more widely available in the future through the sale of electronic subscriptions and individual on-line Working Papers.

To access NBER Working Papers on-line, visit our Web site at

<http://www.nber.org/wwp.html>

If you believe that your organization subscribes, but you cannot access the on-line Working Paper service, you may e-mail the NBER at wwp@nber.org for more information and assistance. If you are unsure as to whether your organization subscribes to the NBER Working Paper series, please ask your librarian.

Individual copies of NBER Working Papers, Historical Factors in Long-Run Growth Papers, and Technical Papers are available free of charge to Corporate Associates. **For all others, there is a charge of \$5.00 per paper requested. (Outside of the United States, add \$10.00 per order for postage and handling.) Advance payment is required on all orders. MasterCard and Visa are accepted. Please do not send cash.** To order, call the Publications Department at (617) 868-3900. Please have ready the number(s) of any Working Paper(s) you wish to order.

Subscriptions to the full NBER Working Paper series include all 400 or more papers published each year. Subscriptions are free to Corporate Associates. For others within the United States, the standard rate for a full subscription is \$1480; for academic libraries and faculty members, \$750. Higher rates apply for foreign orders. **Partial Working Paper subscriptions**, delineated by program, are also available.

For further information, see our Web site, or please write: National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138-5398.



Journal of Economic Literature (JEL) subject codes, when available, are listed after the date of the paper, followed by the program(s) of research represented by each paper. Papers not associated with an NBER program are listed as Miscellaneous. All Historical Factors in Long-Run Growth Papers are in the Development of the American Economy program.

Abstracts of all papers issued since April 1997 are presented below. For previous papers, see past issues of the *NBER Reporter*. Working Papers are intended to make results of NBER research available to other economists in preliminary form to encourage discussion and suggestions for revision before final publication. They are not reviewed by the Board of Directors of the NBER.

NBER Working Papers

Do Wages Rise with Job Seniority? A Reassessment

Joseph G. Altonji and
Nicolas Williams

NBER Working Paper No. 6010

April 1997

JEL Nos. J31, J41

Labor Studies

We provide new estimates of the return to job seniority using data similar to that used by Abraham and Farber [1987], Altonji and Shakotko [1987], and Topel [1991], as well as a new Panel Survey of Income Dynamics (PSID) sample. Topel obtains much larger estimates than we do because he uses a wage and a tenure that refer to different years; he uses the Current Population Survey to detrend the PSID; and there are differences between his estimator and Altonji and Shakotko's (AS) estimator. The data used by both AS and Topel point to an effect of 10 years of tenure on the log wage that is equal to .11. This is above AS's preferred estimate of .066 but far below Topel's estimate. However, this estimate is probably biased upward by the wage measure used in all three studies. We also obtain a modest estimate of the return to seniority using data for 1983-91.

On The Pricing of Intermediated Risks: Theory and Application to Catastrophe Reinsurance

Kenneth A. Froot and
Paul G. J. O'Connell

NBER Working Paper No. 6011

April 1997

JEL No. 400

Asset Pricing, Corporate Finance,
and International Finance and
Macroeconomics

We model the equilibrium price and quantity of risk transfer between firms and financial intermediaries.

Value-maximizing firms have downward sloping demands to cede risk, while intermediaries, who assume risk, provide a less-than-fully-elastic supply. We show that equilibrium required returns will be "high" in the presence of financing imperfections that make intermediary capital costly. Moreover, financing imperfections can give rise to intermediary market power, so that small changes in financial imperfections can lead to large changes in price.

We develop tests of this alternative against the null that the supply of intermediary capital is perfectly elastic. We take the U.S. catastrophe reinsurance market as an example, using detailed data from Guy Carpenter & Co., covering a large fraction of the catastrophe risks exchanged during 1970–94. Our results suggest that the price of reinsurance generally exceeds "fair" values, particularly in the aftermath of large events, that market power of reinsurers is not a complete explanation for such pricing, and that reinsurers' high costs of capital appear to play an important role.

Spurts in Union Growth: Defining Moments and Social Processes

Richard B. Freeman

NBER Working Paper No. 6012

April 1997

Labor Studies

This paper examines the spurt in U.S. unionism during the Great Depression. I argue that this spurt is understood better as resulting from a Depression-sparked endogenous social process than from New Deal legislation and Congress of Industrial Organizations (CIO) leadership. I offer four pieces of evidence for this interpretation: 1) the ubiquity of spurts in unionization across countries, particularly in the Depression; 2) the widespread use of recognition strikes during the 1930s spurt; 3) the growth of CIO affiliates with little

CIO financial or organizing aid; and 4) the growth of American Federation of Labor (AFL) affiliated unions.

I model unionization as the outcome of a conflict between union/worker organizing activity and employer opposition, both of which depend on the proportion organized. Union organizing and activity rises, then falls, with density. Employer opposition is high at low densities, but falls once unions gain control of the relevant market. The result is a nonlinear difference equation that produces spurts of union growth. The Depression initiated a spurt by increasing worker desires for unions and by raising density above the "critical level" for rapid growth in many industries.

The Incidence of Medicare

Mark McClellan and

Jonathan Skinner

NBER Working Paper No. 6013

April 1997

JEL Nos. H2, I1

Aging, Health Care, and Public Economics

The Medicare program transfers more than \$200 billion annually from taxpayers to beneficiaries. This paper considers the "incidence" of such transfers. First, we examine the net tax payments and program expenditures for individuals in different lifetime-income groups. We find that Medicare has led to net transfers from the *poor* to the *wealthy*, as a result of relatively regressive financing mechanisms, and of the higher expenditures and longer survival times of wealthier beneficiaries. Even with recent financing reforms, net transfers to the wealthy are likely to continue for at least several more decades. Second, we consider the insurance value of Medicare in providing a missing market for health insurance. With plausible parameter values, our simulations suggest that low-income elderly benefitted more than the dol-

lar flows would suggest. Including this insurance value implies that, on net, there is faint redistribution from the highest income deciles to the lowest income deciles. We also consider the likely distributional impact of several proposed reforms in Medicare financing and benefits.

The Control of Strategic Alliances: An Empirical Analysis of Biotechnology Collaborations

Josh Lerner and

Robert P. Merges

NBER Working Paper No. 6014

April 1997

JEL Nos. O32, O34

Productivity

We examine the determinants of control rights in technology strategic alliances between biotechnology firms and pharmaceutical corporations, as well as with other biotechnology firms. We undertake three clinical studies and an empirical analysis of 200 contracts. Consistent with the framework developed by Aghion and Tirole [1994], the allocation of control rights to the smaller party increases with its financial health. The empirical evidence regarding the relationship between control rights and the stage of the project at the time the contract is signed is less consistent with theoretical frameworks.

Understanding the Great Depression: Lessons for Current Policy

Stephen G. Cecchetti

NBER Working Paper No. 6015

April 1997

JEL Nos. E58, G28, N12

Monetary Economics

Over the four years beginning in the summer of 1929, financial markets, labor markets, and goods markets all virtually ceased to function. Throughout this, the government

policymaking apparatus seemed helpless. Since the end of the Great Depression, macroeconomists have labored diligently in an effort to understand the circumstances that led to the wholesale collapse of the economy. What lessons can we draw from our study of these events?

In this essay, I argue that the Federal Reserve played a key role in nearly every policy failure during this period, so the major lessons learned from the Great Depression concern the function of the central bank and the financial system. In my view, there is now a broad consensus supporting three conclusions. First, the collapse of the financial system could have been stopped if the central bank had properly understood its function as the lender of last resort. Second, deflation played an extremely important role in deepening the Depression. Third, the gold standard, as a method for supporting a fixed exchange rate system, was disastrous.

Issues in the Design of Monetary Policy Rules

Bennett T. McCallum

NBER Working Paper No. 6016

April 1997

JEL Nos. E52, E58

Economic Fluctuations and Growth and Monetary Economics

This survey paper covers the following topics: distinguishing rules from discretion in practice; the feasibility of rule-like behavior by an independent central bank; optimal control versus robustness as research strategies; choice among target variables; growth-rate versus growing-level target paths; feasibility of interest rate and monetary base instruments; nominal indeterminacy as distinct from solution multiplicity; root-mean-square performance measures with interest rate and monetary base instruments; operationality of rule specifications; stochastic versus counterfactual historical simulation

procedures; interactions between monetary and fiscal policies; and the fiscal theory of the price level.

Sectoral Productivity, Government Spending, and Real Exchange Rates: Empirical Evidence for OECD Countries

Menzie D. Chinn

NBER Working Paper No. 6017

April 1997

JEL Nos. F31, F41

International Finance and Macroeconomics

This paper investigates the long- and short-run determinants of the real exchange rate using a panel of data for 14 OECD countries. I analyze the data using time series, panel unit root, and panel cointegration methods.

Two dynamic productivity-based models motivate the empirical exercise. The candidates for determinants include: productivity levels in the traded and the nontraded sectors; government spending; the terms of trade; income per capita; and the real price of oil. The empirical results indicate that it is easier to detect cointegration in panel data than in the available time series. Moreover, the estimate of the rate of reversion to a cointegrating vector defined by real exchange rates and sectoral productivity differentials is estimated with greater precision as long as homogeneity of parameters is imposed upon the panel. It is more difficult to find evidence for cointegration when allowing for heterogeneity across currencies.

The most empirically successful model of the real exchange rate includes sectoral productivity measures in the long-run relation and government spending in the short-run dynamics.

Public-Private Interaction and the Productivity of Pharmaceutical Research

Iain Cockburn and

Rebecca Henderson

NBER Working Paper No. 6018

April 1997

JEL Nos. H8, L2, L6, O3

Productivity

We examine the impact of publicly funded biomedical research on the in-house research of the for-profit pharmaceutical industry. Qualitative analysis of the history of the discovery and development of a sample of 21 significant drugs, and a program of interviews with senior managers and scientists, reveals a complex and often bidirectional relationship between the public and private sectors of the industry, illustrating the difficulties inherent in estimating the rate of return to public support of basic research. This analysis also highlights the importance for private sector firms of maintaining close connections to the "upstream" scientific community, which requires them to make significant investments in in-house basic research and adopting appropriate internal incentives and procedures. We measure the extent and nature of this "connectedness" using data on coauthorship of scientific papers between pharmaceutical company scientists and publicly funded researchers. These measures are correlated significantly with firms' internal organization, as well as their research performance in drug discovery as measured by important patents per research dollar. The size of the estimated impact of "connectedness" to private research productivity implies a substantial return to public investments in basic research.

Regional Integration and Foreign Direct Investment **Magnus Blomström and Ari Kokko**

NBER Working Paper No. 6019

April 1997

JEL Nos. F15, F23

International Trade and Investment

This paper deals with the investment effects of regional integration agreements and discusses how such arrangements may affect inward and outward foreign direct investment flows in the integrating region. After setting up a conceptual framework for the analysis, we provide three studies focusing on different kinds of regional integration: North-North integration (Canada joining CUSFTA); North-South integration (Mexico's accession to NAFTA); and South-South integration (MERCOSUR). Our main conclusion is that the responses to an integration agreement depend largely on the environmental change brought about by the agreement and the locational advantages of the participating countries and industries. Moreover, the findings suggest that the most positive impact on FDI has occurred when regional integration agreements have coincided with domestic liberalization and macroeconomic stabilization in the member countries.

Ethical Foundations of Financial Regulation **Edward J. Kane**

NBER Working Paper No. 6020

April 1997

Corporate Finance

Regulation consists of rulemaking and enforcement. Economic theory offers two complementary rationales for regulating financial institutions. Altruistic public-benefits theories treat rules as governmental instruments for increasing fairness and efficiency across society as a whole. In contrast, agency-cost theory recog-

nizes that incentive conflicts and coordination problems arise in multi-party relationships, and that regulation introduces opportunities for imposing rules that enhance the welfare of one sector of society at the expense of another.

Each rationale sets different goals and assigns responsibility for choosing and adjusting rules differently. Altruistic theories routinely assign regulation to governmental entities. These theories empower government officials to search for market failures and to correct them. It is taken for granted that society may rely on well-intentioned government officials to use their discretion to choose actions that advance the common good.

Agency-cost theories portray regulation as a mechanism for enhancing the quality of financial services by improving incentives to perform contractual obligations in stressful circumstances. These private-benefits theories count on self-interested parties to spot market failures and to correct them by opening additional markets. In financial services, markets for regulatory services produce outside discipline that controls and coordinates industry behavior. Institutions benefit from regulation that: enhances customer confidence; increases the convenience of customer transactions; or generates cartel profits. Agency-cost theories emphasize the need to reconcile conflicts between the interests of institutions, customers, regulators, and taxpayers.

To overcome nontransparency and disinformation in the performance measurements that government regulators are permitted to transmit to taxpayers, society must strive to allocate regulatory rights, duties, and rewards in ways that reduce agency costs. To achieve accountability, public-service contracts must be supported by information flows that clarify the consequences of the policy choices being made.

Only if we assume a free flow of information may we suppose that, in long-run equilibrium, competition between government and private regulators would simultaneously improve efficiency, limit the size of net regulatory burdens, and break down cartel pricing. In a world with incomplete or asymmetric information, statutory constraints on performance measurement and the exercise of individual regulatory discretion provide a way to limit departures from socially optimal patterns of rulemaking and enforcement.

Garbage and Recycling in Communities with Curbside Recycling and Unit-Based Pricing **Thomas C. Kinnaman and Don Fullerton**

NBER Working Paper No. 6021

April 1997

JEL Nos. H71, Q28

Public Economics

We estimate the impact of a user fee and a curbside recycling program on amounts of garbage and recycling, allowing for the possibility of endogenous policy choices. Previous estimates of the effects of these policies could be biased if unobserved variables, such as local preference for the environment, impact both the probability of implementing the policies and the levels of garbage and recycling in the community. We estimate a simple sequential model of local policymaking using original data gathered from a large cross-section of communities with user fees, combined with an even larger cross-section of towns without user fees but some of which have curbside recycling programs. The combined dataset is larger and more comprehensive than any used in previous studies. Without correction for endogenous policy, the price per unit of garbage collection has a negative