

formed by suppliers. They also play a key role in explaining changes in manufacturing TFP growth over time. Changes in the contribution made by direct productivity spillovers to TFP growth account for almost half of the

slowdown in TFP growth in manufacturing between 1958–67 and 1967–77, and 20 percent of the TFP growth recovery in this sector between 1967–77 and 1977–87. Changes in R and D intensity and

embodied R and D are relatively unimportant in explaining movements in manufacturing TFP growth over these three periods.

DAE Program Meeting

Members of the NBER's Program on the Development of the American Economy held their spring meeting in Cambridge on March 14 and 15. Program Director Claudia Goldin, also of Harvard University, and John J. Wallis, NBER and University of Maryland, chose the following papers for discussion:

Naomi R. Lamoreaux and **Kenneth L. Sokoloff**, NBER and University of California,

Los Angeles, "Inventors, Firms, and the Market for Technology: U.S. Manufacturing in the Late Nineteenth and Early Twentieth Centuries"

Shawn E. Kantor and **Price V. Fishback**, NBER and University of Arizona, "The Political Economy of Workers' Compensation Benefit Levels, 1910–50"

Eugene N. White, NBER and Rutgers University, "California

Banking in the Nineteenth Century: The Art and Method of the Bank of A. Levy

Robert A. Margo, NBER and Vanderbilt University, "Wages in California during the Gold Rush"

Paul Rhode, NBER and University of North Carolina, "California's Emergence as the Second Industrial Belt: the Pacific Coast Tire and Automobile Industries"

Recent scholarly literature explains the spread of in-house research laboratories during the early twentieth century by pointing to the information problems involved in contracting for technology. **Lamoreaux** and **Sokoloff** argue, by contrast, that these difficulties have been overemphasized — that, in fact, a substantial trade in patented inventions developed over the course of the nineteenth century, much of it taking the form of transactions conducted at arms-length through the market. This expansion of trade in technology made possible a growing division of labor, as inventors increasingly took advantage of their greater ability to sell off rights to patented technologies and focused their energies and resources on invention itself. Firms in turn responded to the expansion of this trade by developing capabilities that enabled them to learn about and assess externally generated inventions. Although it is true that by the early twentieth century large firms also were beginning to invest in

developing their internal inventive capabilities, in doing so they faced a number of significant problems. Most importantly, they had to overcome resistance to contracts requiring employees to sign over patents to their employers, and they had to reduce the high turnover rates that made such requirements effectively unenforceable. The increased costs of inventive activity and the greater risks borne by independent inventors by the early twentieth century helped firms make their case. But there was still a lot of organizational learning involved. Hence where other scholars have emphasized the difficulties of contracting for technology in the market and the relative ease of integrating invention and production within the firm, **Lamoreaux** and **Sokoloff** reverse the story. Economic actors at that time had a great deal of experience contracting for new technological ideas in the market; what they did not know how to do, and had to spend a great deal of time and energy learning, was managing cre-

ative individuals within the firm.

Fishback and **Kantor** note that in the case of workers' compensation legislation, most members of the key interest groups with a stake in the legislation expected to benefit from it. However, during the first 20 years of experience with workers' compensation, the various interest groups actively fought over the level of benefits paid because the benefit level determined each group's share of the rents created by workers' compensation. The disputes ultimately were settled by state legislators, who appear to have been focusing more on appeasing powerful interest groups than on pleasing the median voter or choosing an efficient political economic solution. In states where unions and political reform movements were weak, legislators appeared to ignore the demands of the numerous but politically weak nonunion workers, instead focusing their attention on the demands of employers. The employers' success in pressing for low benefits was tempered in

areas where organized labor was strong, where political reform movements led to shifts in party control of the houses of the legislature, and where agencies had been established to administer workers' compensation.

Although there is a large literature on banking in nineteenth century America, relatively little work has been done on the actual lending practices of banks. **White** examines the lending practices of the Bank of A. Levy. Using data from its loan book combined with census and other records, he produces a detailed picture of the loan portfolio. White shows that reputation played a key role. Furthermore, while the bank was on the agricultural frontier, it appears to have been well integrated into financial markets.

The California Gold Rush (1847–54) was an unusual “natural experiment” — an unexpected shock of tremendous size that required the costly reallocation of labor to a virtually unpopulated region. Using newly-collected archival data, **Margo**

presents the estimates of nominal and real wages in Gold Rush California. He finds that real wages rose sharply during the early years of the Rush (1848–52), declined sharply in 1852, and then remained roughly constant for the remainder of the decade. Although the Rush itself was transitory, it left California wages permanently higher, as the state integrated into the (high-wage) U.S. economy. Margo also estimates the “long-run” elasticity of labor supply into Gold Rush California. His estimates range between 2 and 3, roughly half of the comparable elasticity of labor supply into Alaska during the Pipeline era (1973–6).

California's emergence as America's second industrial belt is one of the most dramatic transformations in the U.S. economy over the 20th century. Yet this shift in the locus of production, markets, and resources has been virtually ignored in the economic history literature. **Rhode** investigates one key aspect of this transformation: the spread of mass-

production manufacturing to the Pacific Coast. He analyzes the economic forces leading to the establishment of the auto and tire branch plants in the West, and examines the concerns of many Westerners that branch plant production contributed to their region's status as an “economic colony” of the East. Rhodes emphasizes the growth of the regional market in explaining the location of these mass-production industries in the West. As the western market expanded, more firms found it profitable to set up western branches and the region's self-sufficiency increased. Contrary to the westerners' fears, the national firms proved quite responsive to local market conditions. An analysis comparing the minimum efficient scale of plant operations and regional sales reveals no significant lag in the establishment of western plants. Yet, in line with some of the concerns, the spillovers of these industries to California manufacturing appears limited.

International Finance and Macroeconomics

Members and guests of the NBER's Program on International Finance and Macroeconomics, directed by Andrew K. Rose of University of California, Berkeley, met in Cambridge on March 24. Their agenda, organized by Rose and Charles M. Engel, NBER and University of Washington, was:

Michael D. Bordo, NBER and Rutgers University, and **Ronald MacDonald**, University of Strathclyde, “Violations of the Rules of the Game and the Credibility of the Classical Gold Standard, 1880–1914.” Discussants: Jose M. Campa, NBER and New York University, and Peter Garber, Brown University.

V.V. Chari, University of Minnesota, and **Patrick Kehoe**, NBER and

University of Pennsylvania, and **Ellen McGrattan**, NBER and Federal Reserve Bank of Minneapolis, “Monetary Shocks and Real Exchange Rates in Sticky Price Models of International Business Cycles.” (NBER Working Paper No. 5876).

Discussants: Alan C. Stockman, NBER and University of Rochester, and Dale Henderson, Federal Reserve System.

Maurice Obstfeld, NBER and University of California, Berkeley, and **Alan M. Taylor**, NBER and Northwestern University, “Nonlinear Aspects of Goods-Market Arbitrage and Adjustment: Heckscher's Commodity Points Revisited.”

Discussants: Menzie D. Chinn, NBER and University of California,

Santa Cruz, and Richard H. Clarida, NBER and Columbia University.

Karen K. Lewis, NBER and University of Pennsylvania, “Consumption, Stock Returns, and the Gains from International Risksharing.” (NBER Working Paper No. 5410).

Discussants: Michael P. Dooley, NBER and University of California, Santa Cruz, and Robert J. Hodrick, NBER and Columbia University.

Kenneth A. Froot, NBER and Harvard University, and **Emil Dabora**, CS First Boston, “How Are Stock Prices Affected by the Location of Trade?”

Discussants: Patrick K. Asea, NBER and University of California, Los Angeles, and Shang-jin Wei, NBER and Harvard University.

Bordo and **MacDonald** examine the finding that the Classical gold standard represented a credible, well behaved, target zone system from the perspective of the well documented failure of countries to play by the rules of the game in the classical period. In particular, they test the hypothesis that a credible target zone can confer on a country a degree of independence in the operation of its monetary policy. They propose a number of ways of testing this proposition and implement them for a newly-created monthly database over the period 1880–1913. They demonstrate that the Classical gold standard worked in the way that the hypothesis predicted. This would seem to have an important bearing on the kind of institutional framework required for a modern day target zone (such as the exchange rate mechanism) to function effectively and, in particular, to weather speculative attacks.

Chari, Kehoe and **McGrattan** examine large and persistent deviations from purchasing power parity in the data on real exchange rates. Recent work has shown that to a large extent these movements are driven by deviations from the law of one price for traded goods. In the data, real and nominal exchange rates are about 6 times as volatile as relative price levels, and both are highly persistent, with serial correlations of 0.85 and 0.83, respectively. The authors develop a sticky price model with price discriminating monopolists, which produces deviations from the law of one price for traded goods. Their benchmark model, which has prices set for one quarter at a time and a unit con-

sumption elasticity of money demand, does not come close to reproducing these observations. A model which has producers setting prices for six quarters at a time and a consumption elasticity of money demand of 0.27 does much better. In it, real and nominal exchange rates are about three times as volatile as relative price levels and exchange rates are persistent, with serial correlations of 0.65 and 0.66 respectively.

Obstfeld and **Taylor** propose that analysis of purchasing power parity and the law of one price should explicitly take into account the possibility of “commodity points” — thresholds delineating a region of no central tendency among relative prices, possibly because of a lack of perfect arbitrage in the presence of transaction costs and uncertainty. Their model performs well using post-1980 data, and yields estimates that appear quite reasonable: adjustment outside the thresholds might imply half-lives of price deviations measured in months rather than years, and the thresholds correspond to popular rough estimates as to the order of magnitude of actual transport costs. The estimated commodity points appear to be related positively to objective measures of market segmentation, notably nominal exchange rate volatility.

Standard theoretical models predict that domestic residents should diversify their portfolios into foreign assets much more than is observed in practice. Whether this lack of diversification is important depends on the potential gains from risksharing. General equilibrium models and consumption data tend to find that the costs are small, typically less than

one half percent of permanent consumption. On the other hand, stock returns imply gains that are several hundred times larger. **Lewis** finds that there are significantly different trends in risk-adjusted consumption growth, primarily arising from either the much higher variability of stocks, or the higher degree of risk aversion required to reconcile an international equity premium. Furthermore, contrary to conventional wisdom, treating stock returns as exogenous does not necessarily imply greater gains.

Froot and **Dabora** examine pairs of large, “Siamese twin” companies whose stocks are traded around the world but have different trading and ownership habitats. The twins pool cashflows so, with integrated markets, twin stocks should move together. In contrast, the relative prices of twin stocks appear excessively correlated with the markets on which they are most intensively traded; that is, a twin’s relative price rises when the market on which it is relatively intensively traded rises. The authors examine several explanations for this phenomenon: the discretionary use of dividend income by parent companies; differences in parent-company expenditures; voting rights issues; currency fluctuations; ex-dividend-date timing issues; and tax-induced investor heterogeneity. Their results are not consistent with these explanations, but appear better explained by the hypotheses that: 1) country-specific sentiment shocks affect share price movements of locally-traded stocks in proportion to their trading/ownership intensity, or 2) investors are rational, but markets are segmented by frictions other than international transactions costs.

Corporate Finance Members Meet

Members of the NBER's Program on Corporate Finance held their spring program meeting in Cambridge on April 11. Program Director Robert W. Vishny, also of the University of Chicago, chose the following papers for discussion:

Kenneth A. Froot, NBER and Harvard University, and **Paul O'Connell**, Harvard University, "On Pricing of Intermediated Risks: Theory and Application to Catastrophe Reinsurance." Discussant: Rene M. Stulz, NBER and Harvard University.

Rafael LaPorta, Harvard University and **Florencio Lopez-de-Silanes**, NBER and Harvard University, "The Benefits of Privatization: Evidence from Mexico." Discussant: Luigi Zingales, NBER and University of Chicago.

Assem Safieddine, Michigan State University, and **Sheridan Titman**, NBER and Boston College, "Debt and Corporate Performance: Evidence from Unsuccessful Takeovers." Discussant: Laurie Hodrick, Columbia University.

Gregor M. Andrade, University of Chicago, and **Steven N. Kaplan**, "How Costly is Financial (Not Economic) Distress? Evidence from Highly Leveraged Transactions that Became Distressed." Discussant: David S. Scharfstein, NBER and MIT.

Brian Hall, Harvard University, and **Jeffrey Liebman**, NBER and Harvard University, "Are CEOs Really Paid Like Bureaucrats?" Discussant: Karen Wruck, Harvard University.

Froot and **O'Connell** model the equilibrium price and quantity of risk transfer between firms and financial intermediaries. They show that equilibrium prices will be "high" in the presence of financing imperfections that make intermediary capital costly. Moreover, small changes in financial imperfections can give rise to large changes in price. Taking the U.S. catastrophe reinsurance market as an example and using detailed data covering 1970-94, they find 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 cost of capital appears to play an important role.

Criticisms of privatization have centered around the possibility that the observed higher profitability of privatized companies comes at the expense of the rest of society. **LaPorta** and **Lopez-de-Silanes** focus on two of the most likely channels for social losses: 1) increased prices as firms capitalize on their market power; and 2) layoffs and lower wages as firms seek to roll back generous labor contracts. Using data for all 218 nonfinancial privatizations

that took place in Mexico between 1983 and 1991, they find that privatization is followed by a 24 percentage point increase in the ratio of operating income to sales. They decompose those gains in profitability as follows: 15 percent of the increase is attributable to higher product prices; 33 percent represents a transfer from laid-off workers; and the remaining 52 percent comes from productivity gains. Transfers from society to the firm are offset partially by taxes which absorb slightly over half the gains in operating income. Finally, deregulation appears to be associated with faster convergence to industry benchmarks.

In a sample of 573 unsuccessful takeovers, **Safieddine** and **Titman** find that on average the failed targets significantly increase their debt levels. Failed targets that increase their debt levels more than the median: are less likely to be taken over in the future; decrease investment; sell off assets; reduce employment; increase the focus of their firms; and have better operating performance in the five years after the takeover attempt than failed target firms that increase their debt levels less than the median. In addition, those failed target firms that

most increase their leverage outperform their benchmarks in the five years following the failed offer. The stock prices of the failed targets that increase their leverage less than the median do very poorly over the following five years if they are not subsequently taken over. This suggests that debt helps firms to remain independent, not because it entrenches managers, but because it commits the managers to making the improvements that would have been made by the bidding firm.

Andrade and **Kaplan** study 29 highly leveraged transactions (HLTs) of the 1980s that subsequently became financially distressed. High leverage, not poor firm performance or poor industry performance, is the primary cause of financial distress for these firms: all of the sample firms have positive operating income at the time of distress. The net effect of the HLT and the distress is to leave the firm's value slightly higher. Operating margins of the distressed firms increase immediately after the HLT, decline when the firms become distressed and while they are distressed, but then rebound after the distress is resolved. Consistent with some costs of financial distress, Andrade and

Kaplan find unexpected cuts in capital expenditures, undesired asset sales, and costly managerial delay in restructuring. However, the costs are modest on average. The authors conclude that the costs of financial distress are related to initial HLT capital, but not to the complexity of the firm's capital structure, the time spent in distress of default, or industry performance.

Hall and **Liebman** use a new 15-

year panel dataset of CEOs in large U.S. firms, and report a variety of pay-to-performance measures, using a broad measure of CEO compensation that includes changes in the value of CEO holdings of stock and stock options. They find that CEO compensation is highly responsive to firm performance. For example, for only a moderate change in firm performance, the compensation of the median CEO in their sample in-

creases by almost 50 percent, which represents about \$1.5 million. They also document that both the level of CEO compensation and the sensitivity of CEO compensation to firm performance have grown dramatically over the past 15 years. The compensation of the mean CEO in their sample increased by 207 percent from 1980 to 1994.

Program Meeting on Monetary Economics

The spring program meeting of the NBER's Monetary Economics Program, whose director is N. Gregory Mankiw of Harvard University, took place in Cambridge on April 18. Susanto Basu, NBER and University of Michigan, and Stephen G. Cecchetti, NBER and Ohio State University, chose the following papers for discussion:

Miquel Faig, University of Toronto, "Investment Irreversibility in General Equilibrium: Capital Accumulation, Interest Rates, and the Risk Premium"

Discussant: Narayana Kocherlakota, Federal Reserve Bank of Minneapolis

Jason G. Cummins, New York University, and **Kevin A. Hassett** and **Stephen D. Oliner**, Federal Reserve Board, "Investment Behavior, Internal Funds, and Observable Expectations"

Discussant: Simon Gilchrist, Boston University

Joe Peck, Boston College, and **Eric S. Rosengren**, Federal Reserve Bank of Boston, "The International Transmission of Financial Shocks: The Case of Japan"

Discussant: Anil K. Kashyap, NBER and University of Chicago

Harald Uhlig, Tilburg University, "Long-Term Debt and the Political Support for a Monetary Union"

Discussant: Fausto Spolaore, Ohio State University

Daniel Levy, Emory University, **Mark Bergen**, University of Minnesota, and **Shantanu Dutta**, University of Southern California, "State-Dependent Pricing and Price Rigidity: Direct Evidence from Store-Level Data"

Discussant: John V. Leahy, NBER and Harvard University

Harold L. Cole, Federal Reserve Bank of Minneapolis, and **Lee E. Ohanian**, University of Minnesota, "Shrinking Money and Monetary Business Cycles"

Discussant: A. Craig Burnside, The World Bank

Irreversibility depresses risk-free rates, especially in booms, and magnifies risk premiums, especially in downturns. **Faig's** model calibrated to U.S. data for 1929-94 shows that investment irreversibility has a positive effect on capital accumulation and growth. Even if this effect is small, it is associated with large effects on risk premiums and interest rates. Thus, without incredibly large coefficients of risk aversion, the model can deliver large risk premiums, low risk-free rates, procyclical premiums on risk, mean reversion of

asset prices, and realistic cyclical patterns of interest rates.

Cummins, Hassett, and Oliner use earnings forecasts from securities analysts to construct observable approximations to expected marginal q in a large firm-level panel dataset. They find that investment responds significantly — in both economic and statistical terms — to "observable" marginal q . They use the earnings forecasts to construct the component of beginning-of-period internal funds that is uncorrelated with expected future profitability. They find that this

measure of liquidity is not correlated with investment behavior, even for selected subsamples of firms — those paying no dividends and those without bond ratings — that have been found to be "liquidity constrained" in previous studies.

Peck and Rosengren investigate the extent to which the sharp decline in Japanese stock prices was transmitted to the United States via U.S. branches of Japanese parent banks, and identify a supply shock to U.S. bank lending that is independent of U.S. loan demand. They find that

binding risk-based capital requirements associated with the decline in the Japanese stock market resulted in a decline in commercial lending by Japanese banks in the United States that was both economically and statistically significant.

Uhlig examines the role of long-term debt for the political support of a monetary union or, more generally, an inflation-reduction policy. The central idea is that the decision about membership in the union leads to a redistribution between debtors and creditors, if they are holding long-term debt with a nominally fixed interest rate. A government of a high inflation country might try to exploit this effect strategically by selling more long-term debt denominated in its own currency at a fixed nominal rate to its citizens. Uhlig shows that the effect on political support is unclear. While the "creditor effect" of increasing the number of agents holding domestically denominated debt helps to generate support for joining the union, the "tax effect" of having to raise more taxes in order to pay for the increased real debt payments after a successful monetary union works in the opposite way.

Finally, in studying a number of special cases, Uhlig argues that recent debt management policy in Italy probably eroded the political support for actions aimed at enhancing the chances of EMU membership.

Levy, Bergen, and Dutta use a unique store-level dataset to document the variation in individual product price rigidity that can be explained by variation in "state." Unlike the common practice of characterizing the state in terms of the effect of the inflation rate on relative prices, they characterize the state in terms of the nature of the cost shocks that the seller experiences. They suggest three features of cost shocks that affect the variation in price rigidity; variation in: 1) their persistence; 2) the information available on them; and 3) their size. They use actual retail and wholesale prices, and a measure of upstream commodity costs, of 12 refrigerated and frozen orange juices. The data were collected weekly over a three-year period at a large midwestern supermarket chain, Dominick's. They find that agents react to cost shocks of different persistence, size, and information in different ways. Since the

nature of a cost shock is an important aspect of the state of market conditions, the evidence that retailers and manufacturers react differently to these cost shocks supports the assumption of state-dependent pricing rules, which are frequently employed in new Keynesian models of the cost of price adjustment.

In the postwar period velocity has risen so sharply in the United States that the ratio of money to nominal output has fallen by a factor of three. **Cole and Ohanian** analyze the implications of shrinking money for the real effects of a monetary shock in two classes of equilibrium monetary business cycle models: limited participation (liquidity) models, and predetermined (sticky) price models. They show that the liquidity model predicts that a rise in velocity leads to a substantial reduction in the real effects of a monetary shock. In sharp contrast, the real effects of a monetary shock in the sticky price model are largely invariant to changes in velocity. The authors also provide evidence that suggests that the real effects of monetary shocks have fallen over the postwar period.

NBER Additional Paper

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.

Disorganization

Olivier Blanchard and Michael Kremer

Bureau Books

Tax Policy Volume

Tax Policy and the Economy, Volume 11, edited by James M. Poterba, is available in paperback from the MIT Press for \$15.00. This volume includes the papers presented at the NBER's Eleventh Annual Tax Policy Conference, which was held in Washington last October. The topics that are discussed range from health insurance for poor women and children, and medical savings accounts, to the consequences of shifting from the current income tax system to a federal tax on consumption, or sales.

This volume should appeal to a wide audience, including economics professors and students, government policymakers and advisors, and tax professionals. Poterba directs the NBER's research on taxation and is a professor of economics at MIT.

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

In Pursuit of Leviathan

In Pursuit of Leviathan, by Lance Davis, Robert Gallman, and Karen Gleiter, is available from the University of Chicago Press for \$80.00. This volume, which is part of the NBER monograph series on "Long-Term Factors in Economic Development," is a comprehensive economic history of the rise and decline of American whaling in the nineteenth century. The authors explore the forces that encouraged the industry's expansion and collapse, as well as its responsiveness to its problems. This volume will interest economic historians and students of this era of American history.

Davis and Gallman are research associates in the NBER's Program on the Development of the American Economy. Davis teaches economics at California Institute of Technology, Gallman at the University of North Carolina, Chapel Hill. Gleiter is also affiliated with UNC, Chapel Hill.

Reducing Inflation

Reducing Inflation, edited by Christina D. Romer and David H. Romer, is available from the University of Chicago Press for \$58.00. This NBER volume is the result of a Bureau project designed to aid economists and policymakers in understanding the pros and cons of reducing the rate of inflation. It includes essays by 16 distinguished economists who analyze the appropriateness of low inflation as a goal for monetary policy and discuss possible strategies for reducing inflation. They look at both day-to-day issues in the conduct of monetary policy and fundamental reforms of monetary institutions.

Both Christina and David Romer are NBER research associates in the Programs in Monetary Economics and Economic Fluctuations and Growth and professors of economics at University of California, Berkeley.

NBER Book Catalog Available On-Line

NBER Books, 1921-96, 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 it by writing to: Book Catalog, Publications Department, NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138-5398.

Current Working Papers

NBER Working Papers

The CEA: From Stabilization to Resource Allocation

Martin Feldstein

NBER Working Paper No. 5908

January 1997

JEL No. A11

Monetary Economics and Public Economics

This paper traces the changing role of the Council of Economic Advisers (CEA). In the 50 years since its creation, the CEA's focus has shifted from the design of policies for achieving full employment to advising the federal government on its much-enlarged spending and tax activities. The CEA's original attention to achieving cyclical stability through fiscal policy diminished as economists changed their views about the inherent stability of the economy and the usefulness of fiscal policy. With the shift of macroeconomic policy to the Federal Reserve, the CEA's macroeconomic role has diminished but not disappeared. The rapid growth of government spending during the past five decades has greatly increased the role for the CEA in seeking efficient resource allocation.

Offshore Hedge Funds: Survival and Performance, 1989–95

**Stephen J. Brown,
William N. Goetzmann,
and Roger G. Ibbotson**

NBER Working Paper No. 5909

January 1997

JEL Nos. N20, G23

Asset Pricing

We examine the performance of the offshore hedge fund industry from 1989 through 1995 using a database that includes defunct as well as currently operating funds. The industry is characterized by high attrition

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.

A complete list of NBER Working Papers and Reprints can be accessed on the Internet at

<http://nber.org>

Abstracts of all papers issued since January 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.

rates of funds and little evidence of differential managerial skill. We develop endogenous style categories for relative fund performance measures, and find that repeat-winner and repeat-loser patterns in the data are largely attributable to style effects in that data.

World Trade Flows, 1970–92, with Production and Tariff Data

Robert C. Feenstra, Robert E. Lipsey, and Harry P. Bowen

NBER Working Paper No. 5910

January 1997

JEL Nos. C80, F14

International Trade and Investment

This paper describes two databases dealing with world bilateral trade flows: the World Trade Database (WTDB) assembled by Statistics Canada, which contains bilateral trade flows for all countries during 1970–92, classified according to the Standard International Trade Classification, Revision 2 (with some modification); and the Compatible Trade and Production (COMTAP) database assembled by the Organization for Economic Cooperation and Development (OECD), which contains production of manufactured goods in OECD countries and bilateral trade flows between these countries and all their trading partners over 1970–85, classified according to the International Standard Industrial Classification, Revision 2. These databases are available to academic users on the CD-ROM “NBER Trade Database, Disk 2: World Trade Flows, 1970–92,” which can be ordered for \$50 from the Publications Department, NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138. Also contained on the CD-ROM is information on countries’ factor endowments, tariff and nontariff barriers for selected countries, and input-output tables for the United Kingdom and the United States. The WTDB database is made

available under a license with Statistics Canada, the terms of which are described herein, and the COMTAP database is made available by permission of the OECD.

The Moral Hazard of Insuring the Insurers

James G. Bohn and Brian J. Hall

NBER Working Paper No. 5911

January 1997

Public Economics

State guaranty funds are quasi-governmental agencies that provide insurance to policyholders against the risk of insurance company failure. But insurance provided by guaranty funds, like all insurance, creates moral hazard problems, especially for companies that are insolvent or nearly insolvent. The key insight of this paper is that, because of the time lag between premium payments and losses (which is especially lengthy in long-tail lines), writing policies is one way for insurance companies to borrow money (that is, from policyholders). Moreover, the existence of guaranty fund insurance enables insurance companies, even very risky ones, to borrow from policyholders at rates that do not reflect the insurer’s risk of default. Thus, one way for insurance companies to “game” the guaranty fund system is to engage in excessive premium writing. Consistent with this idea, we find that insolvent property and casualty insurance companies tend to have had very high premium growth before they failed. More than one-third of the failed insurance companies had premium growth of more than 50 percent in the two years before failure. Moreover, this excessive premium growth was more pronounced in long-tail lines than in short-tail lines. We also find that greater regulatory resources are associated with less “gaming” of the system.

Pension and Social Security Wealth In The Health and Retirement Study

Alan L. Gustman, Olivia S. Mitchell, Andrew A. Samwick, and Thomas L. Steinmeier

NBER Working Paper No. 5912

February 1997

Aging and Labor Studies

Together, pensions, Social Security, and health insurance account for half of the wealth held by all households represented in the Health and Retirement Study (HRS), 60 percent of the total wealth of HRS households in the 45th to 55th wealth percentiles, and 48 percent of wealth for households in the 90th to 95th wealth percentiles. The HRS surveys households whose members were aged 51 to 61 in 1992, and obtains descriptions of pension plans from the respondents’ employers. Pension accrual profiles, income and wealth distributions by type, wealth-income ratios, and accrued wealth by pension status are also explored.

Reinsurance for Catastrophes and Cataclysms

David M. Cutler and Richard J. Zeckhauser

NBER Working Paper No. 5913

February 1997

Asset Pricing and Public Economics

This paper examines the optimal design of insurance and reinsurance policies. We first consider reinsurance for “catastrophes:” risks that are large for any one insurer but not large for the reinsurance market as a whole. Reinsurance for catastrophes is complicated by adverse selection. Optimal reinsurance in the presence of adverse selection depends critically on the source of information asymmetry. When information on the probability of a loss is private but the magnitude of the loss is public, then optimal reinsurance will employ a

deductible-style excess-of-loss policy. When information on the magnitude of a loss is private but the probability of a loss is common, optimal reinsurance covers small and large risks, but makes the primary insurer responsible for moderate risks. There is a dramatic divergence between these designs, which suggests that traditional, rule-of-thumb approaches to design are likely to be misguided.

We then consider reinsurance for "cataclysms:" risks that are so large that a loss can threaten the solvency of reinsurance markets as a whole. Some cataclysms can arise from a single event, such as a major earthquake or hurricane, while others derive from common risks — changes in conditions that affect large numbers of individuals — such as the liability revolution or escalating medical care costs. We argue that cataclysms must be reinsured either in broad securities markets or by the government. Beyond their one-period loss potential, cataclysms pose an additional risk: risk levels change over time. A simulation model traces the implications of evolving risk levels for long-term patterns of losses and premiums, which reflect learning about loss distributions. Premium risk emerges as an important component of risk, which is not adequately diversified by reinsurance and primary insurance markets.

TFPG Controversies, Institutions, and Economic Performance in East Asia

Dani Rodrik

NBER Working Paper No. 5914

February 1997

JEL Nos. O30, F43, O47, O53

Economic Fluctuations and Growth and International Trade and Investment

The controversy over the appropriate partitioning of East Asian growth into accumulation versus technical change has overlooked a fundamental indeterminacy in mea-

surement. As a result, we cannot rule out the possibility that East Asia in fact has experienced a tremendous amount of technological and labor-saving progress. Further, an index of institutional quality (drawn from work by Knack and Keefer [1995] and Easterly and Levine [1996]) does exceptionally well in rank-ordering East Asian countries according to their growth performance. A parsimonious specification containing only initial income, initial education, and institutional quality accounts for virtually all of the variation in the growth performance in the region, even when institutional quality is instrumented. Finally, the experience of Hong Kong, which has had a flat investment ratio since the 1960s, is consistent with the idea that making the transition from a low-investment economy to a high-investment economy requires a hands-on government.

Cyclical Productivity with Unobserved Input Variation

Susanto Basu and

Miles S. Kimball

NBER Working Paper No. 5915

February 1997

JEL Nos. E32, D24

Economic Fluctuations and Growth

In this paper, we derive and estimate relationships governing variable utilization of capital and labor for a firm solving a dynamic cost-minimization problem. Our method allows for: imperfect competition; increasing returns to scale; unobserved changes in utilization and technology; unobserved fluctuations in the factor prices of capital and labor and in the shadow price of output; and the lack of a value-added production function. We can estimate the parameters of interest without imposing specific functional forms or using restrictions, simply by assuming the existence of a representative consumer. We find that variable utilization of capital and labor explains

40–60 percent of the cyclical of the Solow residual in U.S. manufacturing, so true technology shocks have a lower correlation with output than the literature assumes. Controlling for variable utilization also eliminates the evidence for increasing returns to scale. Our model-based proxies for variable utilization are valid even when extending the workweek of capital has two potential costs: a shift premium paid to workers, and a higher rate of depreciation. Thus, these proxies can be used under very general conditions in a wide range of empirical work.

Contract Form and Procurement Costs: The Impact of Compulsory Multiple Contractor Laws in Construction

Orley Ashenfelter, David Ashmore, and Randall Filer

NBER Working Paper No. 5916

February 1997

JEL Nos. K11, K42

Law and Economics

It is claimed that many regulatory rules enforce inefficiencies in order to achieve the appearance of cost control. We assess these claims by measuring the effect of New York state's compulsory multiple contractor law on the cost of public construction in New York City. Multiple contractor laws, which exist in many states, prohibit the use of general contractors in order to promote the appearance of competition. Contrasting construction costs between buildings with identical blind cost estimates indicates that this law increases public construction costs by 8 percent and increases construction delays by more than a calendar year.

Employment Policy of the Middle Reagan Years: What Didn't Happen and Why It Didn't Happen

Martin Feldstein

NBER Working Paper No. 5917

February 1997

JEL No. J6

Public Economics and Labor Studies

This paper examines the record of employment and unemployment between 1982 and 1986 and discusses a variety of cyclical and structural employment policies that were considered but not implemented during 1982-4 when I served as chairman of the Council of Economic Advisers. Employment rose by 11 million jobs during the cyclical recovery of 1982-6, lowering the unemployment rate from 10.8 percent to 6.6 percent. Even before the recovery was visible, the Reagan administration supported the tight Federal Reserve policy designed to reverse the high inflation at the end of the 1970s. The policies for reducing structural unemployment that were considered but not enacted at the time have become law in later years: a gradual decline in the real minimum wage, the full taxation of unemployment insurance, and a work requirement for those on welfare.

Analyzing Investments Whose Histories Differ in Length

Robert F. Stambaugh

NBER Working Paper No. 5918

February 1997

JEL Nos. G11, G15, C11

Asset Pricing

This study explores multivariate methods of investment analysis using a sample of return histories that differ in length across assets. The longer histories provide more information about "moments" of returns for both the longer-history and the shorter-history assets. To account for the

remaining parameter of uncertainty, or "estimation risk," portfolio opportunities are characterized by a Bayesian predictive distribution. Examples involving emerging markets demonstrate the value of using the combined sample of histories and accounting for estimation risk, as compared to truncating the sample to produce equal-length histories or ignoring estimation risk by using maximum-likelihood estimates.

The Evolving External Orientation of Manufacturing Industries: Evidence from Four Countries

**José Campa and
Linda S. Goldberg**

NBER Working Paper No. 5919

February 1997

International Finance and
Macroeconomics and International
Trade and Investment

There have been significant changes in the external orientation of manufacturing industries in the United States, Canada, and the United Kingdom, but not in Japan. These increases in external orientation are in industry export shares, import penetration, and imported input use in production. Over the past two decades, U.S. industries have experienced a particularly dramatic increase in use of imported inputs, accompanied by highly variable patterns of industry net external orientation. Although similar manufacturing industries have strong export orientation in all countries, these same industries have profoundly different patterns of import penetration, imported input use, and net external exposure to exchange rate and trade policy changes across countries.

On the Uses of Benefit-Cost Reasoning in Choosing Policy Toward Global Climate Change

David F. Bradford

NBER Working Paper No. 5920

February 1997

JEL No. D61

Public Economics

In the debate about the correct discount rate to use in evaluating policy with regard to climate change, which covers the entire world and extends for centuries, the conditions for deploying benefit-cost analysis often are overlooked. Where income distributional effects of policies are large and one cannot take for granted compensating adjustment in other policy instruments affecting distribution, the simple aggregation of gains and losses is not likely to provide a convincing basis for action, as an ethical matter, or predictor of policy, as a political matter.

Regionalism and Multilateral Tariff Cooperation

**Kyle Bagwell and
Robert W. Staiger**

NBER Working Paper No. 5921

February 1997

JEL Nos. F02, F13, F15

International Trade and Investment

We consider a three-country "world" in which each country's import market is served by competing exporters from its two trading partners. We assume that weak multilateral enforcement mechanisms prevent governments from implementing efficient trade policies through multilateral agreements that require tariffs to conform to the most-favored-nation (MFN) principle. We then ask whether exceptions from MFN aimed at forming preferential agreements can lead to lower external tariffs, and thus to a more efficient tariff structure under the

multilateral agreement. We identify three opposing effects of preferential agreements on the multilateral tariff structure in this setting. The first, a *tariff complementarity effect*, works to reduce the desired external tariffs of countries that join in a preferential agreement. The two other effects of preferential agreements arise only when enforcement issues at the multilateral level are considered. One of these, the *punishment effect*, weakens the ability of the member countries of a preferential agreement to punish deviations from the multilateral agreement, thereby interfering with the ability of countries to sustain low tariffs under the multilateral agreement. The other, the *tariff discrimination effect*, allows countries to discriminate against those who would "free ride" under MFN, and therefore works to increase the desired external tariffs of countries that join together in a preferential agreement. The relative strengths of these three effects determine the impact of a preferential agreement on the tariff structure under the multilateral agreement. Our findings suggest that preferential agreements can have their most desirable effects on the multilateral system when the degree of multilateral cooperation is low.

Equilibrium Unemployment

Joao Gomes, Jeremy Greenwood, and Sergio Rebelo

NBER Working Paper No. 5922

February 1997

JEL Nos. E24, E32

Economic Fluctuations and Growth

A search-theoretic general equilibrium model of frictional unemployment is consistent with some of the key regularities of unemployment over the business cycle. In the model, the return to a job moves stochastically. Agents can choose either to quit and search for a better job or to continue working. The search

process generates job offers that agents can accept or reject. Two distinguishing features of current work relative to the existing business cycle literature on labor market fluctuations are: 1) the decision to accept or reject jobs is modeled explicitly, and 2) there is imperfect insurance against unemployment.

The Uruguay Round and Welfare in Some Distorted Agricultural Economies

James E. Anderson

NBER Working Paper No. 5923

February 1997

JEL Nos. F13, F14, O13, O20

International Trade and Investment

There is widespread concern that the Uruguay Round may reduce the welfare of developing countries through its effect on world agricultural prices. Reduced distortions in agricultural prices among major supplying nations are predicted to increase basic food prices and to decrease some important export prices, such as for coffee and cotton. It appears that raising the food prices paid by food importers must be bad for them, while reducing world coffee and cotton prices appears to be bad for exporters of those products. Appearances may be deceiving, however, since theory shows that a *distortion effect* operates alongside the standard *terms-of-trade effect*.

In an analysis of the Uruguay Round's impact on nine agricultural economies, I find distortion effects that are many times larger than terms-of-trade effects. Using a simple Computable General Equilibrium model, I find that in the nine developing economies, there are domestic agricultural distortions in 15 markets, along with the distortions caused by hundreds of 4-digit non-agricultural tariffs and quotas. In three of the nine countries, the distortion effect reverses the impact of the terms-of-trade effect. In two other

countries, the distortion effect raises a trivial terms-of-trade effect to around 1 percent of national income.

Labor Market Shifts and the Price Puzzle Revisited

Alan B. Krueger

NBER Working Paper No. 5924

February 1997

JEL Nos. J31

Labor Studies

This paper examines the relationship between price growth and skill intensity across 150 manufacturing industries between 1989 and 1995. There are two main findings. First, wage growth and increases in intermediate goods prices are passed through to final product prices roughly in proportion to their factor shares. Second, product prices have grown relatively less in sectors that use less-skilled labor more intensively. This latter finding is consistent with the Stolper-Samuelson theory of expanded trade with countries that are abundant in less-skilled workers, as well as with some models of technological change.

Uncertain Duration of Reform: Dynamic Implications

Guillermo A. Calvo and Allan Drazen

NBER Working Paper No. 5925

February 1997

JEL Nos. F41, E32

International Finance and Macroeconomics

We develop a framework for studying the effects of policies for uncertain duration on consumption dynamics under both complete and incomplete markets. We focus on the dynamic implications of market incompleteness, specifically on the lack of state-contingent bonds. We consider two policies: pure increasing of output and reducing tariffs (trade liberalization). With complete

markets, the output-increasing policy leads to flat consumption. With no contingent assets, consumption jumps on the announcement of the policy, continues to rise as long as the policy is in effect, and collapses when it is abandoned. A similar consumption path obtains with a trade liberalization in the realistic case of low elasticity of substitution and no rebate of tariffs. Market incompleteness rationalizes the existence of gradual changes in consumption.

A Model of Investor Sentiment

Nicholas Barberis, Andrei Shleifer, and Robert W. Vishny

NBER Working Paper No. 5926

February 1997

JEL No. 313

Asset Pricing

Recent empirical research in finance has uncovered two families of pervasive regularities: *underreaction* of stock prices to news such as earnings announcements; and *overreaction* of stock prices to a series of good or bad news. In this paper, we 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.

Immigrant Inflows, Native Outflows, and the Local Labor Market Impacts of Higher Immigration

David Card

NBER Working Paper No. 5927

February 1997

JEL No. J2

Labor Studies

This paper uses 1990 Census data to study the effects of immigrant inflows on the labor market opportunities of natives and older immi-

grants. I divide new immigrants, older immigrants, and natives into distinct skill groups and focus on the outcomes within each group and within cities. An important first question is whether inflows of new immigrants lead to outflows of natives or earlier immigrants who have the same skills. Even after accounting for mobility decisions, I find that inter-city migration flows of natives and older immigrants largely are unaffected by new immigrant inflows. Inflows of new immigrants are associated with lower employment rates among natives and earlier immigrants, but with fairly small effects on the relative wage structure. These estimates imply that immigrant arrivals between 1985 and 1990 depressed the employment rate of low-skilled natives in major U.S. cities by 1–2 percentage points on average, and by substantially more in cities with a high proportion of immigrants.

Measuring Positive Externalities from Unobservable Victim Precaution: An Empirical Analysis of Lojack

Ian Ayres and Steven D. Levitt

NBER Working Paper No. 5928

February 1997

JEL Nos. H23, K42

Public Economics

Private expenditures on crime reduction have potentially important externalities. Observable measures such as barbed-wire fences and deadbolt locks may shift crime to those who are unprotected, imposing a negative externality. Unobservable precautions, on the other hand, may provide positive externalities, since criminals cannot determine a priori who is protected. Focusing on one specific form of victim precaution, Lojack, we provide the first thorough empirical analysis of the magnitude of such externalities. Because installing Lojack does not reduce the

likelihood that an individual car will be stolen, any decrease in the aggregate crime rates attributable to Lojack is an externality from the perspective of the individual Lojack purchaser. We 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. Our 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.

The Evolution of Advanced Large Scale Information Infrastructure in the United States

Shane M. Greenstein, Mercedes M. Lizardo, and Pablo T. Spiller

NBER Working Paper No. 5929

February 1997

Productivity

Is private industry investing in backbone digital technology in a manner consistent with social policy? To address this question, we assemble highly disaggregate data and compute indexes for the geographic distribution of advanced backbone information technology in computing and telecommunications, focusing on recent changes in the indexes. Our evidence suggests that the stock of advanced information technology capital and access to it became distributed across the United States more evenly between the mid-1980s and early-1990s. In light of these findings, there needs to be careful rethinking of the current policy con-

cerns about the distribution of backbone technologies.

To Each According To...? Markets, Tournaments, and the Matching Problem With Borrowing Constraints

Raquel Fernández and Jordi Galí

NBER Working Paper No. 5930

February 1997

JEL Nos. D52, E44, J41

Economic Fluctuations and Growth

We compare the performance of markets and tournaments as allocative mechanisms in an economy with borrowing constraints. Our model consists of a continuum of individuals who differ in their initial wealth and ability level (for example, students) and who are assigned to a continuum of investment opportunities or inputs of different productivity (for example, schools of different qualities). With perfect capital markets, both mechanisms achieve efficient allocation, although markets generate higher aggregate consumption because of the waste associated with the production of signals under tournaments. However, when borrowing constraints are present, tournaments dominate markets in terms of aggregate output and, for sufficiently powerful signaling technologies, in terms of aggregate consumption.

Within Group "Structural" Tests of Labor-Market Discrimination: A Study of Persons with Serious Disabilities

**David S. Salkever and
Marisa E. Domino**

NBER Working Paper No. 5931

February 1997

JEL No. I1

Health Care and Labor Studies

Measures of labor-market discrimination usually are derived from comparisons of market outcomes for

avored versus disfavored groups, after controlling for productivity-related individual characteristics. When the disfavored group is heterogeneous, one can relate variations in the intensity of discrimination to market outcomes within the group. We use this approach to test for employment and wage discrimination against persons with various types of disabilities. Measures of "social distance" and employer judgments of "employability" are controls for the intensity of discrimination. However, in a national sample of adults with serious disabilities, employment discrimination effects are in the "wrong" direction and wage effects are unstable. Thus, variability in labor market outcomes among different types of disabilities is not explained well by variations in discrimination intensity that are correlated with social distance and employer attitudes. We conjecture that differences in available support services by type of disability may help to explain this variability.

Reciprocity, Nondiscrimination, and Preferential Agreements in the Multilateral Trading System

**Kyle Bagwell and
Robert W. Staiger**

NBER Working Paper No. 5932

February 1997

JEL Nos. F02, F13, F15

International Trade and Investment

We present a framework for understanding and interpreting reciprocity and non-discrimination, the two principles that are the pillars of the multilateral trading system as embodied in GATT and its successor, the WTO. We show that GATT's principle of reciprocity serves to neutralize the world-price effects of a country's trade policy decisions. Hence GATT can deliver efficient trade-policy outcomes for its member governments provided that the exter-

nalities associated with trade intervention travel through world prices. Then we establish that externalities indeed travel in this way if and only if tariffs also conform to the principle of nondiscrimination. In this way, the principles of reciprocity and nondiscrimination can work together to deliver efficient outcomes for the multilateral trading system. Within our framework we also consider the implications of preferential agreements for the multilateral trading system. The introduction of free trade agreements complicates the way in which externalities are transmitted across countries, and in this environment the principle of reciprocity can no longer deliver efficient multilateral outcomes for its member governments. However, we do find a limited place for customs unions in the multilateral trading system, provided that the member countries of the union have similar political preferences. As these conditions are quite stringent, we offer little support for the hypothesis that the principle of reciprocity can deliver an efficient multilateral trade agreement in the presence of preferential agreements. Instead, our results support the view that preferential agreements pose a threat to the existing multilateral system.

Macroeconomic Fluctuations and the Allocation of Time

Robert E. Hall

NBER Working Paper No. 5933

February 1997

JEL No. E32

Economic Fluctuations and Growth

What are the fundamental driving forces behind macroeconomic fluctuations? In particular, why do people spend more time working in booms and less in recessions? These are basic questions of macroeconomics. Recent thinking has emphasized technology shifts, preference shifts,

and changes in government purchases as the likely driving forces. It is useful to distinguish between atemporal and intertemporal effects of the driving forces. Under standard assumptions, the technology shift has no effect through atemporal channels because income and substitution effects exactly offset each other. A straightforward decomposition of employment movements attributes most of them to the atemporal effects of preference shifts.

Shifts in U.S. Relative Wages: The Role of Trade, Technology, and Factor Endowments

Robert E. Baldwin and Glen G. Cain

NBER Working Paper No. 5934

February 1997

JEL Nos. F10, J31

International Trade and Investment

This paper investigates three hypotheses to account for the observed shifts in U.S. relative wages of less educated compared to more educated workers during 1967 to 1992: increased import competition; changes in the relative supplies of labor of different education levels; and changes in technology. Our analysis relies on a basic relation of the standard general equilibrium trade model that links changes in product prices to factor price changes and factor shares, along with information about changes in the composition of output, trade, within-industry factor use, and factor supplies. For 1967 to 1973, we conclude, the relative increase in the supply of well-educated labor was the dominant economic force that narrowed the wage gap among workers of different education levels. The wage gap continued to narrow during the rest of the 1970s, but our empirical results are not clear enough to conclude that the continued increase in the relative supply of more educated workers

again was the main factor shaping relative wages.

In a reversal of the previous trend, the wage gap between more educated and less educated workers widened sharply from 1980 to 1993, despite the continued relative increase in the supply of workers with more education. We find that increased import competition cannot account for the rise in wage inequality among the major education groups, although it could have contributed to the decline in the wages of the least educated workers (those who had completed one to eleven years of schooling). Instead, we find that technical progress which saves less educated labor and is more rapid in some manufacturing sectors intensively using highly educated labor is the dominant force in widening the wage gaps among college educated workers, workers with a completed high school education, and workers with one to eleven years of schooling. Finally, we use the Deardorff-Staiger model, which allows changes in the factor content of trade to reveal the effects of trade on relative factor prices. Our empirical tests reinforce the conclusion that increased import competition during 1977 to 1987 was not the dominant force in widening the wage gap between more educated and less educated labor between those years.

Understanding China's Economic Performance

Jeffrey D. Sachs and Wing Thy Woo

NBER Working Paper No. 5935

February 1997

JEL Nos. O53, O57, P51

Economic Fluctuations and Growth

Broadly speaking, two schools of thought have emerged to interpret China's rapid growth since 1978: the experimentalist school and the convergence school. The experimentalist school attributes China's successes

to the evolutionary, experimental, and incremental nature of China's reforms. Specifically, the resulting noncapitalist institutions are claimed to be successful in 1) agriculture, where land is not owned by the farmers; 2) township and village enterprises which are owned collectively by rural communities; and 3) state-owned enterprises where increased competition and wage incentives, but not privatization, have been emphasized.

The convergence school holds that China's successes are the consequence of its institutions being allowed to converge with those of nonsocialist market economies, and that China's economic structure at the start of reforms is a major explanation for the rapid growth. China had a high population density heavily concentrated in low-wage agriculture, a condition that was favorable for labor-intensive export-led growth in other parts of East Asia. The convergence school also holds that China's gradualism results primarily from a lack of consensus over the proper course, with power still divided between market reformers and old-style socialists; and that the "innovative" non-capitalist institutions are responses to China's political, and not to its economic, circumstances.

Perhaps the best test of the two approaches is to ask whether China's policy choices in fact are leading to institutions harmonized with normal market economies or to more distinctive innovations. In this regard, the recent policy trend has been towards institutional harmonization rather than institutional innovation, suggesting that the government accepts that the ingredients for a dynamic market economy are already well-known.

Is There Private Information in the FX Market?

The Tokyo Experiment

Takatoshi Ito, Richard K. Lyons, and Michael T. Melvin

NBER Working Paper No. 5936

February 1997

JEL Nos. F31, G15

Asset Pricing and International Finance and Macroeconomics

Although the common view is that private information in the foreign exchange market does not exist, we provide evidence to the contrary. Our evidence comes from the introduction of trading in Tokyo during the lunch hour. The variance of lunch returns doubles when trading is introduced, which cannot be attributable to public information, since the flow of public information did not change with the trading rules. Having eliminated public information as the cause, we exploit the pattern of volatility over the entire day to discriminate between two alternatives: private information and pricing errors. Three key results support the importance of private information: First, the U-shape of the volatility distribution flattens; greater revelation over lunch leaves a smaller share for the morning and afternoon, it appears. 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 during lunch, and this disappears when trading is introduced.

Neglected Effects on the Uses Side: Even a Uniform Tax Would Change Relative Goods Prices

Don Fullerton and Diane Lim Rogers

NBER Working Paper No. 5937

February 1997
JEL No. H22
Public Economics

Fundamental tax reform may change relative prices of consumption goods and therefore may have important effects on the uses side that are ignored by most general equilibrium simulation models. For a uniform rate of tax, in our model, results on the uses side are driven by the nonuniform tax system being replaced. Similar effects occur under any uniform and comprehensive tax reform, whether the current system is replaced by a consumption tax, a wage tax, or a pure income tax. Any such reform, which eliminates the current preferential treatment of housing, would impose an additional one-time levy on the elderly; any reform that eliminates the current double taxation of corporate capital would reduce the relative prices of corporate-capital-intensive goods bought by the poor.

Location and Technological Change in the American Glass Industry During the Late-Nineteenth and Early-Twentieth Centuries

Naomi R. Lamoreaux and Kenneth L. Sokoloff

NBER Working Paper No. 5938

February 1997

JEL Nos. O3, N0, L0

Development of the American Economy

Scholars have attempted to explain geographic clustering in inventive activity by arguing that it is connected with clustering in production or new investment. They have offered three possible reasons for this link: invention occurs as a result of learning by doing; new investment encourages experimentation with novel techniques; and, there are local information flows that make inven-

tors more fertile in areas where producers are concentrated. We test these theories by studying geographic patterns of production and invention in the glass industry during the late-nineteenth and early-twentieth centuries. We find that the patterns deviate significantly from what the theories would predict, and we offer the alternative hypothesis that inventive activity proceeded most intensively in areas where markets for technology had developed most fully — that is, where there were localized networks of institutions that mobilized information about technological opportunities and mediated relations among inventors, suppliers of capital, and those who would commercially develop or exploit new technologies.

Patterns of Intra- and Inter-State Trade

Holger C. Wolf

NBER Working Paper No. 5939

February 1997

JEL Nos. O51, F11, F12, F14, F15

International Trade and Investment

Recent studies suggest that *intra-national* trade is “excessive” compared to *international* trade. National trade barriers provide an intuitive explanation for this home bias. A dataset on trade between U.S. states, however, reveals that home bias extends to sub-national units. The data suggest three additional stylized facts: First, shipment distances are shorter for intermediate than for final goods. Second, states located close to each other tend to have similar production patterns. Third, trade flows are higher among states with similar production patterns. The stylized facts are consistent with a complementary explanation of home bias resulting from a spatial clustering of production driven by natural and created comparative advantage.

Technology, Trade, and Wages

James D. Adams

NBER Working Paper No. 5940

February 1997

JEL Nos. J3, O3, L3, F1

Labor Studies and Productivity

In recent years considerable effort has been devoted to the *description* of wage structure. This research has documented a rising return to education, unobserved skills, and work experience. However, there appears to be little research into the causes of the change in structure. This paper seeks to fill the gap by studying the impact of domestic technology, foreign technology, and trade on U.S. wages.

Empirically, I devise measures of foreign and domestic R and D *inputs* for six sectors of the private U.S. economy, and of R and D *outputs* for 24 manufacturing industries. Holding time and industry effects constant, I find that: 1) in most cases technology has the same, rather than opposite, effect on wages at both skill levels; 2) a rise in the foreign share in world innovation or U.S. patents decreases U.S. wages; 3) an increase in the U.S. share in world innovation or U.S. patents raises U.S. wages, especially for the less skilled; and 4) the stock of world innovation and U.S. patents decreases real wages, especially for the less skilled. Turning to the relative skilled wage, I find that the stock of world innovation or U.S. patents increases the skill differential. Holding technology constant, I find mixed results for trade. Effects of trade on real wages are generally insignificant once time effects are taken into consideration.

Together the findings suggest that sectoral labor immobility is an important part of the interaction between the U.S. labor market, technology, and trade. They also suggest that technology is a key explanatory element in the twists of the wage struc-

ture in recent years, and that, *in and of itself*, trade may not be an important determinant of real wages.

Technological Change and Wages: An Inter-Industry Analysis

Ann P. Bartel and
Nachum Sicherman

NBER Working Paper No. 5941

February 1997

JEL Nos. J31, J24, O33

Labor Studies

Previous research has found that wages in industries characterized as "high tech," or subject to higher rates of technological change, are higher. In addition, there is evidence that skill-biased technological change is responsible for the dramatic increase in the earnings of more educated workers relative to less educated workers that took place during the 1980s. In this paper, we match a variety of industry-level measures of technological change to a panel of young workers observed between 1979 and 1993 and examine the role of unobserved heterogeneity in explaining the positive relationships between technological change and wages, and between technological change and the education premium. We find that the wage premium associated with technological change is attributable primarily to the sorting of better workers into those industries. In addition, we find that the education premium associated with technological change is the result of an increase in demand for the innate ability or other observable characteristics of more educated workers.

Protection for Sale: An Empirical Investigation

Pinelopi K. Goldberg and
Giovanni Maggi

NBER Working Paper No. 5942

February 1997

JEL No. F1

International Trade and Investment

In the recent political economy literature on trade policy, Grossman and Helpman's (1994) "Protection for Sale" model is prominent. This model yields clear predictions for the cross-sectional structure of trade protection. Our paper aims to check whether the predictions of the Grossman-Helpman model are consistent with the data and, if so, to estimate its two key structural parameters: the government's valuation of welfare relative to contributions, and the fraction of the voting population represented by a lobby. We find that the pattern of protection in the United States in 1983 is consistent with the basic predictions of the model. Our estimate of the government's valuation of welfare relative to contributions is surprisingly high; the weight of welfare in the government's objective function is estimated to be between 50 and 88 times the weight of contributions.

Integration, Cointegration, and the Forecast Consistency of Structural Exchange Rate Models

Yin-Wong Cheung and
Menzie D. Chinn

NBER Working Paper No. 5943

February 1997

International Finance and
Macroeconomics

We generate exchange rate forecasts using some popular monetary models of exchange rates in conjunction with several estimation techniques. We propose an alternative set of criteria for evaluating forecast rationality which entails the following requirements: the forecast and the actual series have the same order of integration; are cointegrated; and have a cointegrating vector consistent with long-run unitary elasticity of expectations. When these conditions hold, we consider the forecasts to be "consistent."

We find that it is fairly easy for the generated forecasts to pass the first requirement. However, cointegration fails to hold as the forecasts extend farther out. At the one-year-ahead horizon, for example, most series and their respective forecasts do not appear cointegrated. Of the cointegrated pairs, the restriction of unitary elasticity of forecasts-with-respect-to-actual does not appear to be rejected in general. The exception to this pattern is in the case of the error correction models in the longer subsample. Imposing a unitary coefficient restriction, we find fewer instances of consistency, but we find a relatively higher proportion of the identified cases of consistency at the longer horizons.

Interest Rate Targeting and the Dynamics of Short-Term Rates

Pierluigi Balduzzi, Giuseppe Bertola, Silverio Foresi, and Leora Klapper

NBER Working Paper No. 5944

February 1997

JEL Nos. E43, E52

Monetary Economics

We find that in 1989–96, when U.S. monetary policy targeted overnight Fed funds rates tightly, the volatility and persistence of spreads between target and term Fed funds levels were larger for longer-maturity loans. We show that such patterns are consistent with an expectational model where target revisions are infrequent and predictable. In our model, the (autoco-) variance of the spreads of term Fed funds rates from the target increases with maturity because longer-term rates are influenced more heavily by persistent expectations of future target changes.

Empirical Patterns of Firm Growth and R&D Investment: A Quality Ladder Model Interpretation

Tor Jakob Klette and Zvi Griliches

NBER Working Paper No. 5945

February 1997

JEL Nos. D21, D43, L10, L13

Productivity

We present a model of endogenous firm growth with R and D investment and innovation as the engines of growth. Our objective is to present a framework that can be used for microeconomic analysis of firm performance in high-tech industries. We employ a partial equilibrium model for firm growth, drawing on the quality ladder models in the macro growth literature, but also on the literature on patent races and on the discrete choice models of product differentiation. We examine to what extent the assumptions and the empirical content of our model are consistent with the findings that have emerged from empirical studies of growth, productivity, R and D and patenting at the firm level. Our analysis shows that the model fits well such empirical patterns as 1) a skewed size distribution of firms with persistent differences in firm sizes; 2) firm growth (roughly) independent of firm size (the so-called Gibrat's law); and 3) R and D investment proportional to sales. It also fits a number of other empirical patterns.

Accounting for Future Costs in Medical Cost-Effectiveness Analysis

David Meltzer

NBER Working Paper No. 5946

February 1997

JEL Nos. I18, D61

Health Care and Productivity

Most medical cost-effectiveness analyses include future costs only for

related illnesses, but this approach is controversial. This paper demonstrates that cost-effectiveness analysis is consistent with lifetime utility maximization only if it includes all future medical and nonmedical expenditures. Estimates of the magnitude of these future costs suggest that they may substantially alter both the absolute and the relative cost-effectiveness of medical interventions, particularly when an intervention increases length of life more than quality of life. In older populations, current methods overstate the cost-effectiveness of interventions which extend life as compared to interventions which improve the quality of life.

On the Optimality of Interest Rate Smoothing

Sergio Rebelo and Danyang Xie

NBER Working Paper No. 5947

February 1997

JEL Nos. E31, E43, E52, O42

Economic Fluctuations and Growth and Monetary Economics

This paper studies some continuous-time cash-in-advance models in which interest rate smoothing is optimal. We consider both deterministic and stochastic models. In the stochastic case, we obtain two results of independent interest: 1) we study what is, to our knowledge, the only version of the neoclassical model under uncertainty that can be solved in closed form in continuous time; and 2) we show how to characterize the competitive equilibrium of a stochastic continuous time model that cannot be computed by solving a planning problem. We also discuss the scope for monetary policy to improve welfare in an economy with a suboptimal real competitive equilibrium, focusing on the particular example of an economy with externalities.

Retiree Health Insurance and the Labor Force Behavior of Older Men in the 1990s

**David M. Blau and
Donna B. Gilleskie**

NBER Working Paper No. 5948
February 1997
JEL Nos. J26, I1
Health Care

We estimate the impact of employer-provided retiree health insurance on the rate at which men aged 51–62 enter and exit the labor force and switch jobs. The models we estimate are an approximation of the decision rules implied by a dynamic stochastic model of employment behavior of older individuals. We use data from the Health and Retirement Survey (HRS), which contains more detailed and accurate measures of retiree health insurance than those used in most previous studies. Our results show that availability of employer-provided retiree health insurance (EPRHI) increases the rate of exit from employment by 2 percentage points per year on average if the individual shares the cost of the insurance coverage with the firm, and by 6 percentage points if the firm pays the entire cost. The impact of EPRHI on the annual rate of labor force exit increases with age, reaching 9 percentage points by age 61. These are larger than the effects estimated in previous studies. The accurate and detailed health insurance measures available in the HRS help account for the larger effects that we find. Controlling for unobserved heterogeneity, which is not accounted for in previous studies, also has a substantial impact on the estimates.

The Genesis and Evolution of Social Security

**Jeffrey A. Miron and
David N. Weil**

NBER Working Paper No. 5949
March 1997
JEL Nos. H55, N42
Development of the American Economy
and Public Economics

We examine the creation of Social Security during the Great Depression, and its evolution since then, asking in particular to what extent the program as it exists today is the same as what was created in 1935 and 1939. We find that there has been surprising continuity. Much of the program's growth was built in from its inception. The replacement rate and the ratio of benefits to payrolls today are roughly at the levels designed into the original legislation. Payroll tax rates today are higher than had been planned, in part because of the failure to accumulate a trust fund during the program's early years. The change in the ratio of contributors to beneficiaries which has taken place over the last 60 years was anticipated fully. The most dramatic changes in Social Security's functioning have come not from legislation, but from changes in the environment in which the program operates. Before the Depression, retirement was unlikely and often involuntary. Higher life expectancy, lower labor force participation, and better health have undermined Social Security's original purpose, a form of insurance. We also find that the Depression itself had surprisingly little influence on the design chosen for Social Security.

Heterogeneous Information Arrival and Option Pricing

Patrick K. Asea and Mthuli Ncube

NBER Working Paper No. 5950
March 1997
JEL Nos. G13, D52
Asset Pricing

We model the arrival of heterogeneous information in a financial market as a doubly-stochastic Poisson process (DSPP). We explore the implications for pricing stock, index, and foreign currency options of the assumption that the underlying security evolves as a mixed diffusion DSPP. We derive an intertemporal Capital Asset Pricing Model and demonstrate that accounting for the arrival of heterogeneous information may minimize the ubiquitous pricing bias — “smile effect” — of standard option pricing models. We propose a conceptually simple but numerically intensive maximum likelihood estimator of the parameters of a DSPP. Our simulation study verifies the adequacy of the asymptotic approximations in finite samples.

Lending Cycles

**Patrick K. Asea and
S. Brock Blomberg**

NBER Working Paper No. 5951
March 1997
JEL Nos. E32, E24, C33
Economic Fluctuations and Growth

We investigate the lending behavior of banks by exploiting a rich panel dataset on the contract terms of approximately 2 million commercial and industrial loans granted by 580 banks between 1977 and 1993. Using a Markov switching panel model, we demonstrate that banks change their lending standards — from tightness to laxity — systematically over the cycle. We then use an efficient minimum chi-square estimator to examine the relationship between the cyclical component of aggregate unemployment and bank lending standards when both variables are determined jointly and endogenously in a system of simultaneous equations with mixed, continuous/discrete, dependent variables. The patterns we uncover suggest that lax lending standards that tend to occur during

expansions exert considerable influence on the dynamics of aggregate fluctuations.

Efficient Rules for Monetary Policy

Laurence Ball

NBER Working Paper No. 5952

March 1997

JEL No. E52

Economic Fluctuations and Growth and Monetary Economics

In this paper, I define an efficient rule for monetary policy as one that minimizes a weighted sum of the variance of output and inflation. I derive several results about the efficiency of alternative rules in a simple macroeconomic model. First, efficient rules can be expressed as "Taylor rules" in which interest rates respond to output and inflation. But the coefficients in efficient Taylor rules differ from the coefficients that fit actual policy in the United States. Second, inflation targets are efficient. Indeed, the set of efficient rules is equivalent to the set of inflation-target policies with different speeds of adjustment. Finally, nominal-income targets are not merely inefficient, but also disastrous: they imply that output and inflation have infinite variances.

The Sociology of Groups and the Economics of Incentives: Theory and Evidence on Compensation Systems

William E. Encinosa III, Martin Gaynor, and James B. Rebitzer

NBER Working Paper No. 5953

March 1997

JEL Nos. I1, D23, L21

Health Care

This paper incorporates the sociological concept of "group norms" into an economic analysis of pay systems. We use a behavioral microeconomic model and a unique survey of medical groups to examine the theoretical

and empirical relationship between group norms and incentive pay. Our findings suggest that, at least for medical groups, norms are binding constraints in the choice of pay practices. While group norms matter, the patterns in the data suggest that they are not *all* that matters. Analysis of the preferences and activities of individual physicians indicates that factors highlighted by the economic theory of agency, notably income insurance and multi-task considerations, also shape pay policies. We conclude that the sociological concept of group norms *augments* rather than replaces more conventional economic analyses of pay practices.

The Optimum Quantity of Money: Theory and Evidence

Casey B. Mulligan and Xavier Sala-i-Martin

NBER Working Paper No. 5954

March 1997

JEL Nos. E52, E61, E63

Economic Fluctuations and Growth and Monetary Economics

We propose a simple and general model for computing the Ramsey-optimal inflation tax, which includes several models from the previous literature as special cases. We show that it cannot be claimed that the Friedman rule is always optimal (or always nonoptimal) on theoretical grounds. Whether the Friedman rule is optimal depends on conditions related to the shape of various relevant functions. One contribution of this paper is to relate these conditions to *measurable* variables, such as the interest rate or the consumption elasticity of money demand. We find that it tends to be optimal to tax money when there are economies of scale in the demand for money (that is, the scale elasticity is smaller than one) and/or when money is required for the payment of consumption or wage taxes. We find that it tends to

be optimal to tax money more heavily when the interest elasticity of money demand is small. We present empirical evidence on the parameters that determine the optimal inflation tax. Calibrating the model to a variety of empirical studies yields an optimal nominal interest rate of less than 1 percent per year, although that finding is sensitive to the calibration.

Entry, Exit, Embodied Technology, and Business Cycles

Jeffrey R. Campbell

NBER Working Paper No. 5955

March 1997

JEL Nos. E22, E32, L16

Economic Fluctuations and Growth

This paper studies the entry and exit of U.S. manufacturing plants over the business cycle and compares the results with those from a vintage capital model augmented to reproduce observed features of the life cycle of the plant. Looking at the entry and exit of plants provides new evidence supporting the hypothesis that shocks to embodied technological change are a significant source of economic fluctuations. In the U.S. economy, the entry rate covaries positively with output and total factor productivity growth, and the exit rate leads all three of these. A vintage capital model in which all technological progress is embodied in new plants reproduces these patterns. In the model economy, a persistent improvement to embodied technology induces obsolete plants to cease production, causing exit to rise. Later, as entering plants embodying the new technology become operational, both output and productivity increase.

Computing Inequality: Have Computers Changed the Labor Market?

**David H. Autor, Lawrence F. Katz,
and Alan B. Krueger**

NBER Working Paper No. 5956

March 1997

Labor Studies

This paper examines the effect of technological change and other factors on the relative demand for workers with different education levels and on the recent growth of U.S. educational wage differentials. We use a simple supply-demand framework to interpret changes in the relative quantities, wages, and wage-bill shares of workers by education in the aggregate U.S. labor market in each decade since 1940 and over the 1990 to 1995 period. The results suggest that the relative demand for college graduates grew more rapidly on average during the past 25 years (1970–95) than during the previous three decades (1940–70). The increased rate of growth of relative demand for college graduates beginning in the 1970s did not lead to an increase in the college/high school wage differential until the 1980s, because the growth in the supply of college graduates increased even more sharply in the 1970s before returning to historical levels in the 1980s. The acceleration in demand shifts for more-skilled workers in the 1970s and 1980s relative to the 1960s is accounted for entirely by an increase in within-industry changes in skill utilization rather than between-industry employment shifts. Industries with large increases in the rate of skill upgrading in the 1970s and 1980s versus the 1960s are those with greater growth in employee computer usage, more computer capital per worker, and larger shares of computer investment as a share of total investment. The results suggest that the spread of computer technology may “explain” as much as 30 to

50 percent of the increase in the rate of growth of the relative demand for more-skilled workers since 1970.

Consolidation in the Medical Care Marketplace: A Case Study from Massachusetts

**Jason R. Barro and
David M. Cutler**

NBER Working Paper No. 5957

March 1997

Health Care

We examine consolidation in the Massachusetts hospital market. We find that consolidation is driven primarily by a large decline in the demand for hospital beds, resulting from increased enrollment in managed care and technological changes. Three primary forces motivate the drive to consolidate: the desire for closure; for economies of scale; and for network creation.

Are U.S. Multinationals Exporting U.S. Jobs? S. Lael Brainard and David A. Riker

NBER Working Paper No. 5958

March 1997

JEL Nos. J23, F23

International Trade and Investment

Many allege that multinationals are “exporting” U.S. jobs when they expand their operations abroad. This paper investigates the extent to which expansion of offshore production by U.S. multinationals reduces labor demand at home and at other offshore locations. Using a panel on U.S. multinationals and their foreign affiliates between 1983 and 1992, we find that foreign affiliate employment is a modest substitute at the margin for U.S. parent employment. There is much stronger substitution between workers at affiliates in alternative low-wage locations. In contrast, activities performed by affiliates at locations with different workforce

skill levels in the same region appear to be complements. These results suggest a vertical division of activities among countries with different workforce skill levels: workers in developing countries compete with each other to perform the activities most sensitive to labor costs. When wages in developing countries, such as Mexico, fall by 10 percent, U.S. parent employment falls by 0.17 percent, while affiliates in other developing countries, such as Malaysia, lay off 1.6 percent of their workforce.

U.S. Multinationals and Competition from Low Wage Countries

**David A. Riker and
S. Lael Brainard**

NBER Working Paper No. 5959

March 1997

JEL Nos. J23, F23

International Trade and Investment

It is often argued that the globalization of production places workers in industrialized countries in competition with their counterparts in low-wage countries. We examine a firm-level panel of foreign manufacturing affiliates owned by U.S. multinationals between 1983 and 1992 and find evidence to the contrary. Affiliate activities in developing countries appear to be complementary to, rather than substituting for, affiliate activities in industrialized countries. Workers do compete across affiliates, but the competition is between affiliates in countries with similar workforce skill levels. These results suggest that multinationals with affiliates in countries at different stages of development decompose production across borders into complementary stages that differ by skill intensity. The implied complementarity of traded intermediate inputs has important implications for the empirical debate over trade, employment, and wages.

The Great Depression as a Watershed: International Capital Mobility over the Long Run

Maurice Obstfeld and Alan M. Taylor

NBER Working Paper No. 5960
March 1997

JEL Nos. F33, N20
Development of the American Economy, International Finance and Macroeconomics, and International Trade and Investment

This paper surveys the evolution of international capital mobility since the late nineteenth century. We begin with an overview of empirical evidence on the fall and rise of integration in the global capital market. Our discussion of institutional developments focuses on the use of capital controls and the pursuit of domestic macroeconomic policy objectives in the context of changing monetary regimes. A fundamental *macroeconomic policy trilemma* has forced policymakers to trade off among conflicting goals. The natural implication of the trilemma is that capital mobility has prevailed and expanded under circumstances of widespread political support, either for an exchange-rate subordinated monetary policy regime (for example, the gold standard), or for a monetary regime geared mainly toward domestic objectives at the expense of exchange-rate stability (for example, the recent float). Through its effect on popular attitudes toward both the gold standard and the legitimate scope for government macroeconomic intervention, the Great Depression emerges as the key turning point in the recent history of international capital markets.

Leverage and House-Price Dynamics in U.S. Cities

Owen Lamont and Jeremy C. Stein

NBER Working Paper No. 5961
March 1997

JEL Nos. G32, R31, E44
Corporate Finance

In this paper, we use city-level data to analyze the relationship between homeowner borrowing patterns and house-price dynamics. Our principal finding is that in cities where homeowners are more leveraged — that is, have higher loan-to-value ratios — house prices react more sensitively to city-specific shocks, such as changes in per-capita income. This finding is consistent with recent theories which emphasize the role of collateralized borrowing in shaping the behavior of asset prices.

Inflation Targeting: Some Extensions

Lars E. O. Svensson

NBER Working Paper No. 5962
March 1997

JEL Nos. E42, E52, E58
Asset Pricing, International Finance and Macroeconomics, Monetary Economics

I extend previous analysis of the implementation of inflation targeting to: monetary policy responses to different shocks; consequences of model uncertainty; effects of interest rate smoothing and stabilization; a comparison with nominal GDP targeting; and implications of forward-looking behavior. Model uncertainty, output stabilization, and interest rate stabilization (or smoothing) all call for a more gradual adjustment of the conditional inflation forecast toward the inflation target. The conditional inflation forecast is the natural intermediate target during inflation targeting.

Was the Great Depression a Watershed for American Monetary Policy?

Charles W. Calomiris and David C. Wheelock

NBER Working Paper No. 5963
March 1997

JEL Nos. E42, E50, N12
Development of the American Economy and Monetary Economics

The Great Depression changed the institutions that govern monetary policy. These changes included: a departure from the gold standard; the opening of a new avenue for monetizing government debt; changes in the structure of the Federal Reserve System; and new monetary powers for the Treasury. Ideological changes accompanied the institutional changes.

We examine whether and how these changes mattered for post-Depression monetary policy. With respect to the period 1935–41, the tools of Fed policy, but not its goals or tactics, changed. Structural reforms weakened the Federal Reserve relative to the Treasury, and removed a key limit on the monetization of government debt. The increased power of the Treasury to determine the direction of policy, and the departure from gold along with the new “technology” for monetizing government debt, produced a new (albeit small) inflationary bias in monetary policy that lasted until the Treasury-Fed Accord of 1951.

The Fed regained some independence with the Accord of 1951; it returned to its traditional (pre-Depression) operating methods. The procyclical bias in these procedures — along with pressures to monetize government debt — explains how the Fed stumbled into an inflationary policy in the 1960s. Depression-era changes — especially the departure from the gold standard in 1933 and the relaxation of an important con-

straint on deficit monetization in 1932 — made this inflationary policy error possible, and contributed to the persistence of inflationary policy.

Private School Vouchers and Student Achievement: An Evaluation of the Milwaukee Parental Choice Program

Cecilia E. Rouse

NBER Working Paper No. 5964

March 1997

JEL No. I20

Children, Labor Studies, Public Economics

In 1990, Wisconsin became the first state in the country to provide vouchers to low-income students to attend non-sectarian private schools. In this paper, I use a variety of estimation strategies and samples to estimate the effect of the program on math and reading scores. First, since schools selected students randomly from among their applicants if the school was oversubscribed, I compare the academic achievement of students who were selected to those who were not. Second, I present instrumental-variables estimates of the effectiveness of private schools (relative to public schools), using the initial selection as an instrumental variable for attendance at a private school. Finally, I used a fixed-effects strategy to compare students enrolled in the private schools to a sample of students from the Milwaukee public schools. I find that the Milwaukee Parental Choice Program had a positive effect on the math achievement of those who attended a private school, but no benefit for reading scores. The results are fairly robust to data imputations and sample attrition, but these limitations should be kept in mind when interpreting the results.

International Portfolio Diversification with Generalized Expected Utility Preferences

Joshua Aizenman

NBER Working Paper No. 5965

March 1997

JEL Nos. F30, F36

International Finance and Macroeconomics

This paper revisits the Home Bias Puzzle: the relatively low international diversification of portfolios. I suggest that part of the diversification puzzle may be attributable to reliance on the conventional Capital Asset Pricing Model as the benchmark that predicts patterns of diversification. I compare the asset diversification patterns of agents who maximize a generalized expected utility (GEU) to the diversification of agents who maximize the conventional expected utility (EU). Specifically, I derive the patterns of diversification for agents who maximize a “rank-dependent” expected utility, attaching more weight to “bad” than to “good” outcomes, in contrast to the probability weights used in a conventional expected utility maximization. I show that agents who maximize a GEU exhibit first order risk aversion and tend to refrain from diversification, in contrast to agents who maximize the EU. For a given covariance structure, I identify a “cone of diversification,” that is, the range of domestic and foreign yields leading to a positive demand for both equities. Greater downside risk aversion increases the threshold of yields leading to diversification, shifting the cone of diversification upwards and rightwards. Thus, greater downside risk aversion narrows the range of foreign yields leading to diversification for a given domestic yield. *Ceteris paribus*, greater downside risk aversion reduces the feasible heterogeneity of normalized excess yields associated with diversification. Consequently, I

argue that first order risk aversion should be added to the explanatory factors that account for the observed diversification patterns.

Community Choice and Local Public Services: A Discrete Choice Approach

Thomas J. Nechyba and Robert P. Strauss

NBER Working Paper No. 5966

March 1997

JEL Nos. H73, R20

Public Economics

This paper uses a discrete choice approach to estimate the impact of local fiscal and other variables on individual community choices. We use a combination of a unique micro dataset composed of 90 percent of all homeowners in six school districts in Camden County, New Jersey and information on local community characteristics, including crime rates, commercial activity, and distance from a metropolitan area. Our model implies that all these variables, as well as the local per pupil spending on public education and “community entry prices,” play a major role in explaining the location of individual households. We also calculate and discuss estimates of elasticities of the probabilities of a representative individual choosing a particular community with respect to the various variables.

When Can Carbon Abatement Policies Increase Welfare? The Fundamental Role of Distorted Factor Markets

Ian W. H. Parry, Robertson C. Williams III, and Lawrence H. Goulder

NBER Working Paper No. 5967

March 1997

JEL Nos. L51, H23, D52

Public Economics

This paper uses analytical and numerical general equilibrium mod-

els to assess the efficiency impacts of two policies for reducing U.S. carbon emissions — a carbon tax and a carbon quota — taking into account the interactions between these policies and the pre-existing tax distortions in factor markets. We show that tax interactions significantly raise the costs of both policies relative to what they would be in a first-best setting. In addition, we show that these interactions put the carbon quota at a significant efficiency disadvantage relative to the carbon tax: the costs of reducing emissions by 10 percent are more than three times higher under the carbon quota than under the carbon tax. This disadvantage reflects the inability of the quota policy to generate revenue that can be used to reduce pre-existing distortionary taxes.

Indeed, second-best considerations severely limit the potential of a carbon quota to generate overall efficiency gains. Under our central estimates, a non-auctioned carbon quota (or set of grandfathered carbon emissions permits) cannot increase efficiency unless the marginal benefits from avoided future climate change are at least \$25 per ton of carbon abatement. Most estimates of these marginal environmental benefits are well below \$25 per ton. Thus, our analysis suggests that any carbon abatement by way of a non-auctioned quota will reduce efficiency. In contrast, a revenue-neutral carbon tax is found to improve efficiency so long as marginal environmental benefits are positive.

Nominal Anchor Exchange Rate Policies as a Domestic Distortion

Anne O. Krueger

NBER Working Paper No. 5968

March 1997

International Finance and
Macroeconomics

This paper analyzes a nominal anchor exchange rate policy as a domestic distortion, in the tradition of international trade theory. I show that, in addition to the problems of sustainability and exit pinpointed in the exchange rate literature, a nominal anchor exchange rate policy, while in force, drives a wedge between the domestic and the international intertemporal marginal rates of substitution. I then estimate the welfare cost of the Mexican use of the nominal anchor exchange rate policy prior to December 1994.

The Dark Side of Internal Capital Markets: Divisional Rent-Seeking and Inefficient Investment

**David S. Scharfstein and
Jeremy C. Stein**

NBER Working Paper No. 5969

March 1997

Corporate Finance

We develop a model that shows how rent-seeking behavior on the part of division managers can subvert the workings of an internal capital market. In an effort to stop rent-seeking, corporate headquarters effectively will be forced into paying bribes to some division managers. And, because headquarters is itself an agent of outside investors, the bribes may take the form not of cash, but rather of preferential capital budgeting allocations. One interesting feature of our model is a kind of "socialism" in internal capital allocation, whereby weaker divisions tend to get subsidized by stronger ones.

Returns to Regionalism: An Evaluation of Non-Traditional Gains from RTAs

Raquel Fernández

NBER Working Paper No. 5970

March 1997

JEL Nos. F13, F15

International Trade and Investment

The last decade has witnessed an explosion in the number of regional trade agreements (RTAs). There seems to be a general if ill-defined belief on the part of many policy-makers, and among a number of academics as well, that there is more to an RTA than the traditional gains from trade. I examine several possible benefits that RTAs may confer to their partners, including credibility, signalling, bargaining power, insurance, and coordination. I then assess the necessary conditions for each of these to work; give stylized examples of specific types of policy where they might be applicable; examine real cases where the explanation might be relevant; and discuss their overall plausibility. I conclude by examining NAFTA and the Europe Agreements viewed in this light.

A Markup Interpretation of Optimal Rules for Irreversible Investment

**Avinash Dixit, Robert S. Pindyck,
and Sigbjørn Sodal**

NBER Working Paper No. 5971

March 1997

JEL Nos. D92, D81, E22

Industrial Organization and Productivity

We re-examine the basic investment problem of deciding when to incur a sunk cost to obtain a stochastically fluctuating benefit. The optimal investment rule satisfies a trade-off between a larger and a later net benefit. We show that this trade-off is closely analogous to the standard trade-off for the pricing decision

of a firm that faces a downward sloping demand curve. We reinterpret the optimal investment rule as a markup formula involving an elasticity that has exactly the same form as the formula for a firm's optimal markup of price over marginal cost. We illustrate this with several examples.

The Way We Were (And Are): Changes in Public Finance and Its Textbooks

Harvey S. Rosen

NBER Working Paper No. 5972

March 1997

JEL Nos. H89, B20

Public Economics

This paper uses a comparison of a contemporary public finance textbook with one written in the 1940s as a vehicle for assessing the changes in the field since the beginning of the *National Tax Journal* 50 years ago. The comparison indicates that there have been major changes in the field. From a methodological point of view, the most important change is the embrace of microeconomic theory as the framework for analyzing both positive and normative issues. In addition, the incorporation of econometrics has affected the field dramatically. With respect to topical coverage, research in public finance has changed along with the items on the public policy agenda, and the results of this new research have made their way into contemporary textbooks. But there is continuity as well as change: some topics and their treatments have metamorphosed very little in the last half century.

The Demand for Hours of Labor: Direct Evidence from California

Daniel S. Hamermesh and Stephen J. Trejo

NBER Working Paper No. 5973

March 1997

JEL No. J23

Labor Studies

For many years California has required that most women receive time-and-a-half for hours of work beyond eight in a given day. In 1980 this daily overtime penalty was extended to men. This change provides a unique opportunity for estimating the impact of an exogenous increase in the relative price of a marginal hour of labor on the demand for hours of work. Analyzing Current Population Survey data from 1973 and 1985, we find that the overtime penalty substantially reduced the amount of daily overtime worked by California men compared to men in other states and to women in California. Our estimates imply that the price elasticity of demand for overtime hours is at least -0.70.

The Forecasting Ability of Correlations Implied in Foreign Exchange Options

José M. Campa and P. H. Kevin Chang

NBER Working Paper No. 5974

March 1997

JEL Nos. F31, G13, G15

Asset Pricing and International Finance and Macroeconomics

This paper evaluates the forecasting accuracy of correlations derived from implied volatilities in dollar-mark, dollar-yen, and mark-yen options from January 1989 to May 1995. As a forecast of realized correlation between the dollar-mark and dollar-yen, we compare implied correlation against three alternative forecasts based on time-series data: historical correlation; RiskMetrics'

exponentially weighted moving average correlation; and correlation estimated using a bivariate GARCH (1,1) model. At the one-month and three-month forecast horizons, we find that implied correlation outperforms these alternative forecasts, often significantly. In combinations, implied correlation always improves the performance of other forecasts incrementally, but the converse is not true; in certain cases, historically based forecasts contribute no incremental information to implied forecasts. The superiority of the implied correlation forecast holds even when forecast errors are weighted by realized variances, reflecting the contribution of correlation to the dollar variance of a multicurrency portfolio.

Putting Things in Order: Patterns of Trade Dynamics and Growth

Robert C. Feenstra and Andrew K. Rose

NBER Working Paper No. 5975

March 1997

JEL No. F10

International Finance and Macroeconomics and International Trade and Investment

We develop a procedure to rank-order countries and commodities using disaggregated data on American imports. We find that both countries and commodities can be ranked, consistent with the "product cycle" hypothesis. Countries habitually begin to export goods to the United States according to an ordering; goods also are exported in order. We estimate these orderings using a methodology which takes account of the fact that most goods are not exported by most countries in our sample. Our orderings seem sensible, robust, and intuitive. For instance, our country rankings derived from disaggregated trade data turn out to be highly correlated with macroeconomic phenomena such as national productivity levels and growth rates.

Taming the Skew: Higher-Order Moments in Modeling Asset Price Processes in Finance

**Sanjiv Ranjan Das and
Rangarajan K. Sundaram**

NBER Working Paper No. 5976

March 1997

Asset Pricing

Many financial markets exhibit a considerably greater degree of kurtosis (and sometimes also skewness) than is consistent with the Geometric Brownian Motion model of Black and Scholes (1973). Among the many alternative models that have been proposed in this context, two have become especially popular in recent years: models of jump-diffusions, and models of stochastic volatility. This paper explores the statistical properties of these models with a view to identifying simple criteria for judging the consistency of either model with data from a given market. Our specific focus is on the patterns of skewness and kurtosis that arise in each case as the length of the interval of observations changes. We find that, regardless of the precise parameterization that we use, these patterns are strikingly similar *within* each class of models, enabling a simple consistency test along the desired lines. As an added bonus, we find that for most parameterizations, the set of possible patterns differs sharply *across* the two models, so that data from a given market will typically not be consistent with both models. However, there exist exceptional parameter configurations under which skewness and kurtosis in the two models exhibit remarkably similar behavior from a qualitative standpoint. The results herein will be useful to empiricists, theorists, and practitioners looking for parsimonious models of asset prices.

Banks and Macroeconomic Disturbances under Predetermined Exchange Rates

**Sebastian Edwards and
Carlos A. Végh**

NBER Working Paper No. 5977

March 1997

JEL Nos. E3, F31, F41

International Finance and
Macroeconomics

As the recent Mexican crisis vividly illustrates, Latin American countries often go through boom-bust cycles caused by both domestic policies and external shocks. Such cycles typically are magnified by weak banking systems which intermediate large capital inflows. This paper develops a simple model to analyze how the banking sector affects the propagation of shocks. In particular, we show how the world business cycle and shocks to the banking system affect output and employment through fluctuations in bank credit. We also analyze the countercyclical use of reserve requirements. Evidence for Chile and Mexico supports the main predictions of the model.

Openness, Productivity, and Growth: What Do We Really Know?

Sebastian Edwards

NBER Working Paper No. 5978

March 1997

JEL Nos. F13, F43

International Finance and Macro-
economics and International Trade
and Investment

For over a century, social analysts have debated the connection between trade policy and economic performance. This controversy continues today, even as the world is experiencing an unprecedented period of trade liberalization, and in spite of numerous studies that claim to find a positive effect of openness

on growth. At the core of these controversies are two issues: first, until recently theoretical models had not been able to link trade policy to faster equilibrium growth. Second, the empirical literature on the subject has been affected by serious data problems. In this paper I use a new comparative dataset for 93 countries to analyze the robustness of the relationship between openness and growth in total factor productivity (TFP). I use nine alternative indexes of trade policy to investigate whether the evidence supports the view that, other things given, TFP growth is faster in more open economies. The regressions that I report are robust with respect to the indicator of openness used, estimation technique, time period, and functional form. They suggest that more open countries indeed have experienced faster productivity growth.

Economic Growth and Real Exchange Rate: An Overview of the Balassa- Samuelson Hypothesis in Asia

**Takatoshi Ito, Peter Isard,
and Steven Symansky**

NBER Working Paper No. 5979

March 1997

JEL Nos. E31, F31

International Finance and
Macroeconomics

We test the Balassa-Samuelson hypothesis (that rapid economic growth is accompanied by real exchange rate appreciation because of differential productivity growth between tradable and nontradable sectors) using data on the APEC economies. Japan, Korea, Taiwan and, to a lesser extent, Hong Kong and Singapore, follow the Balassa-Samuelson path. These countries follow a similar pattern of industrialization, increasing the weight of high value-added exports. Although Hong Kong and Singapore grew fast, their

real exchange rates appreciated only moderately. High productivity growth in service sectors might explain this. Other fast-growing ASEAN countries, such as Thailand, Indonesia, and Malaysia did not experience real appreciation. Closer examination of various components of the Balassa-Samuelson hypothesis reveals that key assumptions are not supported uniformly: there is no uniform pattern for the movement of nontradable prices relative to tradable prices, and tradable prices (measured by common currency) do not show international arbitrage.

Alternative Strategies for Aggregating Prices in the CPI

Matthew D. Shapiro and David W. Wilcox

NBER Working Paper No. 5980

March 1997

JEL Nos. C82, E31

Economic Fluctuations and Growth, Monetary Economics, and Productivity

The Consumer Price Index does not take into account the fact that consumers alter the composition of their purchases in response to changes in relative prices. This substitution effect causes the CPI to grow faster than the cost of living. We present new estimates showing that this bias in the CPI averaged 0.3 percentage points per year between December 1986 and December 1995. This bias could be eliminated by using a superlative index to aggregate prices across the item-area strata of the CPI. We discuss the practical difficulties in implementing such a calculation and suggest a method for overcoming them. In particular, we show how to construct an accurate approximation to a superlative price index that can be published with the same timeliness as the CPI.

The Sugar Institute Learns to Organize Information Exchange

David Genesove and Wallace P. Mullin

NBER Working Paper No. 5981

March 1997

JEL Nos. B00, L13

Industrial Organization

This paper describes information exchange between 1928 and 1936 under the *Sugar Institute*, the trade association of U.S. domestic sugar cane refiners. The Institute collected production and delivery data from individual firms and returned it to them in aggregated form. Attempts to exchange sales data were stymied by the larger firms. Surprisingly, there is no indication of mis-reporting of statistics by Institute members, although, at times, statistics were withheld. The paper concentrates on the evolution of the Institute. Proposals for successor organizations show that a workable mechanism required the central authority to have greater discretion and the larger firms to have greater voting rights.

Cellular Telephone, New Products, and the CPI

Jerry Hausman

NBER Working Paper No. 5982

March 1997

Productivity

The cellular telephone is an example of a new product that has significantly affected how Americans live. Since their introduction in 1983, the adoption of cellular telephones has grown at 25–35 percent per year; at year end 1996, about 42 million cellular telephones were in use in the United States. However, the cellular telephone has not been included in the construction of the CPI, and the CPI will not include cellular telephones until 1998 or 1999. This type of neglect of new goods leads to an upward bias in the CPI. This paper

demonstrates that the gains in consumer welfare from a new product such as cellular telephone can be substantial. The paper also gives an approximation result which the BLS could use in the CPI to calculate gains in consumer welfare from new products.

The BLS telecommunications CPI estimates that since 1988, telecommunications prices have increased by 8.5 percent, or an increase of 1.02 percent per year. This estimate ignores cellular service. A corrected telecommunication services cost-of-living index that includes cellular service decreased from 1 in 1988 to 0.903 in 1996, for a decrease of 1.28 percent per year. Thus, the bias in the BLS telecommunications services CPI equals approximately 2.3 percentage points per year. The neglect of new products in the CPI can lead to significant biases.

Market Wages and Youth Crime

Jeff Grogger

NBER Working Paper No. 5983

March 1997

JEL Nos. J2, K14

Labor Studies

Youth crime is widespread. To study the effect of market wages on youth crime, I analyze a time-allocation model in which consumers face parametric wages and diminishing marginal returns to crime. Under these assumptions, individuals who work will commit crimes if the returns to the first hour of crime exceed their market wage. This decision rule imposes considerable structure on the econometric model, which I estimate using data from the National Longitudinal Survey Youth Cohort. The empirical model provides estimates of the determinants of criminal returns and of the wage responsiveness of criminal participation. Young men's behavior appears to be very responsive to price incen-

tives. My estimates suggest that falling real wages may have been an important determinant of rising youth crime over the past two decades. Moreover, wages explain an important component of the racial differential in criminal participation, and they largely explain the age distribution of crime.

Identifying the Common Component in International Economic Fluctuations

Robin L. Lumsdaine and Eswar S. Prasad

NBER Working Paper No. 5984

April 1997

JEL Nos. E32, C51, E37

Economic Fluctuations and Growth and International Finance and Macroeconomics

We develop an aggregation procedure using time-varying weights for constructing the common component in international economic fluctuations. The methodology for deriving time-varying weights is based on some stylized features of the data documented in the paper. The model allows for a unified treatment of cyclical and seasonal fluctuations and also captures the dynamic propagation of shocks across countries. Based on correlations of individual country fluctuations with the common component, we find evidence for a "world business cycle," as well as for a distinct European common component. We find few systematic differences in international business cycle relationships between the Bretton Woods and the post-Bretton Woods periods.

The Technology of Birth: Health Insurance, Medical Interventions, and Infant Health

Janet Currie and Jonathan Gruber

NBER Working Paper No. 5985

April 1997

JEL Nos. I18, I11

Children, Health Care, Labor Studies, and Public Economics

Two key issues for public insurance policy are the effect of insurance status on medical treatment, and the implications of insurance-induced treatment differentials for health outcomes. We address these issues in the context of the treatment of childbirth, using Vital Statistics data on every birth in the United States from 1987–92. We identify the effects of insurance status on treatment and outcomes using the tremendous variation in eligibility for public insurance coverage under the Medicaid program during this period. Among teen mothers and high school dropouts, who largely were uninsured before they became eligible for Medicaid, eligibility meant significant increases in the use of a variety of obstetric procedures. On average, this more intensive treatment was associated with only marginal changes in the health of infants, as measured by neonatal mortality. But the effect of eligibility on neonatal mortality was sizeable among children born to mothers whose closest hospital had a Neonatal Intensive Care Unit, suggesting that insurance-induced increases in use of "high tech" treatments can have real effects on outcomes. Among women with more education, however, there is a countervailing effect on procedure use. Most of these women had private insurance before becoming eligible for Medicaid, and some may have been "crowded out" onto the public program. These women moved from more generous to less

generous insurance coverage of pregnancy and neonatal care. This movement was accompanied by reductions in procedure use without any discernable change in neonatal mortality.

The Great Depression and the Regulating State: Federal Government Regulation of Agriculture, 1884–1970

Gary D. Libecap

NBER Working Paper No. 5986

April 1997

Development of the American Economy

The New Deal increased the amount and breadth of agricultural regulation in the economy, shifting it from providing public goods and transfers to controlling supplies and directing government purchases in order to raise prices. It also created the institutional structure to continue the new regulation long after the crisis ended. I classify agricultural laws passed by Congress and the President from 1884 through 1970 as to whether they provided public goods, gave direct and indirect transfers, or engaged in economic regulation. Additionally, I classify laws enacted from 1940 through 1970 as to whether they were linked to specific New Deal agricultural programs. I then test the hypothesis that, absent the Great Depression and New Deal, the pattern of agricultural regulation with public goods and transfers that existed prior to 1933 would have continued through 1970. I assemble and categorize budget appropriations for economic regulation of agricultural commodities as demand enhancement and supply control in order to analyze how the New Deal affected regulatory expenditures relative to what existed prior to 1933. Additionally, I examine staffing and budgets for the U.S. Department of Agriculture and domestic wheat prices to determine if they were

changed by New Deal policies from 1933 through 1970 compared to the pre-New Deal period. Finally, I make international comparisons to determine how the U.S. regulatory experience compared to that in other western industrial countries.

The Effect of Managed Care on Health Care Providers

Laurence C. Baker and Martin L. Brown

NBER Working Paper No. 5987

April 1997

JEL No. I1

Health Care

We investigate the effect of managed care on the health care system, focusing on the effect it could have on the number and type of health care providers and their efficiency. By influencing providers, managed care may change the structure and performance of the entire health care system in ways that influence care provided to all patients. We begin by discussing the mechanisms by which managed care influences health care providers, concentrating on shifts in market demand and increases in the amount of attention paid to price in provider choices. We develop a theoretical framework that illustrates these effects. We then empirically examine the relationship between managed care activity and mammography providers. We 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 evidence is consistent with the view that HMOs can have broad effects on health care providers.

Labor Earnings Mobility and Inequality in the United States and Germany During the Growth Years of the 1980s

Richard V. Burkhauser, Douglas Holtz-Eakin, and Stephen E. Rhody

NBER Working Paper No. 5988

April 1997

JEL Nos. D31, I32, J68

Labor Studies

In recent years there has been increased interest in issues of inequality and mobility in the labor market. Using data from the Panel Study of Income Dynamics and the German Socio-Economic Panel, we compare the labor earnings mobility of prime age men and women in the United States and Germany during the growth years of the 1980s. Despite major differences in labor market institutions, we find very similar patterns in the two countries. Our formal models of labor earnings dynamics suggest a great deal of persistence in both countries. In the United States, this may be the result of permanent individual-specific differences among men, while in Germany random shocks persist longer for men. Women in Germany and the United States have similar earnings dynamics.

The Impact of Psychiatric Disorders on Labor Market Outcomes

Susan L. Ettner, Richard G. Frank, and Ronald C. Kessler

NBER Working Paper No. 5989

April 1997

JEL Nos. J24, I12

Health Economics

We use data on 2225 men and 2401 women from the National Comorbidity Survey to examine the impact of psychiatric disorders on employment and on conditional work hours and income. We use two-

stage instrumental variables methods to correct for the potential endogeneity of psychiatric disorders. The instruments used (the psychiatric disorder history of the respondent and the respondent's parents) passed tests of the overidentifying restrictions. Psychiatric disorders significantly reduced employment among both men and women. There was also evidence of small reductions in the conditional work hours of men and a substantial drop in the conditional earnings of both men and women, although these findings were somewhat more sensitive to the estimation methods and specification of the model.

U.S. Exports, 1972-94: With State Exports and Other U.S. Data

Robert C. Feenstra

NBER Working Paper No. 5990

April 1997

JEL Nos. F14, C88

International Trade and Investment

This paper describes data on U.S. exports from 1972-94, classified according to the "Schedule B" system, Harmonized System (HS), Standard International Trade Classification (SITC, Revisions 2 and 3), and Standard Industrial Classification (SIC, 1972 basis), along with various concordances. All of these datasets are disaggregated by the destination country for exports. These data are available on the CD-ROM: "NBER Trade Database, Disk 3: U.S. Exports, 1972-94," which can be ordered for \$50 from the Publications Department, NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138. A summary of the SIC data, which does not contain the source country detail and incorporates earlier years, is available via anonymous FTP from nber.org/pub/feenstra, or via the Web from www.nber.org. Disk 1 of the NBER Trade Database contained complete data on U.S. imports, and

included on this CD-ROM is a *revision* to the SIC imports for the years 1989–94. In addition, the CD-ROM includes state-level exports and a number of other U.S. datasets contributed by various researchers, such as tariff reductions under NAFTA, antidumping cases, domestic and imported automobile data, materials consumption by industry, foreign trade zones, foreign investment, and programs used to construct and update the data.

Are Countries with Official International Restrictions “Liquidity Constrained?”

Karen K. Lewis

NBER Working Paper No. 5991

April 1997

Asset Pricing and International Finance and Macroeconomics

In this paper, I empirically examine consumption smoothing behavior across a broad group of countries using a unique dataset that indicates whether residents in a country face an official government restriction. I then ask whether the *ex ante* consumption movements among restricted countries differ from those among unrestricted countries. To gauge the departure from standard consumption smoothing, I use the Campbell and Mankiw [1989, 1991] approach of regressing consumption growth on income growth and instrumenting with lagged variables. I find that consumption growth for residents in countries that impose international restrictions has a significantly higher coefficient on income growth than consumption growth for residents in countries without those restrictions. Thus, a greater proportion of consumers facing international restrictions appear to act as though they are liquidity constrained according to the Campbell and Mankiw approach. I also discuss alternative interpretations that do not depend on liquidity constraints.

Does Acquisition of a GED Lead to More Training, Post-Secondary Education, and Military Service for School Dropouts?

Richard J. Murnane, John B. Willett, and Kathryn P. Boudett

NBER Working Paper No. 5992

April 1997

Labor Studies

This paper uses data from the National Longitudinal Survey of Youth to examine whether acquisition of a GED increases the probability that male and female school dropouts will obtain training, post-secondary education, or military service. We use random-effects-probit models to account for both the dichotomous nature of the dependent variables and the correlations among error terms pertaining to different years of data for the same individual. We find that acquisition of a GED increases the probability that school dropouts obtain post-secondary education and the probability that they obtain noncompany training, defined as training provided by government or by proprietary schools. However, it is still the case that the majority of GED recipients obtain no post-secondary education or training through the age of 26.

The Case for a Two-Part Instrument: Presumptive Tax and Environmental Subsidy

Don Fullerton and Ann Wolverton

NBER Working Paper No. 5993

April 1997

JEL Nos. Q21, H23

Public Economics

This paper builds two simple general equilibrium models to demonstrate the equivalence between the Pigovian tax and the combination of a presumptive tax and an environmental subsidy. A presumptive tax is

one that is imposed under the presumption that all production uses a dirty technology, or that all consumption goods become waste. The environmental subsidy then is provided only to the extent that production uses a cleaner technology, or that consumption goods are recycled. To analyze the usefulness of the tax-subsidy combination, we review conceptual considerations regarding its implementation and practical considerations regarding its actual use throughout the world. While the tax-subsidy combination is being used increasingly, in the form of a deposit-refund system, it is important to explore more flexible interpretations. For example, the two parts of such a policy do not have to apply to the same side of the market: the tax and subsidy do not have to be equal, and they can apply to different goods altogether. Compared to the Pigovian tax, a two-part instrument may be easier to enforce and enact, and still can force the market to recognize the social cost of disposal.

Business Cycles: Theory, Evidence, and Implications

Russell W. Cooper

NBER Working Paper No. 5994

April 1997

JEL Nos. E32, E37, E44, E62

Economic Fluctuations and Growth

This paper looks at recent advances in the study of aggregate fluctuations. My emphasis is on three prominent areas of research: the stochastic growth model; economies that exhibit macroeconomic complementarities; and models that emphasize heterogeneity. Each section of the paper outlines the theory, discusses relevant empirical evidence, and then discusses some implications of the analysis.

The Determinants of Public Education Expenditures: Evidence From the States, 1950–90

Raquel Fernández and Richard Rogerson

NBER Working Paper No. 5995

April 1997

JEL Nos. I22, H52

Public Economics

We examine a panel dataset for the U.S. states over the period 1950–90 and use it to assess the effects of growth in personal income and in the number of students on expenditure on public primary and secondary education. Our analysis suggests that the share of personal income devoted to education is roughly constant, implying that per student education expenditures grow at roughly the same rate as personal income per student. We also find that additional factors accounted for an increase in education expenditures over the period 1950–70.

Capital-Market Imperfections and Investment

R. Glenn Hubbard

NBER Working Paper No. 5996

April 1997

JEL Nos. E2, G3, E5, H3

Corporate Finance, Economic Fluctuations and Growth, Monetary Economics, and Public Economics

Over the past decade, a number of researchers have extended conventional models of business fixed investment to incorporate a role for “financial constraints.” This paper reviews this empirical research, and uses advances in models of information and incentive problems to motivate those developments and challenges. First, I describe the analytical underpinnings of models of capital-market imperfections in the investment process, and I illustrate the principal testable implications of

those models. Then I motivate tests and describe and critique existing empirical studies. Third, I consider applications of the underlying models to a range of investment activities, including inventory investment, R and D, employment demand, pricing by imperfectly competitive firms, business formation and survival, and risk management. Fourth, I discuss implications of this research program for analysis of effects of investment on monetary and tax policy. Finally, I examine some potentially fruitful avenues for future research.

Sovereign Debt and Consumption Smoothing

Herschel I. Grossman and Taejoon Han

NBER Working Paper No. 5997

April 1997

JEL Nos. F34, H63

Economic Fluctuations and Growth and Monetary Economics

This paper shows that whether a sovereign can borrow to smooth consumption depends both on how the consumption smoothing is achieved — that is, whether by contingent debt issuance or by contingent debt servicing — and on the exact nature of the penalty for debt repudiation. If a sovereign that repudiated its debt could not borrow again, but could continue to save and to dissave, then contingent debt issuance, without contingent debt servicing, cannot support a positive amount of uncollateralized sovereign debt. But, under this same specification of the penalty for repudiation, contingent debt servicing supports a positive amount of uncollateralized sovereign debt.

Can Higher Cigarette Taxes Improve Birth Outcomes?

William N. Evans and Jeanne S. Ringel

NBER Working Paper No. 5998

April 1997

JEL Nos. H2, I12, I18

Health Economics and Public Economics

This study uses within-state variation in taxes during 1989–92 to test whether maternal smoking and birth outcomes respond to higher state cigarette taxes. The data come from the Natality Detail files, generating a sample of roughly 10.5 million births. The results indicate that smoking participation declines when excise taxes are increased. The elasticity of demand for cigarettes is estimated to be approximately -0.25 . In addition, estimates of two-part models suggest that taxes only alter the probability that a mother smokes and not her average daily consumption conditional on smoking. Reduced-form models also indicate that higher excise taxes translate into higher birth weights. These two sets of results can be used to form an instrumental variables estimate of the impact of smoking on birth weight. This estimate indicates that maternal smoking reduces average birth weight by 367 grams, which is remarkably close to estimates from random assignment clinical trials.

It is important to note that as a policy tool for improving birth outcomes, cigarette taxes are a blunt instrument. Taxes will be imposed on all smokers, but the benefits received and costs imposed extend beyond the targeted population. Under the naive assumption that the only benefits of the tax are received in the form of improved birth outcomes, we find that an increase in the cigarette tax is not as cost effective in preventing low birth weight as other more targeted public policies, such as the Medicaid expansions of the late 1980s.

A Clinical Exploration of Value Creation and Destruction in Acquisitions: Organizational Design, Incentives, and Internal Capital Markets

Steven N. Kaplan, Mark L. Mitchell, and Karen H. Wruck

NBER Working Paper No. 5999

April 1997

Corporate Finance

This paper presents clinically-based studies of two acquisitions that received very different stock market reactions at announcement, one positive and one negative. Despite the differing market reactions, neither acquisition ultimately created value overall. In exploring the reasons for the acquisition outcomes, we rely primarily on interviews with managers and on internally generated performance data. We compare the results of these analyses and analyses of post-acquisition operating and stock price performance traditionally applied to large samples.

We draw two primary conclusions: 1) It is difficult to implement a successful acquisition strategy and to run an effective internal capital market. Post-acquisition difficulties resulted because managers of the acquiring company did not deeply understand the target company at the time of the acquisition; the acquirer imposed an inappropriate organizational design on the target as part of the post-acquisition integration process; and inappropriate management incentives existed at both the top management and division levels. 2) Measures of operating performance used in large sample studies are correlated weakly with actual post-acquisition operating performance.

Government Debt and Social Security in a Life-Cycle Economy

Mark Gertler

NBER Working Paper No. 6000

April 1997

JEL Nos. E13, E60

Monetary Economics and Public Economics

This paper develops a tractable overlapping generations model that is useful for analyzing both the short- and long-run impact of fiscal policy and Social Security. It modifies the Blanchard (1985)/Weil (1987) framework to allow for life-cycle behavior by introducing random transition from work to retirement, and then from retirement to death. The transition probabilities may be picked to allow for realistic average lengths of life, work, and retirement. The resulting framework is not appreciably more difficult to analyze than the standard Cass/Koopmans one-sector growth model: besides the capital stock, there is only one additional state variable, the distribution of wealth between workers and retirees. Under reasonable parameter values, government debt and Social Security have significant effects on capital intensity.

The History of Annuities in the United States

James M. Poterba

NBER Working Paper No. 6001

April 1997

JEL Nos. G22, D91

Aging, Asset Pricing, Corporate Finance, and Public Economics

This paper summarizes the development of private annuity markets in the United States. Annuities constituted a small share of the U.S. insurance market until the 1930s, when two developments contributed to their growth. First, concerns about the stability of the financial system drove investors to products offered

by insurance companies, which were perceived to be stable institutions. Flexible payment deferred annuities, which permit investors to save and accumulate assets as well as to draw down principal, grew rapidly in this period. Second, the group annuity market for corporate pension plans began to develop in the 1930s. The group annuity market grew more rapidly than the individual annuity market for several decades after World War II. The most recent development in the annuity marketplace has been the rapid expansion of variable annuities. These annuity products combine the investment features of mutual funds with the tax deferral available for life insurance products. Variable annuity premium payments increased by a factor of five in the most recent five years for which data are available.

New Evidence on the Money's Worth of Individual Annuities

Olivia S. Mitchell, James M. Poterba, and Mark J. Warshawsky

NBER Working Paper No. 6002

April 1997

JEL Nos. J14, D91, G22, H55

Aging, Asset Pricing, and Public Economics

This paper presents new information on the expected present discounted value of payouts on individual life annuities. We 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 people outliving their savings, given uncertainty about longevity. For reasonable estimates of behavioral parameters, we calculate that individual annuities currently are priced so that retirees without bequest motives should find them of

substantial value in configuring their portfolios to smooth retirement consumption. We also find that the expected present discounted value of payouts, relative to the initial cost of the annuity, has increased over the last decade. These findings bear on the policy debate regarding the role of individual choice and self-reliance in retirement planning.

Local Violence, Educational Attainment, and Teacher Pay

Jeff Grogger

NBER Working Paper No. 6003

April 1997

JEL Nos. I2, J1

Labor Studies

Violence in and around schools has drawn increasing attention lately from both the public and policymakers. Despite the importance of the problem, however, there has been limited research on this topic. In this paper I analyze how local violence affects high school graduation, college attendance, and teacher pay. Using data from the High School and Beyond survey, I find that moderate levels of violence reduce the likelihood of high school graduation by 5.1 percentage points on average; lower the likelihood that a student will attend college by 6.9 percentage points; and raise teacher salaries by 2.4 percent.

The Optimal Tax Rate for Capital Income is Negative

Kenneth L. Judd

NBER Working Paper No. 6004

April 1997

JEL No. H21

Public Economics

I examine the problem of optimal taxation in a dynamic economy with imperfectly competitive markets. I find that the optimal tax system tends to provide subsidies for the purchase of capital goods in order to offset gaps between price and marginal

cost. The average tax on capital income will be negative, even if pure profits are not taxed away, and even if the alternative distortionary taxes have an *infinite* efficiency cost. These arguments hold even if it is necessary to tax consumption goods which also sell above marginal cost; the difference is that capital goods are intermediate goods and consumption goods are final goods. Since observed markups are greater for equipment than for construction, this analysis justifies the Investment Tax Credit's discrimination in favor of equipment over structures.

Industry Evolution and Transition: A Neoclassical Benchmark

Andrew Atkeson and Patrick Kehoe

NBER Working Paper No. 6005

April 1997

JEL Nos. F36, O4, E13

Economic Fluctuations and Growth and International Finance and Macroeconomics

Recently, many countries have undertaken major reforms which 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. The thesis of this paper is that the process of starting new enterprises is turbulent and time-consuming; as a result, it takes time before the benefits of reform show up in increases in measured output and productivity. To establish a neoclassical benchmark for reforming economies, we ask what the path of transition looks like in an economy with a process governing the growth of new enterprises like that of the United States, that is a well-functioning market economy. We 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.

International Trade Between Consumer and Conservationist Countries

James Brander and M. Scott Taylor

NBER Working Paper No. 6006

April 1997

International Trade and Investment

We consider trade between a "consumer" country with an open access renewable resource and a "conservationist" country that regulates resource harvesting to maximize domestic steady-state utility. In what we call the "mild overuse" case, the consumer country exports the resource good and suffers steady-state losses from trade, as suggested by the "conventional wisdom" that weak resource management standards confer a competitive advantage on domestic firms in the resource sector but cause welfare losses. Strikingly, however, when the resource stock is most in jeopardy, the conservationist country exports the resource good in steady state and both countries experience gains from trade.

Hot Money

V. V. Chari and Patrick Kehoe

NBER Working Paper No. 6007

April 1997

JEL Nos. F0, F3, G0

International Finance and Macroeconomics

The conventional wisdom is that capital flows between developing and developed countries are more volatile than can be justified by fundamentals. We construct a simple model in which frictions in international financial markets together with occasional fiscal crises lead to excessive volatility of capital flows. The financial market frictions inhibit the transmission of information across investors and lead to herd-like be-

havior. The fiscal crises lead to standard debt-default problems. These crises act as “tests of fire” for borrowing countries. If a country survives such tests, its reputation is enhanced, and future capital flows become less volatile. Failing these tests is associated with a loss of reputation and a decline in the amount of capital flows.

Urban Growth **Duncan Black and** **Vernon Henderson**

NBER Working Paper No. 6008

April 1997

JEL Nos. O4, R00, E2, J24

Economic Fluctuations and Growth
and Public Economics

This paper models and examines empirically the evolution of cities in an economy. Twentieth-century evolution in the United States is characterized by parallel growth of cities of different types and ongoing entry of new cities, together maintaining a stable relative size distribution of cities. Each type of city has a particular industrial composition and good(s) it specializes in, and corresponding equilibrium size. We model this evolution in an economy with exogenous population growth and endogenous accumulation of human capital. Within cities, there are knowledge spillovers as well as scale externalities. Individual city sizes increase with human capital accumulation; cities grow in number if national population growth is high enough. Different types of cities grow in parallel in size and human capital accumulation. However, per capita income and human capital levels differ across city types by production process and by the benefits of human investments and spillovers, so there is observed inequality across cities among otherwise identical individuals.

Public Goods and **Ethnic Divisions**

Alberto Alesina, Reza Baqir,
and William Easterly

NBER Working Paper No. 6009

April 1997

Public Economics

We present a model that links heterogeneity of preferences across ethnic groups in a city to the amount and type of public good the city supplies. We test the implications of the model with three related datasets: U.S. cities, U.S. metropolitan areas, and U.S. urban counties.

We show that productive public goods — education, roads, libraries, sewers, and trash pickup — in U.S. cities (metro areas/urban counties) are related inversely to the city’s (metro area’s/county’s) ethnic fragmentation, even after controlling for other socioeconomic and demographic determinants. Ethnic fragmentation is related negatively to the share of local spending on welfare. The results are driven mainly by observations in which majority whites are reacting to the varying sizes of minority groups. We conclude that ethnic conflict is an important determinant of local public finances.

NBER Historical Papers

***Latifundia* as Malefactor in** **Economic Development?** **Scale, Tenancy, and** **Agriculture on the Pampas,** **1880–1914**

Alan M. Taylor

NBER Historical Paper No. 96

March 1997

JEL Nos. N56, Q15, Q12

Development of the American Economy

This paper uses extensive micro-level data from Argentine agriculture circa 1880–1914 to explore various hypotheses relating to the supposed unusual and favored position enjoyed by the owner-operated large scale estates (*latifundia*) on the pam-

pas, as compared to small-scale units operated by cash tenants and sharecroppers. I have access to several datasets which allow me to explore whether tenancy and scale mattered as determinants of technique and efficiency in the rural estates of Buenos Aires province at the turn of the century. I obtain some surprising results. Tenants did not seem disadvantaged in terms of access to land. Accumulation of land in and of itself produced no direct gain in terms of augmented land prices (caused by say, scale economies or monopoly power). And tenancy status appears to have mattered very little as a determinant of investment choices. I conclude that the case against the *latifundia*, and the pessimistic conventional view of tenant farming on the pampas, rests at present on little solid quantitative evidence.

Debt, Default, and Revenue **Structure: The American** **State Debt Crisis in the** **Early 1840s**

Arthur Grinath, III; John Joseph
Wallis, and Richard Sylla

NBER Historical Paper No. 97

March 1997

JEL Nos. N21, N41, N71

Development of the American Economy

During the 1820s and 1830s, American state governments made large investments in canals, banks, and railroads. In the early 1840s, nine states defaulted on their debts, four ultimately repudiated all or part of their debts, and three went through substantial renegotiations. This paper examines how the states got into the debt crisis and, as a result of their earlier history, how they responded to fiscal pressure in the debt crisis. The explanation is built around revenue structures. States along the developed eastern seaboard were able to avoid politically costly property taxes, while states along the frontier were forced to rely heavily on property taxes. When faced with

fiscal pressures, two of the defaulting states — Maryland and Pennsylvania — were able to resume debt payments, with back interest, as soon as a property tax was enacted. The other defaulting states, however, already had high property taxes. Without access to new revenue sources, these states were forced to default, and then either to renegotiate or repudiate their debts.

Inventors, Firms, and the Market for Technology: U.S. Manufacturing in the Late Nineteenth and Early Twentieth Centuries

Naomi R. Lamoreaux and Kenneth L. Sokoloff

NBER Historical Paper No. 98

April 1997

JEL Nos. O3, N0, L0

Development of the American Economy

Recent scholarly literature explains the spread of in-house research laboratories during the early twentieth century by pointing to the information problems involved in contracting for technology. We argue, by contrast, that these difficulties have been overemphasized; in fact, a substantial trade in patented inventions developed over the course of the nineteenth century, much of it taking the form of transactions conducted at arms-length through the market. This expansion of trade in technology made possible a growing division of labor, as inventors increasingly took advantage of their greater ability to sell off rights to patented technologies and focused their energies and resources on invention itself. Firms in turn responded to the expansion of this trade by developing capabilities that enabled them to learn about and assess externally generated inventions. Although it is true that by the early twentieth century large firms also were beginning to invest in developing their internal inventive capabilities, in doing so they faced a number of significant problems. Most

importantly, they had to overcome resistance to contracts requiring employees to sign over patents to their employers, and they had to reduce the high turnover rates that made such requirements effectively unenforceable. The increased costs of inventive activity and the greater risks borne by independent inventors by the early twentieth century helped firms to make their case. But there was still a lot of organizational learning involved. Hence where other scholars have emphasized the difficulties of contracting for technology in the market and the relative ease of integrating invention and production within the firm, we reverse the story. Economic actors at that time had a great deal of experience contracting for new technological ideas in the market; what they did not know how to do, and had to spend a great deal of time and energy learning, was managing creative individuals within the firm.

NBER Technical Papers

The Significance of the Market Portfolio

Stefano Athanasoulis and Robert J. Shiller

NBER Technical Working Paper No. 209

February 1997

JEL Nos. G00, G13, G22

Asset Pricing

The market portfolio in one sense is the least important portfolio to provide to investors. In a J-agent-one-period-stochastic-endowment economy, where preferences are quadratic, a social-welfare-minded contract designer would never create a contract that would allow trading the market portfolio. Even the complete set of contracts, all J-1 of them, which provide a first best solution, never span the market portfolio. These conclusions rely on the assumption that the contract designer has perfect information about agents' utilities. We also show that as the

contract designer's information about agents' utilities becomes less perfect, optimal contracts eventually become contracts that weight individual endowments in proportion to elements of eigenvectors of the variance matrix of endowments. Then, if there is a strong enough market component to endowments, a portfolio approximating the market portfolio may be the most important portfolio.

Observational Agency and Supply-Side Econometrics

Tomas Philipson

NBER Technical Working Paper No. 210

February 1997

Health Care

A central problem in applied empirical work is separating out the patterns in the data that are attributable to poor production of the data, such as non-response and measurement errors, from the patterns attributable to the economic phenomena studied. This paper interprets this inference problem as an agency problem in the market for observations, and suggests ways in which using incentives may be useful in overcoming it. I discuss how wage discrimination may be used to identify economic parameters of interest, taking into account the responses in the survey supplied by sample members to that discrimination. Random wage discrimination alters the supply behavior of sample members across the same types of populations in terms of outcomes, and thereby allows for separating out poor supply from the population parameters of economic interest. Empirical evidence for a survey of U.S. physicians suggests that survey supply even for this wealthy group is affected by the types of wage discrimination schemes discussed, in a manner that makes the schemes useful for identification purposes. Using such schemes to correct mean estimates of physician earnings increases those earnings by about one third.

NBER *Reporter*
NATIONAL BUREAU OF ECONOMIC RESEARCH

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

Address Correction Requested

Nonprofit Org.
U.S. Postage
Paid
Boston, MA
Permit No. 55932