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Program Report

Development of the American Economy

Claudia Goldin

The NBER's Program on the Development of the American Economy (DAE) includes research on labor and population, industrial organization, financial and macroeconomic history, and political economy. Yet all of its members are engaged in the "objective quantitative analysis of the American economy," the stated mission of the NBER. The NBER was established 75 years ago to inform contemporary policy debate. Wesley C. Mitchell, the first president of the NBER, was an economic historian who appreciated the need to produce data and the difficulty in doing so. He also recognized that history was essential to the policy debates of his age, and for the same reason it is essential to those of ours: it is risky and foolish to base conclusions on potentially transient phenomena. The central task of the DAE program today is precisely that which led to the formation of the NBER: informing current policy debate through the use of historical data and analysis.

This summary highlights some of the work of a subgroup of DAE researchers who have been concerned mainly, although not exclusively, with labor and population issues. How economies and regions became integrated economically (and sometimes became disintegrated) is central to several projects that emphasize the role of factor flows, particularly flows of labor, but also of capital and commodities. Some of the work deals with distributional issues, such as the roles of education and technology in affecting the wage structure. Other papers focus on how human capital investments in education and health enhance labor productivity, change labor supply, and alter longevity and the quality of life. Still others seek the causes and labor market impact of institutional change, for example government provision of social insurance and the extension of publicly provided education.

Convergence and Market Integration

Jeffrey G. Williamson, jointly with Alan Taylor and other coauthors, is engaged in research on the impact of commodity and factor flows on convergence since 1850. Their work points to two golden ages of conver-

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gence among the current OECD countries—from 1850 to 1914, and from 1950 to 1995—as well as one period when it stopped, between 1914 and 1950. To deal explicitly with multifactor theories of convergence, Williamson has assembled annual time series of purchasing-power-parity (PPP) adjusted real wages for 17 Old World (European) and New World countries.[1] Most Old World countries had far lower real wages than the New World countries did. For example, in the 1880s Sweden's real wages were 0.39, and Norway's were 0.44, of those in the New World. But just 25 years later, there was considerable catch-up, with Sweden's wage increasing to 0.56, and Norway's to 0.67, of the New World's.

Various papers in this project demonstrate that open-economy forces, often ignored in the new growth literature, explain a large share of the convergence of PPP-adjusted real wages between 1850 and World War I. According to these studies, mass migrations within Europe, and between Europe and the New World, account for a large part of the convergence. And these migrations, which were the greatest in world history, in turn were slowed by the convergence in standards of living.[2]

Commodity trade, as once suggested by Heckscher and Ohlin, was another major factor. World transportation costs plummeted in the late nineteenth century, and the ensuing commodity price convergence reinforced that from factor flows.[3] Both fostered convergence in factor prices and labor productivity among various OECD nations. The next phase of this project explains why convergence stopped abruptly around 1914, not to resume again until 1950.

The integration of domestic labor markets is central to the work

of Robert A. Margo and Joshua L. Rosenbloom. Margo's work has explored the antebellum economy, whereas Rosenbloom's looks at the late nineteenth century. Margo has continued his longstanding work, assembling a new index of nominal and real wages at the regional level for skilled and unskilled workers from 1820 to 1860.[4] He finds that there was considerable wage convergence within but not between regions; that differentials in wages between artisans and laborers did not widen over the period; and that the gap between farm and nonfarm wages was small.[5] His most recent work on this project, an investigation of the price of urban housing, concludes that antebellum increases in the real wage have been overstated in the absence of a true cost-of-housing index.[6]

Rosenbloom's work, for the later period, reinforces Margo's and finds that there was substantial integration within regions, as well as among areas of the country outside the South, in the market for manufacturing workers. But he also finds that labor markets in the North and South continued to be largely separate, at least until 1920.[7]

In related work, Rosenbloom explores information flows for long-distance migrations, and finds that decentralized and informal modes of communication effectively mobilized large-scale movements of labor. It is all the more curious that integration between the North and the South was delayed so long. Rosenbloom points to mechanisms developed by northern employers to recruit European immigrants, and the absence of those mechanisms in recruiting southern labor until the 1920s.[8]

Longevity and Labor Force Participation

Dora L. Costa has written several papers on why retirement rates increased in the twentieth century. Using a unique natural experiment —the Union Army pension—Costa finds that increased wealth had a large positive effect on retirement (the elasticity of retirement with respect to the pension was 0.73). Thus, secularly rising income can explain a substantial part of increased retirement before the introduction of Social Security.[9] Costa rules out the shift from agriculture as a major factor explaining increased retirement because farmers retired at the same rate as other workers did.[10] She also rules out worsening health. For example, heart disease was almost three times as prevalent among older veterans in 1910 as around 1990. Further, in the past unhealthy people continued to work despite their poor health.[11]

Robert W. Fogel's recent Nobel address points out that the high rates of chronic disease observed among Union Army veterans imply that degenerative disorders are not simply part of the natural process of aging but also are caused by environmental conditions. Therefore, Fogel predicts, because the environmental conditions of early life have improved, lifespans will continue to increase.[12] His Nobel address provides a fine summary of his research findings of the past 20 years.

Central to his work are the factors that increased longevity during the last two centuries. Prior to the mid-twentieth century, nutritional increases were paramount. And, in most countries, adequate nutrition has been a distributional problem, rather than one of aggregate shortfalls. Fogel's research draws on findings from economics, history, medicine, physiology, demography, and statistics, and his evidence covers centuries and continents. Although far-reaching in time, space, and methodology, his conclusions are pointed and highly relevant to current policy. His finding that chronic diseases are influenced by early environments informs economic debate regarding the future of Social Security and Medicare.

Education

Economists have long viewed education as the engine of twentieth-century growth. What has gone largely unappreciated is that 70 percent of the increase in years of schooling occurred at the secondary level. In a series of papers, I have tracked the rise of the American high school from 1900 to 1960, and created the first state-level dataset on secondary schooling.[13] In the states outside the South, the average 18-year-old in 1910 stood only a 10 percent chance of having a high school diploma; by the mid-1930s, the median 18-year-old was a high school graduate.

I also have examined how productivity, state-level income, geographic mobility, and the wage structure were affected by the increase in education. Some of this research extends work I did jointly with Margo on the "great compression" of the wage structure in the 1940s.[14] In joint work with Lawrence F. Katz, I find that increased secondary school education caused the premium to white-collar jobs to plummet between 1910 and 1930. In 1909 the average male office worker earned 50 percent more than the average production worker; by 1929 he earned only 12 per-

cent more. Increased education led to the decline of previously "noncompeting" groups. We also find that "high-technology" manufacturing firms of the 1920s to 1940s hired disproportionately more high school graduates in blue-collar jobs than other firms did, suggesting that the rise of the high school fueled the increase in American manufacturing labor productivity in the mid-twentieth century.[15]

My research on twentieth-century education also has explored how the increase in women's college attendance and graduation affected their demographic and labor force experiences. I find that 50 percent of women who graduated from college around 1905 never had children. But women college graduates 50 years later were marrying and having children at almost the same rate as noncollege women.[16] Differences in the demographic experiences of college and noncollege women now have widened again. Thirty percent of women who received a bachelor of arts degree around 1970 have not yet borne a child.[17]

Social Insurance

Workers' compensation (WC) was the first social insurance program in the United States. Passed by almost all states between 1910 and 1930, WC was a major victory for progressives. In a series of papers, Price V. Fishback and Shawn E. Kantor have investigated why a winning coalition that supported state intervention was formed. Fishback and Kantor find that workers were constrained in their ability to purchase private accident insurance. They insured through other, second-best means before passage of WC.[18] After passage of WC, the wages of nonunion workers decreased dollar for expected-benefit dollar, implying that workers effectively purchased their higher benefits. Therefore, firms did not pay higher wages for nonunion workers after passage of WC, and their general support for WC was not surprising. Union members experienced smaller wage declines than nonunion workers, and thus benefited the most.[19] Still, risk-averse nonunion workers, firms, and union members all gained from the passage of WC. Although the passage of WC is easily explained, the form it took among the various states (for example, benefit levels, and state-provided insurance) was the result of complicated bargaining among economic factions.[20]

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[1]*J. G. Williamson, "The Evolution of Global Labor Markets in the First and Second World Since 1930: Background Evidence and Hypotheses," NBER Historical Paper No. 36, February 1992, and* Explorations in Economic History *(April 1995).*

[2]*T. J. Hatton and J. G. Williamson, "What Drove the Mass Migrations from Europe in the Late Nineteenth Century?" NBER Historical Paper No. 43, November 1992, and* Population and Development Review *20 (1994), pp. 1–27; "Late-Comers to Mass Emigration: The Latin Experience," NBER Historical Paper No. 47, June 1993, and in* Migration and the International Labor Market, 1850–1939, *T. J. Hatton and J. G. Williamson, eds. London: Routledge, 1994; A. M. Taylor and J. G. Williamson, "Convergence in the Age of Mass Migration," NBER Working Paper No. 4711, April 1994.*

[3]*K. O'Rourke, A. M. Taylor, and J. G. Williamson, "Land, Labor, and the Wage–Rental Ratio: Factor Price Convergence in the Late Nineteenth Century," NBER Historical Paper No. 46, May 1993; K. O'Rourke and J. G. Williamson, "Were Heckscher and Ohlin Right? Putting the Factor-Price-Equalization Theorem Back into History," NBER Historical Paper No. 37, May 1992, and* Journal of Economic History *54 (December 1994), pp. 892–916; J. G. Williamson, K. O'Rourke, and T. J. Hatton, "Mass Migration, Commodity Market Integration, and Real Wage Convergence: The Late Nineteenth Century Atlantic Economy," NBER Historical Paper No. 48, June 1993, and as O'Rourke, Williamson, and Hatton, with same title, in* Migration and the International Labor Market, 1850–1939, *op. cit.*

[4]*R. A. Margo, "Wages and Prices During the Antebellum Period: A Survey and New Evidence," in* American Economic Growth and Standards of Living Before the Civil War, *R. Gallman and J. Wallace, eds. Chicago: University of Chicago Press, 1992, and "The Labor Force in the Nineteenth Century," NBER Historical Paper No. 40, August 1992.*

[5]*R. A. Margo, "Labor Market Integration Before the Civil War: New Evidence," NBER Historical Paper, forthcoming, and "The Farm–Nonfarm Wage Gap in the Antebellum United States: Evidence from the 1850 and 1860 Censuses of Social Statistics," NBER Historical Paper, forthcoming.*

[6]*R. A. Margo, "The Price of Housing in New York City, 1830–60," NBER Historical Paper No. 63, November 1994.*

[7]*J. L. Rosenbloom, "Was There a National Labor Market at the End of the Nineteenth Century? Intercity and Interregional Variation in Male Earnings in Manufacturing," NBER Historical Paper No. 61, October 1994.*

[8]*J. L. Rosenbloom, "Employer Recruitment and the Integration of Industrial Labor Markets, 1870–1914," NBER Historical Paper No. 53, January 1994.*

[9]*D. L. Costa, "Health, Income, and Retirement: Evidence from Nineteenth Century America," NBER Working Paper No. 4537, November 1993, and as "Pensions and Retirement: Evidence from Union Army Veterans,"* Quarterly Journal of Economics, *forthcoming.*

[10]*D. L. Costa, "Agricultural Decline and the Secular Trend in Retirement Rates," NBER Historical Paper No. 55, April 1994, and* Explorations in Economic History, *forthcoming.*

[11]*R. W. Fogel, D. L. Costa, and J. M. Kim, "Secular Trends in the Distribution of Chronic Conditions and Disabilities at Young Adult and Late Ages, 1860–1988: Some Preliminary Findings," paper presented at the 1993 NBER Summer Institute.*

[12]*R. W. Fogel, "Economic Growth, Pop-*

ulation Theory, and Physiology: The Bearing of Long-Term Processes on the Making of Economic Policy," American Economic Review *84 (June 1994), pp. 369–395.*

[13]C. Goldin, "How America Graduated from High School: 1910 to 1960," NBER Working Paper No. 4762, June 1994; "Appendix to: 'How America Graduated from High School, 1910 to 1960, Construction of State-Level Secondary School Data'," NBER Historical Paper No. 57, June 1994.

[14]C. Goldin and R. A. Margo, "The Great Compression: The Wage Structure at Mid-Century," Quarterly Journal of Economics *107 (February 1992), pp. 1–34. Margo also has researched a related distributional change in "Explaining Black–White Wage Convergence, 1940–50: The Role of the Great Compression," NBER Historical Paper No. 44, March 1993, and* Industrial and Labor Relations Review, *forthcoming.*

[15]C. Goldin and L. F. Katz, "The Decline of Noncompeting Groups: Changes in the Premium to Education, 1890 to 1950," NBER Working Paper, forthcoming.

[16]C. Goldin, "The Meaning of College in the Lives of American Women: The Past 100 Years," NBER Working Paper No. 4099, June 1992.

[17]C. Goldin, "Career and Family: College Women of the Baby Boom," manuscript in progress.

[18]P. V. Fishback and S. E. Kantor, "Insurance Rationing and the Origins of Workers' Compensation," NBER Working Paper No. 4943, December 1994.

[19]P. V. Fishback and S. E. Kantor, "Did Workers Pay for the Passage of Workers' Compensation Laws?" NBER Working Paper No. 4947, December 1994.

[20]P. V. Fishback and S. E. Kantor, "A Prelude to the Welfare State: Compulsory State Insurance and Workers' Compensation in Minnesota, Ohio, and Washington, 1911–19," NBER Historical Paper No. 64, December 1994.

Research Summaries

Rules for Monetary Policy

Bennett T. McCallum

In recent years, the economics profession's interest in rules for the conduct of monetary policy has dramatically increased. This has occurred as analysts and central bankers have sought to avoid the inflationary bias that is induced by "discretionary" policymaking (that is, period-by-period optimization), and have come to recognize that rule-based strategies can incorporate activist responses to changing conditions. Furthermore, both analysts and practitioners increasingly have viewed rules not as constraints imposed on central banks by external agencies, such as the U.S. Congress, but as orderly and time-consistent means of operating internally—for example, as explicit starting points for consideration of current policy options.[1]

During this period, various researchers—including John B. Taylor, Allan H. Meltzer, Martin Feldstein and James H. Stock, Robert E. Hall and N. Gregory Mankiw, and John P. Judd and Brian Motley[2]—have proposed alternative monetary rules to be considered by central banks whose policies are not strictly limited by exchange rate commitments. My own work has emphasized variants of a rule that treats nominal GNP as the target variable and the monetary base as the instrument, with base growth rates set each quarter to keep the growth in nominal GNP close to a steady noninflationary path. (Here "noninflationary" might mean 1 or 2 percent per year; for this discussion, we will treat the target trend inflation rate as given.)

In terms of the nominal GNP (or GDP) target, some critics favor traditional monetary aggregates and others prefer direct targeting of the price level, or some other weighted average of price level and real output variables. I tend to favor GDP over the monetary aggregates, because keeping its growth close to the target value will result in inflation close to the desired rate on average, that is, over a decade or so. That might not be true for M1 or M2; the recent "stability" of M2 velocity may not hold in the future. In addition, GDP seems preferable to direct price level targets, even if inflation control is the main goal for the central bank, for three reasons. First, because prices evidently react more slowly than output in response to monetary actions,[3] cycling and instability are more likely with a price level (or inflation) target. Second, a smoothed path for nominal GDP is probably better suited to stabilizing output than is a smoothed path of the price level.[4] We cannot be certain about this, because the profession has a very poor understanding of the short-run dynamic interactions between nominal and real variables, and of the magnitude and correlation of various types of shocks. But this poor understanding suggests, third, that it is more difficult to design a rule for achieving inflation targets than for GDP growth targets: the former requires an understanding of forces determining the split of nominal GDP growth into its inflation and real growth components.

Some economists, including Hall,[5] would prefer a target that

gives more weight to output movements and less to inflation than does a GDP target, which weights them equally. But a counterargument is that choice of some "optimal" weights again relies on knowledge that the profession does not possess. To favor GDP targeting is not to claim that it is optimal, but that it would provide a simple scheme that is likely to work moderately well under a variety of conditions.

One practical objection is that GDP statistics are not produced often or quickly enough, and are revised significantly after their first release. But the essence of the approach is to use some comprehensive measure of nominal spending; it need not be GDP or GNP. Other measures surely could be developed on the basis of price and quantity data that are collected more often and more promptly.

Concerning the use of a monetary base instrument, most central banks actually use an interest rate instrument, and some analysts suggest that this is desirable. Indeed, the variability of short-term interest rates probably would be substantially greater with the base kept on a rule-specified path week by week, and banks thus would be forced to hold an increased volume of excess reserves. It is unclear, however, that the consequent social costs would be sizable.

In any event, in a recent paper I investigated the possibility of using an interest rate instrument—and smoothing its movements weekly—so as to keep monetary base values close to quarterly "intermediate target" levels, with these levels dictated by the monetary policy rule that I am discussing.[6] Although only a preliminary investigation of the topic, the study attempts to account realistically and quantitatively for variations in shocks and responses of the U.S. economy. It suggests that the federal funds rate could be manipulated weekly to hit base targets designed to yield desirable quarterly GNP targets, with considerable smoothing of the funds rate on a weekly basis, and not too much more variability than now exists.

"To favor GDP targeting is not to claim that it is optimal, but that it would provide a simple scheme that is likely to work under a variety of conditions."

Then why not simply express the policy rule in terms of quarterly settings of an interest rate instrument? First, interest rates have (as is widely known) ambiguous meanings regarding the stance of monetary policy: the funds rate may be high either because of current tightness or because of past looseness of monetary policy. In practical terms, this implies a much more complicated policy feedback rule than one involving the monetary base. In my own simulation studies, for instance, I have not been able to find a simple interest rate rule that performs nearly as well as a base rule.

The studies that I have conducted over several years have been designed in part to determine whether a simple and operational feedback rule, one that adjusts base growth settings in response to past long-term changes in velocity (reflecting institutional change) and recent GNP target misses, would keep GNP close to its target path when the system is buffeted by the type of shocks that have been experienced historically.[7] The main difficulty in conducting appropriate simulations is in choosing the correct model of the economy. I presume that we cannot be confident about the correct model, and proceed by asking whether any rule under investigation yields reasonably good results in a variety of different models.

In my studies of the U.S. and Japanese economies, the type of rule I just described has performed quite well. Thus, in my 1988 study, I conducted simulations with two single-equation atheoretic specifications, six different vector autoregression systems, and three models that are intended to be structural (that is, policy invariant). These latter models are quite small in scale, but are designed to represent leading alternative theories of business cycle dynamics—specifically, the real business cycle theory of Kydland and Prescott; the monetary-misperceptions theory of Lucas and Barro; and a more Keynesian theory patterned on the Phillips-curve and price-adjustment relationships of the Fed's quarterly MPS model.

My results for the U.S. economy pertain to counterfactual simulations for 1954/1–85/4 in systems that include the policy rule and one of the models indicated above. In each case, the simulation begins with initial conditions that actually prevailed at the beginning of 1954, and continues with shocks fed into the system each quarter. A feedback policy parameter, measuring the strength of responses of base growth to the previous period's GNP target miss, varies from 0 to 0.5. I find that for policy parameter values ranging from 0.1 to more

than 0.25, performance is satisfactory in all models, and distinctly superior to performance with a parameter of zero. Higher parameter values give rise to the possibility of dynamic instability. With moderate values, the rule succeeds in generating paths of nominal GNP that are noninflationary and, in addition, somewhat smoother than those that have obtained historically.

My two 1990 papers report additional findings with this initial rule.[8] In the first paper, I find that substitution of an explicit price level target, rather than nominal GNP, increases the likelihood of dynamic instability. Also, a few experiments with an interest rate instrument yielded unsatisfactory results.

In the second 1990 paper, I asked whether adherence to my rule for growth of the monetary base would have prevented the Great Depression of the 1930s. I conducted counterfactual simulations for 1923/1–41/4 with a small model of GNP determination, estimated with quarterly U.S. data for 1922–41. My results indicate that nominal GNP would have been kept reasonably close to a steady 3 percent growth path from 1923–41 if the rule had been in effect. In that case it seems highly unlikely that output and employment would have collapsed, as they in fact did.

One important feature of my research is that the rules I study are all *operational*, that is, based on instrument variables that a central bank could control accurately, and on information that is plausibly available.[9] Furthermore, their design does not presume advance knowledge of average velocity growth rates, as do some rules studied in the literature.

The robustness of my findings was challenged at the Federal Reserve Board of Governors by G. D. Hess, D. H. Small, and F. Brayton.[10] One of their valid arguments is that the set of models that I consider is too limited. A second argument is that, even with my own models, there has been a breakdown in performance since 1985. But in their work, as in my initial studies, the GNP target was constantly growing, thus calling for a return to a prespecified path after shocks had driven the system away from that path. I have come to believe over the years, however, that *growth rate* targets perhaps would be preferable, in which case past misses would be treated as bygones.[11] If shocks hitting the economy are predominantly permanent or highly persistent, instead of being highly transitory, then it would be best to treat past misses of the target as bygones. But with GNP growth rate targets, there is in fact very little deterioration in performance in the years since 1985. (I report these results in the paper cited in endnote 6.)

Nevertheless, there are some reasons for favoring a target with growing levels that does not treat past misses as bygones. Consequently, I have also considered targets that are weighted averages of the two types just discussed. A weighted average target, with a weight of 80 percent for the growth rate path and 20 percent for the growing-levels value, yields results that are quite desirable. The root-mean-squared (RMS) target misses relative to the growth rate target path are virtually the same as when we aim for growth rate targets, and the RMS behavior relative to a growing-levels path is reasonably good.[12] There is a distinct tendency for the simulated GNP values to return to the growing-levels path, rather than drifting away arbitrarily far (as is the case when pure growth rate targeting is pursued). Therefore, these weighted average targets seem quite attractive, and the satisfactory results for the post-1985 period obtain for them, as well as for the growth rate targets.

In conclusion, I acknowledge valuable contributions to this line of work that have been provided by Judd and Motley, and by Michael J. Duecker.[13] Specifically, Judd and Motley have extended the analysis by conducting stochastic simulations, rather than simulations using historic residuals, and by carrying out additional experiments with an interest rate instrument. Duecker, by contrast, has investigated the performance of one of the rules I discussed here in simulations in which the model's parameters are subject to stochastic shocks.

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[1] *For one example of this point of view, see J. B. Taylor, "Discretion Versus Policy Rules in Practice,"* Carnegie–Rochester Conference Series on Public Policy *(December 1993), pp. 195–214.*

[2] *J. B. Taylor,* Macroeconomic Policy in a World Economy, *New York: W. W. Norton, 1993; A. H. Meltzer, "Limits of Short-Run Stabilization Policy,"* Economic Inquiry *(February 1987), pp. 1–14; M. Feldstein and J. H. Stock, "The Use of a Monetary Aggregate to Target Nominal GDP," in* Monetary Policy, *N. G. Mankiw, ed. Chicago: University of Chicago Press, 1994; R. E. Hall and N. G. Mankiw, "Nominal Income Targeting," in* Monetary Policy, *op. cit.; J. P. Judd and B. Motley, "Nominal Feedback Rules for Monetary Policy," Federal Reserve Bank of San Francisco* Economic Review *(Summer 1991), pp. 3–11; J. P. Judd and B. Motley, "Controlling Inflation with an Interest Rate Instrument," Federal Reserve Bank of San Francisco* Economic Review *3 (1992), pp. 3–22.*

[3] *This is suggested by many time-series studies, including L. J. Christiano, M. Eichenbaum, and C. Evans, "The Ef-*

fects of Monetary Policy Shocks: Some Evidence from the Flow of Funds," NBER Working Paper No. 4699, April 1994.

[4]See C. Bean, "Targeting Nominal Income: An Appraisal," Economic Journal (December 1983), pp. 806–819, and D. W. Henderson and W. J. McKibbin, "A Comparison of Some Basic Monetary Policy Regimes for Open Economies," Carnegie–Rochester Conference Series on Public Policy (December 1993), pp. 221–317.

[5]R. E. Hall, "Monetary Policy with an Elastic Price Standard," in Price Stability and Public Policy, Federal Reserve Bank of Kansas City, 1984, pp. 137–159.

[6]B. T. McCallum, "Monetary Policy Rules and Financial Stability," NBER Working Paper No. 4692, April 1994. Also forthcoming in a Bank of Japan conference volume.

[7]The initial study is B. T. McCallum, "Robustness Properties of a Rule for Monetary Policy," Carnegie–Rochester Conference Series on Public Policy (Autumn 1988), pp. 173–203. Others will be mentioned below.

[8]B. T. McCallum, "Targets, Indicators, and Instruments of Monetary Policy," NBER Reprint No. 1550, March 1991, and in Monetary Policy for a Changing Financial Environment, W. S. Haraf and P. Cagan, eds. Washington, DC: The AEI Press, 1990, pp. 44–70 and 193–197; and B. T. McCallum, "Could a Monetary Base Rule Have Prevented the Great Depression?" NBER Reprint No. 1595, September 1991, and Journal of Monetary Economics (August 1990), pp. 3–26.

[9]For a critique of work involving rules that are not operational, see B. T. McCallum, "Specification of Policy Rules and Performance Measures in Multicountry Simulation Studies," NBER Reprint No. 1897, August 1994, and Journal of International Money and Finance (June 1994), pp. 259–275.

[10]G. D. Hess, D. H. Small, and F. Brayton, "Nominal Income Targeting with the Monetary Base as Instrument: An Evaluation of McCallum's Rule," in Operating Procedures and the Conduct of Monetary Policy: Conference Proceedings, M. Goodfriend and D. H. Small, eds. Washington, DC: Federal Reserve Board, 1993.

[11]Other proponents of this point of view include M. Feldstein and J. H. Stock, op. cit., and S. Fischer, "Central Bank Independence Revisited," American Economic Review (May 1995).

[12]B. T. McCallum, "Specification and Analysis of a Monetary Policy Rule for Japan," NBER Reprint No. 1854, March 1994, and Bank of Japan Monetary and Economic Studies (November 1993), pp.1–45.

[13]J. P. Judd and B. Motley, op. cit., and M. J. Duecker, "Can Nominal GDP Targeting Rules Stabilize the Economy?" Federal Reserve Bank of St. Louis Review (May/June 1993), pp. 15–29.

An Overview of Monetary Policy

Christina D. Romer and David H. Romer

Two features unite much of our recent research. Most obviously, many of the papers deal in one way or another with monetary policy: we have examined both the effects of monetary policy and the mechanism by which monetary policy influences real output. We also have examined the historical record to discover the role of monetary policy in both starting and ending recessions in the United States.

The second, and perhaps more important unifying characteristic of our research is its methodology. Many of our papers augment standard statistical procedures with a scientific analysis of qualitative evidence. This method, which we have dubbed the "narrative approach," involves using government reports, periodicals, and other sources to glean information not reflected in economic statistics. While such qualitative evidence frequently is used by economists in their more casual analysis, a crucial feature of the narrative approach is its systematic use of this evidence.

The Effects of Monetary Policy

To a layman, the question "Does monetary policy matter?" probably seems absurd. Of course it matters—why else would it be front page news every time the Federal Reserve moves interest rates up or down? But to economists, the question is both serious and fundamentally important. Many of our hypotheses about how the economy works imply that changes in monetary policy, especially those that are widely recognized and anticipated, do not matter. Furthermore, the correlation between money and output is not enough to prove that monetary policy matters, because the direction of causation is ambiguous: high growth of the money supply may cause rapid output growth, or rapid output growth may cause banks to lend more, and hence cause increases in the money supply.

Over the last few decades economists have used various statistical techniques to try to skirt the issue of causation, but with only limited success. For this reason, in "Does Monetary Policy Matter?" we turned to the narrative approach pioneered by Milton Friedman and Anna J. Schwartz in their monumental NBER study, *A Monetary History of the United States*.[1] Friedman and Schwartz's insight was to use additional evidence from the historical record to separate the

changes in the money supply that occur endogenously when output rises or falls from those that occur because of policy actions, or more frequently in their prewar period of analysis, policy mistakes.

Our application of Friedman and Schwartz's insight to the postwar era took the following systematic form. Using both the *Record of Policy Actions* and the *Minutes of the Federal Open Market Committee* of the Federal Reserve, we looked throughout the postwar era for episodes when monetary policymakers changed their tastes or expectations about inflation. In particular, we identified six episodes between 1947 and 1987 when monetary policymakers decided that the current level rate of inflation was too high, and they were willing to accept output losses to bring it down.

Having identified these six episodes, we then looked at the behavior of industrial production and unemployment in the months following these decisions. We found that real output most definitely declined following these policy changes, even when we controlled for the usual cyclical dynamics of output. Indeed, we estimated that a monetary policy shock leads to a decline in industrial production (relative to its usual behavior) of 4 percent after 12 months, 9 percent after 24 months, and 12 percent at its peak effect, which occurs after 33 months.

In a more recent paper, we find that this conclusion is strengthened by the passage of time.[2] In December 1988 the Federal Reserve again decided to lower the rate of inflation despite the likely negative effect on real output. When this additional observation is included in our original regressions, the results essentially are unchanged. We also find that our conclusions are robust to careful treatment of oil price shocks. No amount of fiddling with supply shock variables or our basic specification alters the conclusion that monetary policy clearly matters.

The Transmission Mechanism

Our finding that monetary policy has large effects on output naturally led to the question of *how* monetary shocks are transmitted to the rest of the economy. Since the work of Keynes, it generally has been presumed that interest rates are the key component of this transmission mechanism. A cut in reserves by the Federal Reserve forces a reduction in demand deposits, and this leads to a rise in interest rates to equilibrate money supply and money demand. The rise in interest rates then chokes off interest-sensitive spending, such as investment and purchases of consumer durables.

In recent years economists have augmented this "interest rate channel" of the transmission mechanism with a "credit channel."[3] In its simplest formulation, the credit channel view suggests that a decline in reserves causes a particular decline in bank credit because bank liabilities are subject to reserve requirements, while liabilities of other lenders are not. Since small firms typically can borrow only from banks, this particular impact on bank credit makes it very costly or difficult for small firms to borrow, and hence affects their behavior above and beyond the general impact of monetary policy on interest rates.

In "New Evidence on the Monetary Transmission Mechanism" we provide both theoretical and empirical evidence against this simple bank credit channel of the transmission mechanism.[4] At a theoretical level, we show that a reduction in reserves forces a reduction in bank loans only if banks have no ways to raise funds that are not subject to reserve requirements. However, for much of the postwar era U.S. banks have been able to issue certificates of deposit (CDs), which are subject to no reserve requirements, or to only very small ones. Thus, there is a strong reason to be skeptical of the bank credit channel.

Our empirical evidence reinforces this skepticism. One test that we perform compares the correlations between output and both money and bank loans in the quarters directly following monetary shocks with those correlations in more ordinary periods. We argue that the correlation with output will be higher for a key transmitting variable around monetary shocks than at other times, because the usual noise in the relationship will be swamped by the monetary shock. We find that the money-output relationship is indeed much stronger around monetary policy shocks, whereas the lending-output relationship does not vary inside and outside our critical episodes. Because more detailed regressions confirm this simple test, we conclude that the conventional interest rate channel is the key component of the transmission mechanism.

Jeffrey A. Miron, Christina D. Romer, and David N. Weil use historical evidence to evaluate the relative merits of the interest rate and bank credit channels of the transmission mechanism.[5] They show first that the changes in financial institutions that have occurred over time imply that the relative strength of the bank credit channel should have declined between the prewar and postwar eras. For example, be-

cause nearly all bank liabilities were subject to substantial reserve requirements before 1914, while CDs have no reserve requirement today, one would expect the bank credit channel to be stronger before World War I than after World War II.

They then look at various indicators of the strength of the two channels of monetary transmission. One indicator that they consider is the spread between the bank loan interest rate and the commercial paper rate. The fact that this spread rises around recent monetary policy shocks has been used to argue that the bank credit channel is important in the postwar period.[6] Looking at the spread around monetary shocks in the past, however, reveals little systematic relationship, and certainly no evidence of the predicted decline in the bank credit channel over time. From this, the three authors conclude either that measures such as the spread are poor indicators of the bank credit channel, or that the bank credit channel has been weak throughout the twentieth century.

We provide an alternative explanation for the apparent disproportionate impact of monetary policy on bank loans in the postwar era.[7] We find that, for much of the postwar era, the Federal Reserve has augmented conventional monetary tightening with actions specifically aimed at curtailing bank loans. An obvious example of one of these "credit actions" occurred in late 1979 and early 1980 when the Federal Reserve accompanied its monetary tightening with special reserve requirements and formal credit controls. A more subtle example of a credit action occurred in 1969 when the Federal Reserve prohibited loan repurchase agreements, and placed new reserve requirements on the Eurodollars that banks were using to raise loanable funds.

When we include the dates of credit actions in regressions of the spread, or the composition of external finance between bank loans and commercial paper (the mix), on the dates of monetary contractions, we find that credit actions greatly reduce the measured impact of monetary contractions. From this we conclude that much of the apparent credit channel of monetary transmission is really the effect of explicit credit actions. The seeming absence of a bank credit channel in recent years is caused by the fact that the Federal Reserve has stopped using credit actions.

The fact that controlling for credit actions does not eliminate all evidence of a credit channel is consistent with recent research on lending to small firms. Mark Gertler and Simon Gilchrist show that loans to small firms from *all* sources decline following monetary contractions.[8] They suggest that this is because small firms become less creditworthy when interest rates are high and output is low. Our results are certainly not at odds with their finding that there is a "balance sheet channel" to the transmission mechanism.

The Policy Record

In "What Ends Recessions?" our focus changes from how and why monetary policy matters to how well policymakers actually have used policy in the postwar era.[9] In particular, we examine the contributions of monetary and fiscal policies to the recoveries from the eight recessions in the United States between 1950 and 1993.

The first step in our analysis is to establish the policy record for the postwar era. We use the change in the real federal funds rate as our measure of discretionary monetary policy, the change in the ratio of the high-employment surplus to trend GDP as our measure of discretionary fiscal policy, and the ratio of the difference between the actual surplus and the high-employment surplus to trend GDP as our measure of automatic fiscal stabilizers. We find that monetary policy typically switches toward aggressive expansion very soon after the peak in economic activity. Averaged over the eight postwar recessions, the real federal funds rate falls just slightly over 2 percentage points between the peak and one quarter after the trough. In contrast, the ratio of the high-employment surplus to trend GDP hardly changes at all until the quarter after the trough, and even then shifts only slightly toward expansion. Finally, the ratio of the automatic surplus to trend GDP moves a moderate amount toward expansion roughly concurrent with recessions.

Since no statistical indicator can provide a perfect measure of the stance of policy, we check the behavior of our policy measures against both the Federal Reserve Board's *Record of Policy Actions* and the *Economic Report of the President*. We find that the declines in interest rates correspond closely to deliberate actions taken by the Federal Reserve to counteract the recessions. The modest falls in the high-employment surplus also correspond to deliberate antirecessionary actions, albeit limited ones, on the part of Congress and the president.

In a more speculative part of the paper, we combine our measures of policy actions with estimates of the effect of policy to derive estimates of the contribution of various

policies to real growth in the years following troughs. The results of this analysis for one reasonable set of policy multipliers shows that, on average, monetary policy actions taken after the peak in economic activity contribute 1.6 percentage points to real GDP growth in the first year of recoveries, while discretionary fiscal policy actions contribute only 0.3 percentage points. Automatic stabilizers contribute a small to moderate amount (0.6 percentage points). Based on these historical results, we conclude that monetary policy is a fast and effective tool for ending recessions.

In a paper that is similar in spirit to "What Ends Recessions?" Christina Romer analyzes the recovery from the Great Depression in detail.[10] In many ways this recovery was spectacular: between 1933 and 1937, real GDP increased at an annual rate of over 8 percent per year; between 1939 and 1942, real GDP grew at an annual rate of over 10 percent per year. Despite these rapid growth rates, there has been little analysis of their cause. Most scholars attribute the recovery from the Great Depression to either the fiscal expansion of the New Deal and World War II, or to the economy's natural self-correction mechanism.

"What Ended the Great Depression?" reminds readers that in addition to fiscal expansion, the mid- and late 1930s were also years of great monetary expansion: M1 increased by an average annual rate of nearly 10 percent between 1933 and 1937, and at an even higher rate between 1939 and 1942. The early monetary expansion was engineered largely by President Roosevelt, who devalued the dollar in 1933–4 and monetized the resulting gold inflows. The later monetary expansions were also the result of monetized gold inflows, this time caused by capital flight from war-nervous Europe.

Using policy multipliers derived from two crucial interwar episodes (1921 and 1938), the paper shows that the monetary expansion of the mid- and late 1930s explains most of the rapid growth of output during the recovery from the Great Depression. Indeed, the contribution of monetary developments is so large that there is little remaining growth to attribute to self-correction. Perhaps more surprising, the estimates imply that fiscal expansion, both during the New Deal and even during the late 1930s and early 1940s contributed little to the recovery. The explanation for this finding is that federal fiscal policy was actually not very expansionary during these periods; only in 1942 did the ratio of the high-employment surplus to trend GDP fall substantially. Thus, to the extent that World War II generated the recovery from the Great Depression, it was initially through its effect on the money supply, rather than through its effect on government spending.

The paper goes on to show that there is an obvious mechanism by which the monetary expansion increased real output: estimates of the real interest rate fell precipitously concurrent with the monetary expansion. Furthermore, interest-sensitive spending on investment and consumer durables led the recovery and appear to have responded strongly to the real interest rate declines throughout the recovery period. Thus, the experience of the 1930s confirms both the crucial role of monetary developments in ending recessions and the preeminence of the interest rate channel of monetary transmission.

[1] *C. D. Romer and D. H. Romer, "Does Monetary Policy Matter? A New Test in the Spirit of Friedman and Schwartz," NBER Reprint No. 1353, February 1990, and in* NBER Macroeconomics Annual, Volume 4, *O. J. Blanchard and S. Fischer, eds. Cambridge, MA: MIT Press, 1989, pp. 121–170; and M. Friedman and A. J. Schwartz,* A Monetary History of the United States, *Princeton, NJ: Princeton University Press, 1963.*

[2] *C. D. Romer and D. H. Romer, "Monetary Policy Matters,"* Journal of Monetary Economics *34 (1994), pp. 75–88.*

[3] *For an elegant and concise description of the two channels, see B. S. Bernanke and A. S. Blinder, "Credit, Money, and Aggregate Demand,"* American Economic Review *82 (1992), pp. 901–921.*

[4] *C. D. Romer and D. H. Romer, "New Evidence on the Monetary Transmission Mechanism," NBER Reprint No. 1500, February 1991, and* Brookings Papers on Economic Activity *1 (1990), pp. 149–213.*

[5] *J. A. Miron, C. D. Romer, and D. N. Weil, "Historical Perspectives on the Monetary Transmission Mechanism," NBER Reprint No. 1931, January 1995, and in* Monetary Policy, *N. G. Mankiw, ed. Chicago: University of Chicago Press, 1994, pp. 263–306.*

[6] *See, for example, A. K Kashyap, J. C. Stein, and D. W. Wilcox, "Monetary Policy and Credit Conditions: Evidence from the Composition of External Finance,"* American Economic Review *83 (1993), pp. 78–98.*

[7] *C. D. Romer and D. H. Romer, "Credit Channel or Credit Actions? An Interpretation of the Postwar Transmission Mechanism," NBER Reprint No. 1880, June 1994, and in* Changing Capital Markets: Implications for Monetary Policy, *Federal Reserve Bank of Kansas City, 1993, pp. 71–116.*

[8] *M. Gertler and S. Gilchrist, "Monetary Policy, Business Cycles, and the Behavior of Small Manufacturing Firms,"* Quarterly Journal of Economics *109 (1994), pp. 309–340.*

[9] *C. D. Romer and D. H. Romer, "What Ends Recessions?" NBER Reprint No. 1930, December 1994, and in* NBER Macroeconomics Annual, Volume 9, *S. Fischer and J. J. Rotemberg, eds. Cambridge, MA; MIT Press, 1994, pp. 13–57.*

[10] *C. D. Romer, "What Ended the Great Depression?"* Journal of Economic History *52 (1992), pp. 757–784.*

Contrarian Investment

Andrei Shleifer and
Robert W. Vishny

For over 30 years, the efficient markets hypothesis (EMH) has remained the central proposition of financial economics. The EMH states that, as an empirical matter, prices at which securities trade in liquid financial markets are equal to their fundamental values, given by the expected present values of the cash flows accruing to these securities. In other words, the stock market prices securities at their fair values. Although the EMH flies in the face of the conventional wisdom that astute analysts can beat the market, it has withstood many empirical challenges for decades, becoming a textbook wisdom for most economists. In particular, the implication of EMH that investment strategies based on public information, including those practiced by mutual funds, cannot beat the market, has survived hundreds of tests.

In recent years, a new set of challenges to the EMH has appeared, based on some very old ideas about contrarian investment. These ideas, dating back to Graham and Dodd,[1] state that investing in value stocks—defined as stocks with low prices relative to some measures of their current fundamentals, such as earnings or dividends—is more attractive than investing in growth stocks, those with high prices relative to measures of fundamentals. Although several papers in the 1980s supported the superior returns from contrarian investment strategies based only on publicly available information, the most celebrated study came from the University of Chicago, the cradle of the EMH.

In 1992, Eugene F. Fama and Kenneth R. French reported that, between 1963 and 1990, stocks of companies with high ratios of book values of assets to market price earned higher returns than stocks of companies with low book-to-market (BM) ratios.[2] They found that the spread in returns between portfolios of stocks with high (top 10 percent) and low (bottom 10 percent) BM ratios was on the order of 10 percent per year. Despite finding this enormous benefit to investing in high BM stocks, Fama and French did not interpret the evidence as contradicting the EMH. Rather, they argued that the high BM stocks in some special ways might be riskier than the low BM stocks. According to them, this difference in risks, as measured by the difference in BM ratios, explains the difference in average returns.

These empirical findings have stimulated a great deal of further work, including our research with Josef Lakonishok and Rafael La Porta. With Lakonishok, we have looked at a variety of contrarian strategies from 1968 to 1990, and found that there is nothing special about BM as a way to identify value and growth stocks.[3] Many other ratios of price to a measure of fundamentals, such as the price-to-cash-flow ratio, and the price-to-earnings ratio, are also good predictors of returns, generating superior performance of nearly 10 percent per year for value relative to growth stocks. Moreover, all of these ratios reflect the fact that the value stocks tend to be those of companies with poor past performance, whereas the growth stocks are those of firms with good past performance. Thus we confirmed the contrarian wisdom that investing in value stocks—however measured—on average has produced superior returns for investors.

We then went on to propose an interpretation of this evidence that is not consistent with the EMH. We argued that value stocks are out of favor with investors, who extrapolate poor past performance too far into the future. Similarly, the excellent past performance of growth stocks is extrapolated too far into the future by investors. Contrary to such extreme expectations of investors, future performance of value and growth stocks is not nearly as different as it was in the past. In fact, we presented some evidence showing that the earnings performance of value stocks tends to improve, and of growth stocks tends to deteriorate; this is consistent with the view that the market overreacts to past performance and misprices these securities. Thus we attributed the superior performance of contrarian investment strategies not to risk, but to inaccurate expectations of market participants, and the resulting inefficient pricing. In addition, we found no evidence that value stocks are especially risky; these stocks do especially well relative to growth stocks when the market goes down, as well as in recessions.

The empirical evidence bearing on the question of why contrarian investment strategies pay off continues to pour in. La Porta directly tested the idea that inaccurate expectations, rather than risk, explain the evidence.[4] By looking at analysts' forecasts of long-term earnings growth of different stocks, he divided firms into those with ex-

tremely bullish forecasts and those with extremely bearish forecasts. La Porta found that firms with bearish forecasts earn higher future returns than firms with bullish forecasts. Analysts subsequently revise downward their growth forecasts for firms they are bullish about, and revise upward their growth forecasts for firms they are bearish on. Not surprisingly, stocks with bullish forecasts tend to be the growth stocks (using the earlier definitions), and stocks with bearish forecasts tend to be the value stocks. La Porta thus provides direct evidence that extreme—and unjustified—pessimism among some investors can explain the current underpricing, and therefore the superior future returns, of value stocks.

With La Porta and Lakonishok, we propose yet another test of the alternative explanations of the returns to contrarian investment.[5] Specifically, if the EMH interpretation of the evidence is correct, and the market on average does not make mistakes about value and growth stocks, then the market should not be surprised, on average, when these companies announce their earnings. In contrast, if the market overreacts to the past performance of value and growth stocks, then it should be disappointed by the earnings of glamour stocks when they are announced, and pleasantly surprised by the earnings of value stocks. A look at the earnings announcements of different companies then perhaps can distinguish the two interpretations. The evidence is not favorable to the EMH: the average return of glamour stocks when their earnings are announced is negative, and that of value stocks is positive. This event study evidence thus favors the extrapolation hypothesis over the EMH.

Of course, this is not the end of the story, and much remains to be done before the dust settles. Although some studies have confirmed the superior performance of value stocks in the United States prior to the Fama–French period, and others found similar results in other countries, doubts about data snooping continue to linger. Many questions remain unanswered on exactly how investor expectations are being formed, and what information causes investors to revise their expectations. Nor is it entirely clear why more investors have not shifted into value strategies, although it is possible that a typical institutional investor does not have a long enough horizon to wait for value to pay off with a high probability. All this research, we hope, will shed new light on the validity of the EMH.

But it can do more than that as well. For example, this research has begun to illustrate the many anomalies concerning the poor performance of professional money managers, who tend not only to fail to beat the market, but actually underperform it, on average, by a significant amount.[6] We conjecture that one possible reason for the poor performance of institutional investors is their preference for holding growth stocks in their portfolios, stemming from the need to impress their investors with a good-looking portfolio. Of course, holding growth stocks can cost dearly in returns. In some of our ongoing research, as well as that by others, indeed we are finding that some of the poor performance of professional investors can be tied to their overexposure to the growth stocks. In this way, our research may illuminate the process by which the pension wealth is managed, as well as the controversies about the EMH.

[1] *B. Graham and D. L. Dodd,* Security Analysis, *New York: McGraw-Hill, 1934.*

[2] *E. F. Fama and K. R. French, "The Cross-Section of Expected Stock Returns,"* Journal of Finance *47 (1992), pp. 427–465.*

[3] *J. Lakonishok, A. Shleifer, and R. W. Vishny, "Contrarian Investment, Extrapolation, and Risk," NBER Working Paper No. 4360, May 1993, and* Journal of Finance *49 (1994), pp. 1541–1578.*

[4] *R. La Porta, "Expectations and the Cross-Section of Expected Stock Returns," NBER Working Paper, forthcoming.*

[5] *R. La Porta, J. Lakonishok, A. Shleifer, and R. W. Vishny, "Good News for Value Stocks: Further Evidence on Market Efficiency," NBER Working Paper, forthcoming.*

[6] *J. Lakonishok, A. Shleifer, and R. W. Vishny, "The Structure and Performance of the Money-Management Industry,"* Brookings Papers on Economic Activity: Microeconomics *(1992), pp. 339–391.*

Historical Economics: U.S. State and Local Government

Richard Sylla, John J. Wallis, and John B. Legler

As Americans reconsider the relative sizes and roles of federal, state, and local government in the federal system, there is renewed interest in how the system functioned and changed in past decades. Twentieth-century trends are well documented. At the start of the century, governments at all levels absorbed and disposed of about one-tenth of gross product; now, near the end of the century, the proportion is about one-third.

Government not only grew relative to the economy; it also became more centralized. The federal share of all governmental revenues and expenditures was approximately one-third when the century began; now it is about two-thirds. The state share of the state and local "fisc" (revenues and expenditures) was about one-seventh in 1902; now it is about one-half.[1]

One implication of these trends is that local government, the largest fiscal component (about 60 percent) of the federal system in terms of revenue at the start of the century, is now the smallest—although intergovernmental transfers raise local government to rough parity with state government in terms of expenditures. The reduction in the relative fiscal role of local government was especially rapid in the New Deal years after 1932. Contrary to widespead impressions, government's growth rate did not accelerate in the 1930s; the significant change in that era was a shift of government spending from the local to the federal level.[2]

What about the decades before the twentieth century? Was government in the aggregate increasing its share of the U.S. economic pie? Were centralizing trends already in place? And, in what ways did fiscal and other activities of federal, state, and local governments interact with each other and with the private sector?

Initial approaches to these questions reveal several problems. For example, there was virtually no comprehensive quantitative record of state and local fiscal activity for the first century or more of U.S. history. Further, although the data on revenues, expenditures, and debts needed to construct such a record exist in the voluminous reports of state, county, and municipal authorities, it would be a major task to retrieve, codify, and compile them. Fortunately, each of us independently was interested in the questions, and so we formed a partnership to tackle the job. We have made considerable progress in retrieving and processing the data.[3] Our ultimate goal is to present and analyze a comprehensive quantitative record of U.S. fiscal federalism from 1790 to the present. This research summary reports on some of our findings to date.

Government's Economic Share

Since our work is still in progress, we can only speculate in an informed way on the trends in government's share of gross product and fiscal centralization. Federal revenues and expenditures increased as a proportion of gross product over the course of the nineteenth century, but not much. The federal share was in the 1–2 percent range from 1790 to 1860, rising to more than 3 percent by the beginning of this century.[4] Our findings for several large states (New York, New Jersey, Ohio, and North Carolina), for which our state *and local* fiscal data for the early decades of U.S. history are most complete, indicate a wide range of variation. Before the Civil War, state and local government in New York raised and spent on a per capita basis well in excess of per capita federal revenues or expenditures. But in North Carolina, at the other extreme, state and local per capita fiscal activity averaged only 30 to 40 percent of federal levels.[5] In New Jersey and Ohio, per capita state and local revenues and expenditures roughly equaled the per capita federal budget at several antebellum dates.

Projecting (very tentatively) on the basis of such partial returns, we think our estimates for the early decades will indicate an overall state and local fiscal share roughly comparable to the federal government's share of the economy. If that turns out to be the case, then there are implications for the issue of how government's aggregate share of the economy changed over time. Government's share increased over the nineteenth century, just as it has in the twentieth. It probably doubled or tripled, from 3–5 percent in the 1790s to 10 percent in 1902.

Fiscal Concentration

Another tentative implication is that, unlike in this century, there was no long-term trend toward fiscal concentration in the nineteenth century. Indeed, it is likely that in

the nineteenth century, local government was the fastest growing, and by 1902 the largest fiscal component, of the federal system.

We have asked why local government increased its fiscal share of all government, as well as its share of the whole economy.[6] Our answer involves urbanization, in particular the growth of cities. In 1850, only 15 percent of Americans lived in urban as opposed to rural places; by 1900 it was 40 percent. The population share of larger cities (25,000 or more people) grew even faster, from 9 percent in 1850 to 26 percent in 1900. Our fiscal data indicate that urban governments raised and spent more per capita in the late nineteenth century than either federal or state governments, and that larger cities spent more per capita than smaller ones. The combination of rapid urban population growth and higher per capita public spending in cities increased the size of local government until it acccounted for some 60 percent of all government spending at the start of this century. But this was a late nineteenth-century occurrence, and there are reasons to doubt earlier conjectures that local government before the beginning of this century was always the largest fiscal component in the U.S. federal system.[7]

Banks and State Finances

Some interesting findings of our project relate to the intimate fiscal relationships that developed in the early decades between state governments and the banks they chartered. The Constitution took away the rights of states to engage in "currency finance," that is, funding state expenditures with fiat paper money issues. But the states could and did charter banks that issued paper banknotes backed by specie. Given rapid growth in credit demand and early restrictive practices in granting charters, bank charters had considerable value. Realizing this, the states raised public revenues from banks by investing in them, taxing them, or both. By the 1820s, every one of the original states received some portion of its revenue from banks. In several cases, that proportion was substantial. Massachusetts was the leader; the Bay State often derived half or more of its ordinary operating revenues between 1820 and 1860 from a tax on the capital stock of the state's chartered banks. Reliance on bank revenues allowed the states to minimize traditional property taxation, which was unpopular at the state level, although property taxes were the mainstays of local revenue systems.[8]

The importance of the bank–state revenue nexus led us to ask whether the methods of raising bank revenues—either investments in banks or taxation—affected the behavior of the states in chartering and regulating their banks. If a state's fiscal interest in its banks was an investment interest, with revenues from dividends, interest, and capital gains, then the state could have had an incentive to restrict bank entry by limiting the number of bank charters granted and restricting banking competition. On the other hand, if the state's fiscal interest took the form of a tax on inputs (such as bank capital) or results (such as bank assets or earnings), then the state had an interest in expanding the size of its chartered banking sector.

We found that our distinction of two quite different types of fiscal interest was indeed relevant. States that taxed bank inputs and outputs encouraged rapid banking development; states that invested in banks restricted banking development. Still other states did both, at different times. For example, in the early decades when New York had investments in banks and the Democrats, led by Martin Van Buren, "sold" bank charters, the state restricted bank chartering. When the Democrats were defeated in the 1830s, partly because of their rigid political control of bank chartering, New York introduced liberal chartering under so-called Free Banking. The Empire State's banking system then grew rapidly.[9] Moreover, the states with large investment interests in their chartered banks were in the forefront of passing legislation to restrict unchartered "private" banking, which competed with state-chartered banks.[10]

One interesting implication of these early government–business relationships involves the way we view business taxation. Most economists and business people today would argue that taxation of a business activity tends to put a damper on its development. But our "fiscal interest" concept suggests that governments, through regulation, may act to promote, not restrict, the private business activities that they tax.

Debt Crises and Revenue Structures

During the 1820s and 1830s, large-scale internal improvement programs—canals, railroads, banks—were undertaken by many states, usually by means of debt finance. The states borrowed with the expectation that the projects would pay for themselves through operating revenues. If they would not, it was better to borrow most of the funds initially and then spread the higher taxes required to service the

debts over future years (tax smoothing). During the depression of 1839–43, however, nine states defaulted on their debts. Four of these states ultimately repudiated a portion of the debt. Four additional states narrowly avoided default.

Earlier historians saw this debt-default experience of the states as initial carelessness, followed by political cowardice and financial immorality. In recent work, we relate the experience to less judgmental economic and political considerations, namely, the revenue structure of state finances.[11] By revenue structure, we mean the mix of investment income, indirect taxes (excises and other business taxes), and direct taxes (mostly property and poll taxes at the time). The written records of the era point to a pecking order of the political costliness of these revenue sources, with investment income as the least costly and direct taxes the costliest form of revenue.

The property tax at the state and federal (not local) levels was very unpopular. If it had to be imposed at all, as in the late 1790s when the federal government was concerned with French and British threats, and during the War of 1812 when state governments helped finance defense, it was dispensed with quickly thereafter by the federal government and a number of state governments. In the state debt crises of the early 1840s, two older states, Pennsylvania and Maryland, had investment and business-tax revenues, but chose to default on their debts rather than impose unpopular direct taxes on property. After their defaults, they reluctantly imposed property taxes, though. The other seven defaulting states were newer, frontier states with limited revenues from investments and limited opportunities for taxing banks and other businesses. Of necessity, these states relied mostly on property taxes for state revenue. Per capita property tax collections were often higher there than in the older states, even though per capita incomes were lower. When their improvement investments failed to pay off, the only option for these newer states in a political sense was to default. Had they raised their already high property taxes to higher levels, they would (as they recognized) lose settlers to other states.

The state debt defaults of the 1840s indicate both a widespread antipathy toward property taxes at the state level and the related importance of revenue structure in determining propensities to default on debt. In the aftermath of the crises, many states imposed constitutional limitations on the incurrence of debt. Modern-day debt crises, it seems, have economic and political characteristics similar to those of American states a century and a half ago.

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[1]*For the state shares of the state and local fisc, see J. J. Wallis and W. E. Oates, "Decentralization in the Public Sector: An Empirical Study of State and Local Government," in* Fiscal Federalism: Quantitative Studies, *H. S. Rosen, ed. Chicago: University of Chicago Press, 1988, pp. 1–28.*

[2]*J. J. Wallis, "The Birth of the Old Federalism: Financing the New Deal, 1932–40,"* Journal of Economic History *44 (March 1984), pp. 139–159.*

[3]*Preliminary annual data series on revenues and expenditures for the 48 states, covering the years up to 1917, are available through ICPSR. Data for the twentieth century covering state and local governments for some, but not all, years in which a Census of Governments was taken, as well as data for some 100 cities at decade intervals for 1820–80, are also at ICPSR. Data on local governments in 1880 and 1890 are nearly complete and will be released through ICPSR.*

[4]*P. B. Trescott, "The United States Government and National Income, 1790–1960," in* Trends in the American Economy in the Nineteenth Century, *Studies in Income and Wealth, Vol. 24, Ann Arbor, MI: University Microfilms for the NBER, 1960, pp. 337–361.*

[5]*R. Sylla, "Long-Term Trends in State and Local Finance: Sources and Uses of Funds in North Carolina, 1800–1977," in* Long-Term Factors in American Economic Growth, *S. L. Engerman and R. E. Gallman, eds., Chicago: University of Chicago Press, 1986, pp. 819–868; and R. Sylla, "Effects of Local Government on Industrialization: The Case of the Early U.S.A.," paper presented at Session C7 of the Eleventh International Economic History Congress, Milan, Italy, September 1994.*

[6]*J. B. Legler, R. Sylla, and J. J. Wallis, "U.S. City Finances and the Growth of Government, 1850–1902,"* Journal of Economic History *48 (June 1988), pp. 347–356.*

[7]*L. E. Davis and J. B. Legler, "The Government in the American Economy, 1815–1902: A Quantitative Study,"* Journal of Economic History *26 (December 1966), pp. 514–552.*

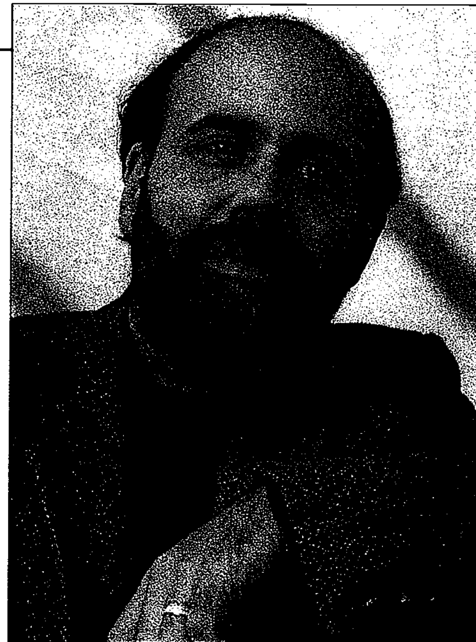
[8]*R. Sylla, J. B. Legler, and J. J. Wallis, "Banks and State Public Finance in the New Republic: The United States, 1790–1860,"* Journal of Economic History *47 (June 1987), pp. 391–403.*

[9]*J. J. Wallis, R. Sylla, and J. B. Legler, "The Interaction of Taxation and Regulation in Nineteenth-Century U.S. Banking," in* The Regulated Economy: A Historical Approach to Political Economy, *C. Goldin and G. Libecap, eds. Chicago: University of Chicago Press, 1994, pp. 121–144.*

[10]*R. Sylla, "Forgotten Men of Money: Private Bankers in Early U.S. History,"* Journal of Economic History *36 (March 1976), pp. 173–188; and R. Sylla, "The Forgotten Private Banker,"* The Freeman *(April 1995), pp. 212–216.*

[11]*A. Grinath, J. J. Wallis, and R. Sylla, "Debt, Default, and Revenue Structure: The Debt Crisis and American State Governments in the 1840s," paper presented at conference of the All-UC Group in Economic History on Fiscal Crises in Historical Perspective, Oakland, CA, April 1994.*

NBER Profile: *Ben S. Bernanke*



Ben S. Bernanke, co-organizer of the NBER's annual Conference on Macroeconomics, is a research associate of the NBER and the Class of 1926 Professor of Economics and Public Affairs at Princeton University. Bernanke received his B.A. in Economics from Harvard University and his Ph.D. from MIT.

He began his career at the Stanford University Graduate School of Business in 1979, moving to Princeton University in 1985. He has been a visiting professor at MIT (twice), and at New York University.

Bernanke also has served as a visiting scholar at the Federal Reserve Banks of Philadelphia, Boston, and New York, and as an advisor to the Federal Reserve Bank of New York. He has authored more than 40 publications in macroeconomics, macroeconomic history, and finance.

Ben's wife of 17 years, Anna, teaches Spanish and Italian. They have two children: Joel, 12, and Alyssa, 8. The Bernankes reside in Montgomery Township, NJ, where Ben is an elected member of the School Board.

NBER Profile: *John B. Legler*

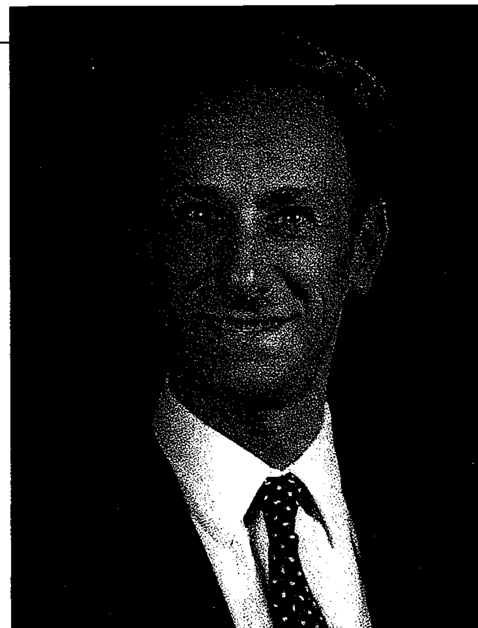
John B. Legler, who has been an NBER research associate since 1988, is a professor of banking and finance in the Terry College of Business at the University of Georgia. He received his B.A. from Allegheny College and his M.S. and Ph.D. from Purdue University.

Legler began his teaching career as an assistant professor of economics at Washington University in 1966, and moved to the University of Georgia in 1971 as an associate professor of banking and finance and head of the public finance section of the Institute of Government. His research interests are economic history and state and local public finance.

Legler is a frequent expert witness on behalf of federal and state government agencies in utility rate cases before regulatory agencies. In 1993 he was appointed by Governor Miller of Georgia to the Joint Study Commission on Revenue Structure.

Legler's wife, Libby, is a retail specialist with a major food company. They enjoy vacations at their place on Pensacola Beach overlooking the Gulf of Mexico.

NBER Profile: *Julio J. Rotemberg*



Julio J. Rotemberg, co-organizer of the NBER's annual Conference on Macroeconomics, is a research associate of the NBER and a professor of economics at MIT's Sloan School of Management. Born in Buenos Aires, he received his B.A. in economics from the University of California, Berkeley, and his Ph.D. from Princeton University.

Rotemberg has taught at the Sloan School since 1980, becoming an associate professor in 1984 and a full professor in 1989. This academic year, he is a visiting professor at the Harvard Business School.

Most of Rotemberg's research is concerned with the sources of economic fluctuations, in particular the effects of monetary policy, fiscal policy, and changing oil prices. He also has written on other topics in macroeconomics, and has done research in industrial organization and international economics.

Rotemberg is married to Analisa Lattes, a physicist with a doctorate from MIT who designs semiconductors for Analog Devices. They have two children: Veronica, 10, and Martin, 8, who are avid soccer players. Rotemberg loves to ski, and often commutes to work by bicycle from his home in Newton.

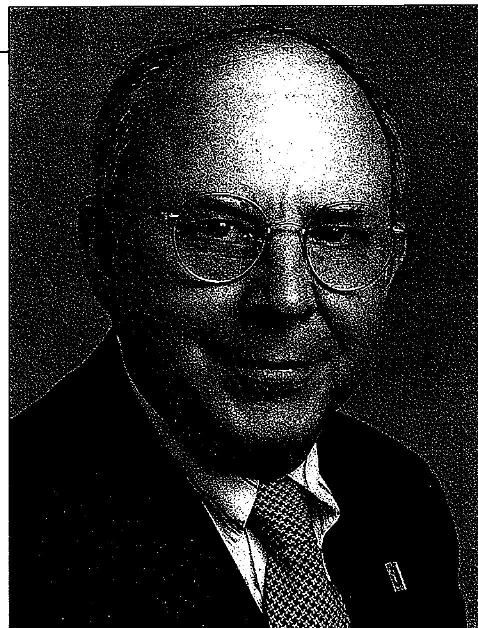
NBER Profile: *Andrei Shleifer*

Andrei Shleifer is a professor of economics at Harvard University and editor of the *Quarterly Journal of Economics*. An NBER research associate in the Programs in Corporate Finance, Asset Pricing, Public Economics, and Economic Fluctuations, he has been affiliated with the Bureau since 1986.

Shleifer was educated at Harvard and MIT, and previously taught at Princeton and the University of Chicago. In 1989, Shleifer received the Presidential Young Investigator Award in Economics. He is widely published in the areas of financial economics, economic growth, and the problems of transition from socialism. He also currently serves as a senior foreign advisor to the Russian privatization effort.

Shleifer's wife, Nancy Zimmerman, runs a hedge fund in Cambridge. They have a 15-month-old son, Sam.

NBER Profile: *Richard Sylla*

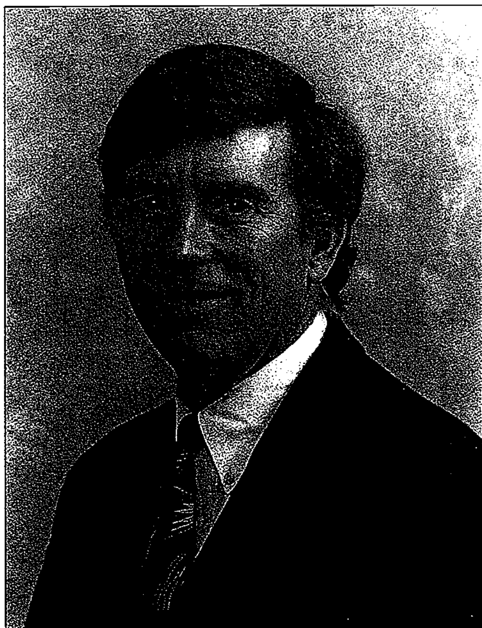


Richard Sylla is a research associate in the NBER's Program on the Development of the American Economy, and the Henry Kaufman Professor of the History of Financial Institutions and Markets, and professor of economics, at New York University's Stern School of Business. He has been at NYU since 1990.

Sylla received his undergraduate and Ph.D. degrees in economics at Harvard University. Prior to moving to New York, he was a professor of economics and business at North Carolina State University in Raleigh. From 1978 to 1984, he also served as editor of the *Journal of Economic History.*

Sylla's research interests range broadly across the histories of public and private finance, including money and banking. He views private and public finance as much more related and integrated in history than they are in current academic specialization.

Sylla's wife, Edith, is a professor of history at North Carolina State, specializing in the history of science. This year she is a fellow at MIT's Dibner Center for the history of science. They have two daughters: Anne, a management consultant, and Peggy, a senior at Emory University. None of them shares Sylla's passions for golf and his Labrador retriever, Buddy, but occasionally they accompany him on forays into the New York cultural and dining scenes.



NBER Profile: *John J. Wallis*

John Wallis received his Ph.D. from the University of Washington in 1981. After a two-year post-doctoral research fellowship at the Center for the Study of Economy and the State at the University of Chicago, he joined the Economics Department at the University of Maryland in 1983. He became a faculty research fellow at the NBER in 1985 and a research associate in 1989.

Wallis's research has focused on political economy and public finance. He has studied the New Deal, particularly the impact of New Deal relief programs on the relationships between national, state, and local governments, as well as on private labor markets. He also has worked with Richard Sylla and John B. Legler to produce a data series on state and local government revenues, expenditures, and debt from 1790 to 1980, and to investigate the importance of revenue sources for long-term government policies in regulation and investment. Further, with Douglass North, Wallis has looked at the quantitative importance of transaction costs, and their relationship to institutional change.

Wallis lives with his two sons, Dexter and Daniel. He is commissioner and a coach in the town soccer league. In addition to an avocational interest in cooking, Wallis plays golf, tennis, and basketball.

Conferences

Health Care in Japan and the United States

The NBER and the Japan Center for Economic Research (JCER) jointly sponsored a conference on "The Economics of Health Care" on December 9 and 10. The program was organized by Alan M. Garber, director of the NBER's Program of Research on Health Care, also of Stanford University, and Seiritsu Ogura, JCER and Hosei University. The agenda was:

Naoki Ikegami, Keio University, Overview of the Japanese Medical System

Jonathan Gruber, NBER and MIT, and
Maria Owings, National Center for Health Statistics, "Physician Financial Incentives and the Diffusion of Cesarian Section Delivery" (NBER Working Paper No. 4933)
Discussant:
Reiko Suzuki, JCER

Makoto Kawamura, JCER, and
Seiritsu Ogura, "Major Surgeries and Economic Incentives—Case of Cesarian Section Deliveries in Japan"
Discussant:
Jonathan Gruber

Mark B. McClellan and
David A. Wise, NBER and Harvard University, "Where the Money Goes: Medical Expenditures in a Large Corporation"
Discussant:
Seiritsu Ogura

Richard Suzman, National Institute on Aging, and
Kenji Shuto, Japan Ministry of Health and Welfare, Panel Discussion on Policy-Oriented Research Using Microdata on Aging and Health

Naoki Ikegami,
Hiroki Kawai, JCER, and
Seiritsu Ogura, "Economic Incentives and Prescription Drugs for Outpatients"
Discussant:
David Cutler, NBER and Harvard University

Seiritsu Ogura, and
Akiko Oishi, JCER, "Hospital Regulations and the Long-Term Care of the Aged in Japan"
Discussant:
Thomas E. MaCurdy, NBER and Stanford University

Hiroyuki Chuma, Hitotsubashi University, and
Takeshi Yamada and
Fumiaki Yasukawa, Health Care Science Institute, "The Demand for Long-Term Care of the Aged in Japan"
Discussant:
Alan M. Garber

Alan M. Garber and
Thomas E. MaCurdy, "Growth in Expenditures for Hospital Care for the Elderly: Cohort and Time Effects"
Discussant:
Hiroyuki Chuma

Tetsuo Fukawa, Institute of Public Health;
Kenji Shuto; and
Reiko Suzuki, "On the Nature and the Costs of Terminal Medical Care in Japan"
Discussant:
Mark B. McClellan

David Cutler, "Does the United States Spend Too Much on Medical Care?"
Discussant:
Hiroki Kawai

Ikegami discussed several aspects of the Japanese health care system, including the three major types of insurance plans; and the differing roles of public and private medical institutions. Throughout Japan's health care system, a fee-for-service schedule determines the price of every item of service and medication used. The health plans for employees at large firms and for public sector employees receive no government subsidy; the "Government Managed Health Insurance" for employees in small companies receives a subsidy of about 14 percent; and "Community Health Insurance" that is provided by municipalities to self-employed workers and retirees receives the largest government subsidy.

Gruber and **Owings** explore two factors that may have influenced the dramatic growth in cesarean delivery rates in the United States. One is the trend toward fewer births, since obstetricians may wish to make up some of the lost income from that trend by performing more cesarean deliveries. Using geographical variation in birth rates, the authors find that a 10 percent decline in the birth rate is associated with an increase in

the C-section delivery rate of about 1 percent. There is no evidence that the second factor, malpractice reforms, has affected the rate of cesarean deliveries.

Kawamura and **Ogura** analyze the variation in cesarean delivery rates across hospitals in Japan. Cesarean deliveries there are more common in larger medical institutions, and in publicly owned medical institutions. However, since higher-risk deliveries more commonly are conducted in larger, publicly owned facilities in Japan, the differences in C-section rates across hospitals are attributed partially to these differences in risk factors associated with pregnancy.

McClellan and **Wise** explore the composition of medical expenditures among employees and dependents at a large *Fortune* 500 company. Comparing the firm's two health insurance plans, the authors note a tendency to substitute inpatient care for less-intensive outpatient care among employees participating in the plan with first-dollar medical coverage. They find that substance abuse and mental health problems account for quite a large portion of the medical claims in this firm, particularly among men between ages 18 and 44. They also find that high-medical-cost individuals in one year also tend to be high-cost individuals in subsequent years.

Suzman discussed a number of government-funded data sources in the United States that have proved extremely valuable for aging and health research. He focused particularly on the initiation and development of two new surveys: the Health and Retirement Survey, and the Survey of Asset and Health Dynamics Among the Oldest Old. **Shuto** discussed some of the medical data available for research in Japan.

Ikegami, Kawai, and **Ogura** consider the determinants of prescription drug use in Japan, focusing on the rapid growth in pharmaceutical costs in the Japanese health care system. Because of the margin between the government-set reimbursement rate for prescription drugs and their wholesale cost, health care providers in Japan earn profits from patients who require medications. The authors suggest that these economic incentives induce more drug prescriptions in Japan, and that the cost of these drugs are a dominant factor in the level and growth of total health care costs in Japan.

Ogura and **Oishi** examine the economic incentives associated with long-term care in Japan, and how medical institutions have responded to recent reimbursement reforms. They suggest, for example, that institutions reimbursed on a fixed fee-per-patient basis have an incentive to use fewer medications and injections than institutions reimbursed on a fee-for-service basis. They also explore the effects of reimbursement policy on the composition of long-term care patients (the extent of their disabilities), and on how long they stay in different types of medical institutions.

Chuma, Yamada, and **Yasukawa** consider the determinants of living arrangements among the disabled elderly in Japan, particularly the choice between living at home and living in some form of medical institution. They find that income is a particularly strong factor in choosing home care, rather than institutional care.

Garber and **MaCurdy** find that Medicare expenditures have increased at about the same rate among younger and older patients, men and women, and among black and white patients. Moreover, the rate of increase in expenditures for those who spend the most on health care is about the same as the rate of increase for those who spend the least on health care. This suggests that the dramatic growth in the costs of the Medicare program is not isolated among specific groups, but is occurring across the board.

Fukawa, Shuto, and **Suzuki** sharply contrast the amount of medical care expenditures near the end of life in Japan versus the United States. The differences in costs appear closely related to differences in the frequency of intensive medical treatments. The authors also find that end-of-life medical expenditures are lower among older patients and among those with more functional limitations, suggesting two possible forms of rationing in the provision of medical services.

Cutler compares aggregate medical care spending across OECD countries since 1960. He finds that the income-adjusted growth in medical expenditures in the United States was comparable to that of other countries in the 1960s and 1970s, but was growing much more rapidly than others in the 1980s. Only in the past 15 years has the United States diverged significantly from other developed countries in health care spending. Despite these variations, though, Cutler suggests that higher levels of spending (for a given level of income) appear to have little effect in extending life expectancy.

Also attending this conference, and assisting with the preparation of this article, was Richard Woodbury, NBER. An NBER conference volume of these proceedings will be published by the University of Chicago Press. Its availability will be announced in a future issue of the *NBER Reporter*.

Economies in Transition

The NBER, Centre for Economic Policy Research (CEPR), and Tokyo Center for Economic Research jointly sponsored a conference on "Economies in Transition" in Tokyo on January 6 and 7. Kiminori Matsuyama of the NBER and Northwestern University, Peter Johns of the CEPR, and Kazuo Ueda of the University of Tokyo, organized this program:

Masahiko Aoki, Stanford University, "Controlling Insider Control"
Discussant:
Erik Berglöf, Université Libre de Bruxelles

Wendy Carlin, CEPR and Wissenschaftszentrum Berlin; and **Colin Mayer,** CEPR and Oxford University, "Structure and Ownership of East German Enterprises"
Discussant:
Sadao Nagaoka, Seikei University

Erik Berglöf and **Gérard Roland,** Université Libre de Bruxelles, "Banking and Soft Budget Constraints in Financial Transition"
Discussant:
Mitsuhiro Fukao, Bank of Japan

Kiminori Matsuyama, "New Goods, Market Formations, and System Design"
Discussant:
Shinichi Fukuda, Hitotsubashi University

Dani Rodrik, NBER and Columbia University, "The Dynamics of Political Support for Reform in Economies in Transition"
Discussant:
Kiminori Matsuyama

Jeffrey D. Sachs, NBER and Harvard University, "Reforms in Eastern Europe and the Former Soviet Union in Light of the East Asian Experiences"
Discussant:
Dani Rodrik

Kazuo Ueda and **Tetsuji Okazaki,** University of Tokyo, "The Performance of Development Banks: The Case of RFB and JDB"
Discussant:
Akiyoshi Horiuchi, University of Tokyo

Aoki summarizes his work as follows: so far, the reform process in transitional economies has focused mainly on the introduction of sound macroeconomic policies and the institutionalization of monitoring devices for the securities market. However, there is another important dimension of reform: the reform of the classical–hierarchical structure within formerly state-owned enterprises. For that purpose, the simultaneous development of banking institutions may be necessary. Sound banking institutions may facilitate the formation of loan consortiums that can provide a complementary, second-best monitoring device for the development of the internal organization.

Carlin and **Mayer** investigate the process by which East German enterprises have been privatized, and their resulting ownership and structure. The authors record higher levels of share and asset transfers than in other countries. In contrast, official insolvency has been modest, and stock market flotations largely unobserved. East German enterprises are now smaller in employment terms than their West German counterparts. Concentration of ownership is high, even by West German standards. This has been crucial to East German enterprises gaining access to finance, markets, and managerial skills.

Berglöf and **Roland** show how the existence of sunk costs may give rise to soft budget constraints when the government cannot commit to no-bailout policies. They also demonstrate that decentralizing credit allocation to banks that do not screen or monitor projects does not alleviate the problem. However, through appropriate tax policies, the government can increase the profitability of new lending relative to refinancing, and thus can harden budget constraints. In general, injecting additional capital into passive banks is not desirable, but if recapitalization can be earmarked for investments in screening activities, then budget constraints may be hardened. By screening projects, banks can improve the relative profitability of new lending.

In economic theory the standard practice is to assume that all the activities of potential economic value are already known to the policymaker, or to the designer of an economic system. However, **Matsuyama** introduces to the theory biases in favor of market socialism, by overemphasizing the allocative distortions across the existing activities, and by underemphasizing the stifling effect of market socialism on innovation. More generally, he shows that by ignoring the fundamentally difficult problem of selecting a relatively small number of activities out of all the possibilities, this approach inadvertently contributes to creating an illusion about our ability to design and control resource allocation.

One of the least-expected developments in the economies in transition is the popularity of former Communist parties. **Rodrik** considers an economy with two sectors: a high-productivity private sector, which initially employs a small share of the economy's work force; and a low-productivity state sector, where at the outset the majority of the population is employed. In the early stages of the transition, the private sector expands less quickly than the state sector contracts. As a result, unemployment rises. The government then subsidizes the state sector, which slows down the transition. A private sector worker always prefers the lowest possible subsidy to the state sector. The same is true for an unemployed worker, because the subsidy only reduces the number of new jobs created without reducing the number of jobseekers. But state sector workers are ambiguous about reform, and their preferences change over time. In particular, even if state sector workers initially prefer shock therapy, they always will want to slow the reforms down later, because the probability of finding a higher-paying job in the private sector declines as the transition unfolds.

Sachs argues that the differences in economic performance between Eastern Europe and the Former Soviet Union (EEFSU) and East Asia are mainly the result of differences in *economic structure* and initial conditions, rather than of differences in economic policymaking. The more rapid growth of East Asia's transition economies reflects the fact that they began the reform process as highly agricultural and rural economies, with underdeveloped industrial sectors. The EEFSU economies, on the other hand, were heavily industrialized economies, with most of the population in urban areas. For this reason, East Asia's brand of gradualism was not applicable in the EEFSU context.

Ueda and **Okazaki** analyze the performance of the Reconstruction Finance Bank (RFB) in order to shed light on the role of development banks in fostering economic growth. They use individual firm-level data on sales, profits, and loans from RFB, and find that initially RFB was making loans to firms with below-average performance. They argue that this was partly a result of political interventions into the loan policy of RFB. In fact, they also find evidence of improvements in the performance of RFB after its loan policy became more independent. They then compare these results with the existing literature on the Japan Development Bank, which succeeded RFB.

Tax Policy Analysis

As part of a multiyear research project, a group of NBER tax economists and other tax experts gathered on January 20–21 to discuss and analyze new research on tax policy. Organized by Bureau President Martin Feldstein, also of Harvard University, and James M. Poterba, director of the NBER's Program in Public Economics, also of MIT, this meeting focused on the effect that tax rules have on the behavior of households and firms. The program was:

Martin Feldstein, and
Daniel R. Feenberg, NBER, "The Taxation of Two-Earner Families"
Discussant:
Harvey S. Rosen, NBER and Princeton University

Gilbert E. Metcalf, NBER and Tufts University, "Labor Supply and Welfare Effects of Value-Added Taxes"
Discussant:
Gary Burtless, Brookings Institution

Nada Eissa, NBER and University of California, Berkeley, "Labor Supply and the Economic Recovery Act of 1981" (NBER Working Paper No. 5023)
Discussant:
James J. Heckman, NBER and University of Chicago

Robert A. Moffitt, NBER and Brown University; and
Robert Triest, NBER and University of California, Irvine, "The Intertemporal Covariance Structure of Deductions and Income in the Federal Income Tax"
Discussant:
Jonathan S. Skinner, NBER and University of Virginia

James Alm, University of Colorado at Boulder;
Brian Erard, Carleton University; and
Jonathan Feinstein, NBER and Yale University, "The Relationship Between State and Federal Tax Audits"
Discussant:
James Wetzler, formerly Revenue Commissioner, State of New York

William M. Gentry, NBER and Duke University; and
Allison Hagy, Pomona College, "The Distributional and Behavioral Effects of the Tax Treatment of Child Care Expenses"
Discussant:
Brigitte C. Madrian, NBER and Harvard University

Jonathan Gruber, NBER and MIT; and **James M. Poterba,** "Tax Subsidies to Employer-Provided Health Insurance"
Discussant:
David F. Bradford, NBER and Princeton University

Joel B. Slemrod, NBER and University of Michigan, "How the Rich Reacted to the Tax Changes Since 1981"
Discussant:
Don Fullerton, NBER and University of Texas

Andrew A. Samwick, NBER and Dartmouth College, "Tax Shelters and Passive Losses After the Tax Reform Act of 1986"
Discussant:
Roger H. Gordon, NBER and University of Michigan

Feldstein and **Feenberg** modify the NBER's TAXSIM model to study the effects of alternative tax rules on the labor force participation and working hours of married women. They then calculate the resulting changes in revenue and in the deadweight loss of the tax system. Their analysis shows that the revenue loss generally is substantially less than the "static" (no change in labor supply) estimates suggest. A variety of alternatives to the current method can reduce the deadweight loss of the existing tax system substantially. For example, reinstating a modified form of the 10 percent deduction for the "second earner's" wage and salary income can reduce the deadweight loss by about 70 cents for every dollar of lost revenue.

Metcalf analyzes the effect on labor supply and economic welfare of a shift from an income to a consumption tax. He argues first that whether labor supply increases or decreases will depend, among other things, on how responsive current leisure is with respect to the price of future consumption. Under plausible assumptions, the response of the labor supply is likely to be small. Then he considers whether, if a narrow-based value-added tax (VAT) is implemented, the reduction in distortions over time might be more than offset by distortions among commodities. He finds that the reduction in economic welfare caused by excluding some consumption from a VAT base is more than offset by the gains from not taxing capital income.

The Economic Recovery Tax Act of 1981 (ERTA81) reduced marginal tax rates across the board by 23 percent within each tax bracket. In addition, ERTA81 introduced a tax deduction of 10 percent of the secondary earner's income up to $30,000. Using data from the Current Population Survey from 1981 and 1985, before and after the change in tax rates, **Eissa** finds that a 1 percent increase in the net-of-tax share of income (that is, one minus the marginal tax rate) led to an increase of 0.5 to 0.7 percent in the labor force participation of married women. The same increase in the net-of-tax wage rate causes hours of work to rise by only 0.2 to 0.3 percent.

Moffitt and **Triest** use panel data on individual income tax records from 1982–8 to study the short-term relationship between deductions and income, and how that relationship changed after the Tax Reform Act of 1986 (TRA86). They find that the most flexible and discretionary types of income and deductions are strongly negatively correlated, while there is a weak positive correlation between the least flexible types of income and deductions.

Alm, Erard, and **Feinstein** present the results of two projects on the relationship between state and federal tax audits. The first is a detailed analysis of audit selection decisions and assessments for Oregon. The results suggest that the IRS and state tax authorities could increase assessments significantly by improving their information sharing. The state of Oregon also could increase assessments by shifting resources from independent to piggyback audits. The second project is a survey of state tax administrators that provides information about state tax audit programs.

Gentry and **Hagy** find that a broad cross-section of Americans benefit from tax relief for child care. However, that tax relief does not reach the bottom 10 percent of the income distribution, because it is available only to those who work a certain number of hours, and as an offset to taxes owed. Above the bottom quintile of the income distribution, though, tax relief for child care is progressive: tax relief benefits divided by income decline steadily as income rises. When potential income is used to measure ability to pay, tax relief for child care is even more progressive.

Gruber and **Poterba** study the current tax subsidy to employer-provided health insurance and various alternatives. They argue that previous analyses have overstated the tax subsidy to health insurance by neglecting: 1) aftertax employee

payments for employer-provided insurance, and 2) the tax subsidy for extreme medical expenses, which discourages the purchase of insurance. Even after considering these factors, though, the authors find that the net tax subsidy to employer-provided insurance is substantial, reducing the price of this insurance by about 30 percent.

According to **Slemrod,** the relative income gains of the affluent after TRA86 are overstated in certain analyses, but are large nevertheless. Factors such as technological change and globalization that affect income inequality can explain much of the increased high-income concentration until 1985, but cannot adequately explain the spurt after TRA86. TRA86 was probably a principal cause of the large increase in the reported personal income of the affluent. A close look at the sources of the post-1986 increases in income for the rich suggests that much of it may reflect income shifting—for example, from the corporate tax base to the individual tax base—and not income creation resulting from additional labor supply, for example.

The precipitous decline in tax sheltered investments after the Tax Reform Act of 1986 (TRA) is widely attributed to the passive loss rules. These rules disallowed losses from activities in which the taxpayer did not participate materially as a current deduction against all sources of income except for other passive activities. **Samwick** shows that the role of the passive loss limitations was secondary to that of other reforms enacted by TRA; most importantly, the repeal of the investment tax credit and the long-term capital gain exclusion. These other reforms not only lowered aftertax rates of return on tax sheltered investments but also eliminated the positive correlation between the investor's marginal tax rate and the investment's aftertax rate of return. As a result, after TRA, high-income taxpayers ceased to be the natural clientele for legitimate tax shelters. The passive loss rules were more effective in curtailing the use of "abusive" tax shelters; however, a more narrowly focused restriction on seller financing of tax sheltered investments could have accomplished the same goal with much less scope for discouraging productive economic investments.

These papers and their discussion will be published by the University of Chicago Press. The availability of the volume will be announced in a future issue of the *NBER Reporter*.

Property–Casualty Insurance

The NBER held a conference on property–casualty insurance at its Cambridge offices on February 10 and 11. David F. Bradford, director of this project, an NBER research associate, and a professor at Princeton University, organized the program:

J. David Cummins, University of Pennsylvania;
Allen N. Berger, Board of Governors of the Federal Reserve System; and
Mary A. Weiss, Temple University, "The Coexistence of Multiple Distribution Systems for Financial Services: The Case of Property–Liability Insurance"
Discussant:
Dwight Jaffee, University of California, Berkeley

Dwight Jaffee, and
Thomas Russell, Santa Clara University, "The Causes and Consequences of Rate Regulation in the Auto Insurance Industry"
Discussant:
Patricia Danzon, University of Pennsylvania

Anne Gron, Northwestern University, and
Deborah J. Lucas, NBER and Northwestern University, "External Financing and Insurance Cycles"
Discussant:
William M. Gentry, NBER and Duke University

Sharon Tennyson and
Susan J. Suponcic, University of Pennsylvania, "Rate Regulation and the Industrial Organization of Automobile Insurance"
Discussant:
W. Kip Viscusi, Duke University

Patricia Born, American Medical Association;
W. Kip Viscusi;
William M. Gentry; and
Richard J. Zeckhauser, NBER and Harvard University, "Organizational Form and Insurance Company Performance: Stocks Versus Mutuals"
Discussant:
Scott Harrington, University of South Carolina

David F. Bradford, and
Kyle Logue, University of Michigan, "The Influence of Income Tax Rules on Insurance Reserves"
Discussant:
Deborah J. Lucas

James Bohn and
Brian J. Hall, Harvard University, "Property and Casualty Solvency Funds as a Tax and Social Insurance System"
Discussant:
Louis Kaplow, NBER and Harvard University

Property–liability insurance is distributed through both independent agents, who represent several insurers, and exclusive (direct writing) agents, who represent only one insurer. **Cummins, Berger,** and **Weiss** find that the independent agency system is less cost efficient than the direct writing system. However, the difference in efficiency in terms of profit between the two is at most one-fourth as large as the difference in efficiency in terms of cost, and is not statistically significant. This supports the "product quality hypothesis": that most of the higher costs of independent agency insurers are associated with higher quality output that is rewarded with additional revenues.

Jaffee and **Russell** find that the decision to purchase auto insurance is very sensitive to changes in price. This means that regulation of insurance premiums may cause the percentage of uninsured motorists to decline. However, an alternative strategy for lowering the percentage of uninsured motorists is the "Pay at the Pump" initiative, which is likely to be forthcoming soon as a California referendum proposition. With pay at the pump, insurance premiums are collected primarily as a fee included in gasoline purchases. Since gasoline is needed to drive, pay at the pump eliminates all uninsured motorists.

Gron and **Lucas** explore the possibility that periods of high prices and constrained supply in the property–casualty insurance industry are the result of temporary shortages of capital. To determine this, they look for cuts in dividends and repurchases (reflecting "cash" shortages), and for issues of debt and equity (also reflecting a need to raise "cash"). Further, by examining the response of the market price to security issues, they look for evidence that the costs of raising external capital are unusually high relative to other industries. They find some changes in the expected payout policy and an increased volume of debt and equity issues following periods of low capacity. However, the total amount of capital obtained by security issues or reduced payouts appears small relative to the observed drops in net worth. This suggests that insurers rely primarily on future retained earnings to rebuild their capital position. The market price reaction to equity issues appears to be considerably less negative than for industrial issuers, but similar to that for banks and utilities.

Tennyson and **Suponcic** analyze the effects of rate regulation on the organization of state automobile insurance markets. Economic reasoning suggests that regulation that restricts the profitability of insurance companies will affect the strategic decisions of insurers both operating in the state and considering entering it. The paper focuses on how differences across insurers in size, production costs, and technology will lead to differences in responses to regulation. Annual data for 1987–92 reveal that more stringent regulation results in fewer firms operating in the market, and in lower market shares for low-cost national producers.

Born, Viscusi, Gentry, and **Zeckhauser** examine the coexistence and performance of stock and mutual companies in the property–casualty insurance industry. Stock companies are similar to corporations in other industries with shareholders that provide capital. In contrast, mutual companies are owned by their customers. Mutual firms write over one-quarter of total premiums in the industry. These different organizational forms give managers different incentives. For example, to best serve their shareholders, managers of stock companies may withdraw quickly from unprofitable lines of business or locations. In contrast, mutuals may respond relatively slowly out of loyalty to their customers.

One of the most important components of the balance sheet of a property–casualty insurance company is the "loss reserve." More precisely termed the "unpaid losses account," the loss reserve expresses the amount the company expects to pay out in the future to cover indemnity payments that will come due on policies already written, and the costs—"loss adjustment expenses" (for example, litigation expenses)—of dealing with the associated claims. If the loss reserve were determined solely on the basis of pure insurance accounting theory, the reserve would reflect only those factors that affect the size, frequency, and pattern of future claim payments and loss adjustment expenses. Such factors include changes in patterns of actual claim payments, changes in inflation rates, weather patterns, technological developments, and, most significant in the context of liability insurance, trends in tort doctrine and jury awards that affect the size and frequency of liability judgments. In practice, loss reserves are influenced by other considerations as well, such as how the reported reserves will affect the likelihood of regulatory scrutiny, the perceptions of investors, and the firm's income tax liability. **Bradford** and **Logue** develop the theory needed to measure the discretionary element in reported loss reserves, and present initial empirical results.

Bohn and **Hall** estimate the costs to the guarantee funds of resolving the insolvencies of property

and casualty insurance companies. They find that resolution costs are remarkably high on average—about 98 cents per dollar of a company's pre-insolvency assets. Further, the resolution costs are higher for small firms, poorly capitalized firms, firms writing significant premiums in long-tail lines, and firms that fail because of disasters. Insolvencies typically are resolved quickly: approximately half of all payments to the fund for a given insolvency occur within two years, and two-thirds within three years. The time-path of these costs varies significantly by firm, although firms with significant fractions of premiums in workmen's compensation, for example, take much longer to resolve.

Also attending this conference were: Richard Derrig, Auto Insurers Bureau; Martin Feldstein and Kenneth A. Froot, both of NBER and Harvard University; Sean Mooney, Insurance Information Institute; Jim Moor, ITT Hartford Insurance Group; Stewart C. Myers, NBER and MIT; and Wayne W. Sorenson, State Farm Insurance Companies.

Tenth Annual Macroeconomics Conference

Over 60 academics, government economists, and journalists attended the NBER's Tenth Annual Conference on Macroeconomics in Cambridge on March 10–11. The new conference chairmen, Ben S. Bernanke of the NBER and Princeton University, and Julio J. Rotemberg of the NBER, MIT, and Harvard University, organized the following program:

Giuseppe Bertola, NBER and Università di Torino, and **Andreas Ichino,** Università Bocconi, "Wage Inequality Unemployment: United States Versus Europe"
Discussants:
Kevin M. Murphy, NBER and University of Chicago, and
Richard Rogerson, NBER and University of Minnesota

Craig Burnside, University of Pittsburgh; **Martin S. Eichenbaum,** NBER and Northwestern University; and **Sergio T. Rebelo,** NBER and University of Rochester, "Capital Utilization and Returns to Scale"
Discussants:
Susanto Basu, NBER and University of Michigan, and
Robert E. Hall, NBER and Stanford University

Gary B. Gorton, NBER and University of Pennsylvania, and **Richard Rosen,** University of Pennsylvania, "Banks and Derivatives"
Discussants:
Peter Garber, Brown University, and
Greg Duffee, Federal Reserve Board

Sergio T. Rebelo, and **Carlos Vegh,** International Monetary Fund, "Exchange-Rate-Based Stabilizations: Theory and Evidence"
Discussants:
Marianne Baxter, NBER and University of Virginia, and
Jeffrey D. Sachs, NBER and Harvard University

Stephen G. Cecchetti, NBER and Boston College, "Inflation Indicators and Inflation Policy"
Discussants:
Donald Kohn, Federal Reserve Board, and
Mark W. Watson, NBER and Northwestern University

Symposium on Central Bank Independence

Carl Walsh, University of California, Santa Cruz, "Recent Central Bank Reforms and the Role of Price Stability as the Sole Objective of Monetary Policy"

Adam Posen, Federal Reserve Bank of New York, "Declarations Are Not Enough: Financial Sector Sources of Central Bank Independence"

Stanley Fischer, International Monetary Fund, "The Unending Quest for Monetary Salvation"
Discussant:
Alberto F. Alesina, NBER and Harvard University

Throughout the 1970s and 1980s, wage differentials widened in the United States but not in Europe, where marginal groups in the labor force experienced increasing and persistent unemployment instead. **Bertola** and **Ichino** argue that both phenomena may be explained by more pronounced volatility in the processes that affect labor demand. If workers bear the costs of labor reallocation, as in the United States, then a higher option value for work in currently depressed regions, occupations, or sectors is consistent with wider wage differentials in equilibrium. Under centralized wagesetting and job security legislation, as in Europe, the higher likelihood of negative shocks in the near future de-

creases labor demand by firms that are hiring.

Burnside, Eichenbaum, and **Rebelo** study the role of rates of capital utilization that vary over time in explaining procyclical labor productivity. Using a measure of capital services based on electricity consumption, they find that the phenomenon of near (or actual) short-run increasing returns to labor is an artifact of the failure to accurately measure rates of capital utilization. They also find that capital services are a significant factor in aggregate and industry-level production technologies. There may be constant returns to scale in production, and the residuals in their estimated production functions may represent technology shocks. Finally, the authors find that correcting for cyclical variations in capital services affects the statistical properties of estimated aggregate technology shocks quite a bit.

In the last 10 to 15 years financial derivative securities have become an important, and controversial, product for commercial banks. The controversy concerns whether the size, complexity, and risks associated with these securities, the difficulties with accurately reporting timely information concerning the value of firms' derivative positions, and the concentration of activity in a small number of firms, has substantially increased the risk of collapse of the world banking system. **Gorton** and **Rosen** estimate the market values and interest rate sensitivity of interest rate swap positions of U.S. commercial banks to assess whether swap contracts have increased the systemic risk in the U.S. banking system. They find that the banking system as a whole faces little net interest rate risk from swap portfolios.

Rebelo and **Vegh** review the evidence on exchange-rate-based stabilizations in light of the different theories that try to explain what happens to the macroeconomy after the adoption of a fixed exchange rate. In particular, they attempt to disentangle the role played by three different factors: 1) the fact that the policy often is perceived as temporary; 2) the fact that important improvements in fiscal policy, both now and in the future, tend to accompany the peg; and 3) the existence of nominal rigidities.

"Three countries—Canada, New Zealand, and the United Kingdom—have been implementing inflation targeting in the last few years, and their inflation performances have been very impressive."

The Federal Reserve wants to keep inflation both low and stable, and downplays the likely responses of output and employment to any policy actions. In his paper, **Cecchetti** asks what the optimal monetary policy is, given some inflation objective. He finds that, since prices take time to respond to all types of impulses, rules aimed at minimizing the mean-square-error of inflation over a horizon of three years imply raising the federal funds rate *immediately* following a shock, regardless of its source. Second, the difficulties inherent in forecasting and controlling inflation might lead one to focus on the growth of nominal income rather than price level targeting.

Walsh suggests that the worldwide wave of reforms in central banking represents an attempt to develop institutional solutions for the inflation bias that can arise under discretionary monetary policy. One alternative to mandated objectives or targeting requirements is incentive contracts: they base the central bank's rewards (or penalties) solely on the realized rate of inflation. New Zealand has well-defined procedures for setting short-run inflation targets involving both the central bank and the government. It also has a system of accountability that requires any government override to be made public, and enables the central bank governor to be dismissed if targets are missed. In Europe, the emphasis has been on political independence; less attention has been given to ensuring that the correct incentives to address the short-run trade-offs are established, or on ensuring accountability.

Posen seeks to explain the pattern of central bank independence that existed prior to its becoming fashionable. He argues that the financial sector is politically capable of protecting central banks from the cost of their counterinflationary policies. He also argues that central bank independence—and inflation—varied across countries between 1950 and 1989 according to national differences in effective financial opposition to inflation. His analysis has two major policy implications: first, moves to central bank independence in countries

where appropriate political support does not exist may not reduce inflation over the long term; second, financial deregulation will affect inflation levels in previously unrecognized ways.

Fischer notes that within the context of an independent but accountable central bank, the inflation targeting approach is a significant new entry in the unending quest for monetary salvation. Three countries—Canada, New Zealand, and the United Kingdom—have been implementing inflation targeting in the last few years, and their inflation performances have been very impressive. Further, monetary policy cannot ensure good macroeconomic performance unless fiscal policy operates in a reasonable way. By providing a visible nominal anchor, the pegging of the exchange rate also can play an important role in reducing inflation and inflationary expectations. This is particularly true for an economy seeking to stabilize from a situation of extreme disorder, and one in which central bank credibility is low. To be effective, such a strategy must start from an appropriately valued rate, and be accompanied by strong fundamentals (especially on the fiscal front), and the willingness of the government to change the rate when needed.

These papers and their discussions will be published in October by the MIT Press as *NBER Macroeconomics Annual, Volume 10.*

Bureau News

Anne Krueger to Head AEA

When NBER Research Associate Victor R. Fuchs passes the gavel at the end of his term as president of the AEA, it will be to another NBER Research Associate: Anne O. Krueger. Krueger, like Fuchs a professor of economics at Stanford University, is president-elect this year, and will be president of the organization in 1996.

Currently a member of the NBER's Programs in International Trade and Investment and International Finance and Macroeconomics, Krueger has been affiliated with the Bureau since 1969. Before joining the Stanford faculty in 1994, she taught at Duke University from 1987–93, and at the University of Minnesota from 1959–82. Between 1982 and 1986, Krueger served as Vice President, Economics and Research, at the World Bank.

Krueger's research, particularly on trade issues, has been published extensively in journals and books. Her most recent NBER book, edited jointly with Takatoshi Ito, was published in 1994.

Card to Receive Clark Medal

The 1995 John Bates Clark Award of the American Economic Association will be given to David Card of Princeton University. Card, who has been a research associate in the NBER's Program in Labor Studies since 1982, is known for his work on the minimum wage and on labor earnings, among other topics.

The Clark Medal is awarded every other year to the economist under the age of 40 who is judged to have made the most significant contribution to economics. Past recipients of the John Bates Clark Award who have been associated with the NBER are: Milton Friedman, 1951; Zvi Griliches, 1965; Gary S. Becker, 1967; Daniel McFadden, 1975; Martin Feldstein, 1977; Joseph E. Stiglitz, 1979; A. Michael Spence, 1981; James J. Heckman, 1983; Jerry A. Hausman, 1985; Sanford J. Grossman, 1987; Paul R. Krugman, 1991; and Lawrence H. Summers, 1993.

Behavioral Finance Program Meeting

Members and guests of the NBER's project on behavioral finance met in Cambridge on February 3. Robert J. Shiller of the NBER and Yale University, and Richard H. Thaler of the NBER and MIT, planned this program:

Rafael La Porta, Harvard University,
Josef Lakonishok, University of Illinois,
Andrei Shleifer, NBER and Harvard University, and
Robert W. Vishny, NBER and University of Chicago, "Good News for Value Stocks: Further Evidence on Market Efficiency"
Discussant:

Richard H. Thaler
Kent Daniel, University of Chicago, and
Sheridan Titman, Boston College, "Evidence on the Characteristics of Cross-Sectional Variation in Stock Returns"
Discussant:
Kenneth R. French, NBER and Yale University

David Dreman, Dreman Foundation, and
Michael Berry, James Madison University, "Investor Overreaction and the Low P/E Effect"
Discussant:
Werner de Bondt, University of Wisconsin

Lawrence Ausubel, University of Maryland, "The Credit Card Market Revisited"
Discussant:
Stewart C. Myers, NBER and MIT

Hersh Shefrin and
Meir Statman, Santa Clara University, "Behavioral Portfolio Theory"
Discussant:
Drazem Prelec, MIT

René M. Stulz, NBER and Ohio State University, and
Jun-Koo Kang, University of Rhode Island, "Why Is There a Home Bias? An Analysis of Foreign Portfolio Equity Ownership in Japan"

La Porta, Lakonishok, Shleifer, and **Vishny** examine the market's reaction to earnings announcements in order to assess the role of errors in earnings expectations in explaining the superior performance of value stocks (that is, stocks with high yield ratios). They find that earnings surprises are systematically positive for value stocks and negative for glamour stocks (stocks with low yield ratios). Differences in returns after an earnings announcement explain approximately 25–30 percent of the differences in annual return between value and glamour stocks in the first two to three years after formation of a portfolio, and 15–20 percent of differences in the return over years four and five. The long half-life of positive surprises in relative earnings for a fixed portfolio of value and glamour stocks is consistent with the highly persistent nature of the difference in returns between value and glamour portfolios.

Daniel and **Titman** find that stock characteristics, rather than the covariance structure of returns, determine average historical (and perhaps expected) returns. As Fama and French (1992) have noted, market capitalization and book-to-market ratios are important determinants of observed average returns. This paper shows that, after controlling for these characteristics, covariances with the book-to-market and size-based factor portfolios described in Fama and French (1993) have no effect on average stock returns. Also, the Fama and French (1993) interpretation of the high minus low book-to-market (HML) portfolio as a proxy for a distress factor does not describe the data accurately. The data can be described more accurately by a relatively stable factor structure, with the HML portfolio loading on different factors at different times. These results indicate that one should be able to form portfolios with very high returns and very low risk.

Dreman and **Berry** show how positive and negative news affect "best" and "worst" stocks. They find that favorable surprises send prices for the "worst" stocks significantly higher, while the "best" stocks continue to underperform the market after a smaller positive initial reaction. Unfavorable surprises result in an initial negative reaction among the "worst" stocks, followed by above-market performance; the return on the "best" stocks is consistently well below market. Both positive and negative surprises have little net effect on the 60 percent of stocks grouped in the middle quintiles.

Ausubel reexamines the credit card market over a longer time period than earlier studies, and with new sources of data. He finds that the stark interest-rate stickiness is fading significantly by the mid-1990s, but there is still no substantial erosion in the extranormal profits earned by credit card issuers. Moreover, the evidence suggests that consumers systematically continue to underestimate the extent of their borrowing on credit cards into the 1990s.

Shefrin and **Statman** develop a behavioral theory of the construction of investment portfolios, and explore its implications for the design and pricing of securities. Behavioral portfolios resemble layered pyramids: at the bottom of the pyramid is the downside protection layer, and the upside potential layer is at the top. The design of financial products generally reflects the awareness of designers for the way investors will construct their portfolios. Putting too much weight on the goal of downside protection is consistent with the existence of the equity premium puzzle and the "options smile."

Stulz and **Kang** use data on foreign stock ownership in Japan from 1975 to 1991 to examine the determinants of the home bias in portfolio holdings. They show that foreign investors put too much weight on: shares of firms in manufacturing industries; large firms; firms with good accounting performance; firms with low unsystematic risk; and firms with low leverage. Consequently, when investors hold foreign shares, they do not hold the market portfolio of foreign countries. However, foreign investors do not perform significantly worse than if they had held the Japanese market portfolio, Stulz and Kang find. After controlling for firm size, there is no evidence that foreign ownership explains the cross-sectional variation in expected returns.

Also attending this meeting were: Paul Asquith, Olivier J. Blanchard, and Jeremy C. Stein, all of NBER and MIT; John Y. Campbell, Martin Feldstein, Kenneth A. Froot, and Michael C. Jensen, all of NBER and Harvard University; Geoffrey Carliner, NBER; and Loren Ross, Russell Sage Foundation.

Economic Fluctuations Research Meeting

The winter meeting of the NBER's Program on Economic Fluctuations was held on February 17. Laurence M. Ball of the NBER and Johns Hopkins University, and Lawrence J. Christiano of the NBER and Northwestern University, organized this program:

Steven J. Davis, NBER and University of Chicago;
Prakash Loungani, Federal Reserve Board; and
Ramamohan Mahidhara, AMOCO Corporation, "Regional Unemployment Cycles"
Discussant:
Valerie A. Ramey, NBER and University of California, San Diego

Per Krusell, University of Rochester, and
Jose-Victor Rios-Rull, University of Pennsylvania, "What Constitutions Promote Capital Accumulation? A Political-Economy Approach"
Discussant:
V. V. Chari, University of Minnesota

Truman Bewley, Yale University, "A Field Study on Downward Wage Rigidity"
Discussant:
David H. Romer, NBER and University of California, Berkeley

Guy Debelle, Reserve Bank of Australia, and
Owen Lamont, Princeton University, "Relative Price Variability and Inflation: Evidence from U.S. Cities"
Discussant:
Mariano Tommasi, Harvard University

Peter Rupert, Federal Reserve Bank of Cleveland;
Richard Rogerson, NBER and University of Minnesota; and
Randall Wright, University of Pennsylvania, "Estimating Substitution Elasticities in Household Production Models"
Discussant:
Lars P. Hansen, NBER and University of Chicago

Monika Merz, Rice University, "Heterogeneous Job-Matches and the Cyclical Behavior of Labor Turnover"
Discussant:
Robert E. Hall, NBER and Stanford University

Davis, Loungani, and **Mahidhara** analyze how regional unemployment rates and employment-to-population ratios respond to aggregate, as well as to region-specific, shocks to labor demand. They use state-level data on military prime contract awards (including contracts awarded by NASA), and data on Department of Defense military and civilian personnel, to estimate the changes in regional unemployment and employment associated with variations in defense spending. Their rough estimates are that a reduction of $1 billion in a state's military prime contract awards is associated with a peak increase in the number of people unemployed of 4000, and a peak decline in regional employment of 20,000 people; the difference between the two numbers is accounted for largely by migration out of the state, rather than by changes in regional labor force participation rates.

Krusell and **Rios-Rull** study how the frequency of elections and the lag between policy decision and policy implementation influence equilibrium tax rates, economic growth, and welfare. They find that constitutional change may lead to large, long-run effects on economic performance. In particu-

lar, the more frequently taxes are voted on, and the shorter the policy implementation lag, the higher taxes are in equilibrium, and the lower growth and welfare are. Also, the more progressive the tax code is, the weaker are the distortions implied by the political transfer system. However, the quantitative effects from changing the progressivity of the tax code are much smaller than those resulting from changing the timing of elections.

Bewley interviewed 334 business people, labor leaders, unemployment counselors, and management consultants to learn why wages and salaries do not decrease during recessions in response to increased unemployment. He learned that employers resist cutting the pay of existing employees largely out of fear that the shock of a reduced living standard, and the insult implied by lower pay, would hurt morale. Employers do not reduce the pay rates of new hires because they would resent being treated less favorably than existing employees. Bewley also finds that the unemployed usually are rejected as overqualified if they apply for jobs paying a good deal less than what they earned before they were unemployed. Employers fear that they will be discontent, be a threat to their supervisors, or that they will leave as soon as they find better work.

Debelle and **Lamont** test whether the positive correlation between inflation and the variability of intermarket prices over time is present in a cross-section of U.S. cities. They find that cities with higher than average inflation also have higher than average dispersion of relative prices. This result holds for different periods of time, different classes of goods, and (surprisingly) across different time horizons. These results suggest that at least part of the relationship between inflation and relative price variability cannot be explained by monetary factors.

Dynamic general equilibrium models that include explicit household production sectors provide a useful framework within which to analyze a variety of macroeconomic issues. However, some implications of these models depend critically on parameters, including the elasticity of substitution between market and home consumption goods, about which there is little information in the literature. **Rupert, Rogerson,** and **Wright** estimate these parameters for single males, single females, and married couples. They find that including home production, at least for single females and married couples, will make a significant difference in applied general equilibrium theory.

Flows into and out of unemployment occur simultaneously over the business cycle, and move closely together. Inflows lead outflows by one quarter (three months), and movements in both are countercyclical. In this paper, **Merz** introduces job matches that depend on labor productivity, so that firms' hiring and firing decisions are specific to them, and not completely dependent on economic changes. When firms can lay off temporarily, recall, or hire new workers in reaction to productivity shocks, Merz shows, then the flows into and out of unemployment have cyclical characteristics (matching the actual data).

Impulse and Propagation Mechanisms

As part of the Program Meeting on Economic Fluctuations held a day earlier, a small group of NBER economists and their guests met on February 18 for a workshop on "Impulse and Propagation Mechanisms." Lawrence J. Christiano and Martin S. Eichenbaum, both of the NBER and Northwestern University, organized this program:

Susanto Basu, NBER and University of Michigan, and **John Fernald,** Federal Reserve Board, "Aggregate Productivity and the Productivity of Aggregates"
Discussant:
Michael Horvath, Stanford University

Mark Bils, NBER and University of Rochester, and **Peter Klenow,** University of Chicago, "Uncovering Curvature—Tests of Competing Business Cycle Models"
Discussant:
Andreas Hornstein, University of Western Ontario

Craig Burnside, University of Pittsburgh; **Martin S. Eichenbaum;** and **Sergio T. Rebelo,** NBER and University of Rochester, "Capital Utilization and Returns to Scale" (See "Tenth Annual Conference on Macroeconomics" in the "Conferences" section earlier in this issue.)
Discussant:
Matthew D. Shapiro, NBER and University of Michigan

Per Krusell, University of Rochester, and **Jose-Victor Rios-Rull,** University

of Pennsylvania, "Capital-Skill Complementarity and Inequality"
Discussant:
Thomas J. Sargent, NBER and Stanford University

Jonas Fisher, University of Western Ontario, and
Andreas Hornstein, "Optimal (S-s) Inventory Policies in General Equilibrium"
Discussant:
Richard Rogerson, NBER and University of Minnesota

Michael Horvath, "Business Cycles Without Shocks: A Model of Firm Selection"
Discussant:
Jose-Victor Rios-Rull

Basu and **Fernald** decompose the aggregate Solow residual into several terms, each of which has an economic interpretation. They apply this decomposition to U.S. data by studying the aggregation from two- to one-digit manufacturing industries, and find that the compositional terms are significantly procyclical. Controlling for these terms reduces the evidence for increasing returns and productive externalities, and lowers the correlation between output growth and technology change by almost one-half.

Consumer theory tells us that luxuries and durables should be more cyclical than necessities and nondurables. **Bils** and **Klenow** calibrate luxuriousness and durability for 57 consumer goods to quantify just how much more cyclical. They find that: 1) productivity *is* more procyclical for luxuries and durables; 2) relative prices are acyclical; and 3) relative quantities are steeply dampened. In short, the data contradict each of the popular business cycle models on at least one dimension.

Equipment capital is more complementary with skilled than with unskilled labor. Given the dramatic decline in the relative price of equipment, and the accompanying increase in its stock, this relative complementarity implies a downward pressure on the relative wage of unskilled workers. **Krusell** and **Rios-Rull** confirm the relative complementarity hypothesis, and find that both the trend and the within-period movements of the skill premium are quite well matched. They also obtain some interesting residual estimates for the average growth rates of the quality (human-capital content) of both skilled and unskilled labor.

Fisher and **Hornstein** study the aggregate implications of optimal inventory policies in a dynamic general equilibrium model by embedding a retail sector into a stochastic growth model with search and matching. They find that: 1) the model is capable of replicating salient features of the business cycle; 2) the model reconciles evidence that orders are more volatile than sales, and that sales and inventory investment are correlated positively for many firms, industries, and in the aggregate; and 3) inventory policies do little to propagate productivity shocks, but have a significant impact on the propagation of shocks to the real interest rate.

Rather than appeal to exogenous shocks as driving forces, **Horvath** views business cycles as the outcome of an economic law, similar in spirit to the biological law of natural selection. The Solow residual and its cyclical characteristic are the aggregate manifestation of this economic law. He views the economy as a continuum of firms with different levels of productivity. Through experience in producing a homogeneous good, some firms deduce that they are bad, or unproductive, and exit the industry. Other firms are reaffirmed as good, or productive, and remain in the industry. Knowing a firm's productivity generates an aggregate level of productivity behavior close to what is observed in the United States.

Program Meeting on Industrial Organization

Severin Borenstein, NBER and University of California, Berkeley, organized the February 24 and 25 program meeting on industrial organization. The following papers were discussed:

Timothy F. Bresnahan, NBER and Stanford University;
Manuel Trajtenberg, NBER and Tel Aviv University; and
Scott Stern, Stanford University, "The Sources of Transitory Market Power for Innovations: Personal Computers"
Discussant:
Tom Gilligan, University of Southern California

Darrell Williams, University of California, Los Angeles, "Why Do Entrepreneurs Become Franchisees? An Empirical Analysis of Organizational Choice"
Discussant:
Benjamin Hermalin, University of California, Berkeley

Paul L. Joskow and
Nancy L. Rose, both of NBER and MIT; and
Catherine Wolfram, MIT, "Political Constraints on Executive Compensation: Evidence from the Electric Utility Industry" (NBER Working Paper No. 4980)
Discussant:
Roger Noll, Stanford University

Sara Fisher Ellison, NBER;
Iain M. Cockburn, NBER and University of British Columbia;
Zvi Griliches, NBER and Harvard University; and
Jerry A. Hausman, NBER and MIT, "Price Competition Among Pharmaceutical Products: An Examination of Four Cephalosporins"
Discussant:
Frank A. Wolak, NBER and Stanford University

Joseph Farrell, University of California, Berkeley, "Competition and Productive Efficiency"
Discussant:
Peter C. Reiss, NBER and Stanford University

Peter Pashigian and
Eric Gould, University of Chicago, "Internalizing External Economies: The Pricing of Space in Shopping Malls"
Discussant:
Nancy E. Wallace, University of California, Berkeley

Fiona Scott Morton, Stanford University, "British Shipping Cartels 1879–1929: Entry and Predation"
Discussant:
Wallace Mullin, Michigan State University

Judith A. Chevalier, NBER and University of Chicago, and
Glenn Ellison, NBER and MIT, "Risktaking by Mutual Funds as a Response to Incentives"
Discussant:
Robert H. Porter, NBER and Northwestern University

Markets for differentiated products often exhibit some form of segmentation or clustering, according to a small number of "principles of differentiation" (that is, features of the product that consumers value). **Bresnahan, Trajtenberg,** and **Stern** study clustering according to two such principles: whether the product is associated with a strong brand name (B), and whether the product is at the cutting edge of the technology frontier (F). They show that both B and F are sources of clustering in the personal computer market in 1987–8, in the sense of diminishing the cross-elasticities between products in different clusters. F seems more important than B in that respect; on the other hand, B definitely was more important than F in shifting out demand. These results suggest that whereas having a brand name strongly increased demand (relative to being a "clone"), being at the technological frontier provided more isolation from competition.

Williams tests the proposition that the demand for franchise opportunities depends upon the demand for managerial inputs and risksharing that this cooperative form of ownership provides. He finds that entrepreneurs derive substantial gains from trade: franchisees would have significantly lower profits as independent owners. This is primarily because of unobservable differences between entrepreneurs who choose franchising and those who do not. Because of these unobservable differences, franchisors face an adverse selection problem that may explain certain terms of the franchise contract, such as screening of potential franchisees and "at will" termination provisions.

Joskow, Rose, and **Wolfram** explore the effect of regulatory and political constraints on the level of CEO compensation for 87 state-regulated electric utilities during 1987–90. Their results suggest that political pressures may constrain top executive pay levels in this industry. First, CEOs of firms operating in regulatory environments characterized by investment banks as relatively "pro-consumer" receive lower compensation than do CEOs of firms in environments ranked as more friendly to investors. Second, CEO pay is lower for utilities with relatively high or rising rates, or a higher proportion of industrial customers. Finally, attributes of the commission appointment and tenure rules affect CEO compensation in ways consistent with the political constraint hypothesis.

Ellison, Cockburn, Griliches, and **Hausman** model the demand for four cephalosporins, and compute price elasticities between branded and generic versions of the four drugs. The purchase of pharmaceutical products occurs in

stages; in particular, there are the prescribing and the dispensing stages. The authors find fairly high elasticities between generic substitutes, but low elasticities between therapeutic substitutes.

Competition may contribute to economic efficiency in many ways other than bringing prices closer to marginal costs. For example, more competitive markets allocate larger market shares to more efficient firms. **Farrell** argues that the market-share effect may be more important than the deadweight-loss effect, especially in oligopolies that are not exceptionally concentrated.

By generating mall traffic, anchor stores attract customers, indirectly increasing the sales of other mall stores, thus creating external economies. Mall developers internalize these externalities by giving anchor stores subsidies, and by charging rent premiums to other mall tenants. **Pashigian** and **Gould** estimate these externalities by comparing the rents per square foot paid by anchors versus other mall tenants in larger, superregional malls with those paid in smaller regional shopping malls. Anchors pay a lower rent per square foot in superregional malls than in regional malls, even though their sales per square foot are the same in each. Sales and rent per square foot of other mall stores are higher in superregional malls than in regional malls. Thus, greater externalities exist in superregional than in regional malls.

At the turn of the century, British shipping firms operated in cartels that held and defended monopoly positions in various international shipping routes. **Morton** constructs a dataset consisting of all cases in which an entrant attempted to break into a cartel and a price war ensued. She finds that entrants lacking experience, financial resources, size, or with poor trade conditions, are preyed upon more than strong entrants. This supports those theoretical models that predict that the effectiveness, and therefore incidence, of predation depends upon the characteristics of the individual entrant. Additionally, she finds that weaknesses of an entrant unrelated to market shocks, demand, or supply affect the probability of predation. This contradicts the assertions of the "Chicago School" that predation is simply a period of low prices and is not motivated by predatory intent.

Chevalier and **Ellison** examine the conflict between mutual fund investors and mutual fund companies. Investors would like fund managers to maximize the fund's risk-adjusted returns. However, because mutual fund companies received a fixed percentage of the assets under management as compensation, they would like to maximize the inflow of investments into the fund. The authors show that the flow of assets into mutual funds is related to the fund's past performance, but that this relationship is not linear. In the data analyzed in this study, mutual funds alter their portfolio riskiness between September and December in a manner consistent with these risk incentives.

Also attending were: Shane Greenstein, Garth Saloner, and Andrea Shepard, NBER and Stanford University; Rebecca Henderson, NBER and MIT; and Francine Lafontaine and Valerie Y. Suslow, NBER and University of Michigan.

Development of the American Economy

Members and guests of the NBER's Program on Development of the American Economy met at the Bureau's Cambridge office on February 25. Their agenda, organized by Program Director Claudia Goldin, also of Harvard University, was:

Robert A. Margo, NBER and Vanderbilt University, "The Price of Housing in New York City, 1830–60" (NBER Historical Paper No. 63)

Joshua L. Rosenbloom, NBER and University of Kansas, "Was There a National Labor Market at the End of the Nineteenth Century? Intercity and Interregional Variation in Male Earnings in Manufacturing" (NBER Historical Paper No. 61)

Price V. Fishback and **Shawn E. Kantor,** NBER and University of Arizona, "A Prelude to the Welfare State: Compulsory State Insurance and Workers' Compensation in Minnesota, Ohio, and Washington, 1911–19" (NBER Historical Paper No. 64)

Charles W. Calomiris, NBER and University of Illinois; and **Joseph R. Mason,** University of Illinois, "Contagion and Bank Failures During the Great Depression: The June 1932 Chicago Banking Panic" (NBER Working Paper No. 4934)

Stanley L. Engerman, NBER and University of Rochester; and **Kenneth L. Sokoloff,** NBER and University of California, Los Angeles, "Factor Endowments, Institutions, and Differential Paths of Growth Among New World Economies" (NBER Historical Paper No. 66)

Margo presents new archival evidence on the rental price of housing in the New York City metropolitan area during 1830 to 1860: newspaper advertisements are detailed enough to allow for the construction of price indexes that control for some housing characteristics, as well as for location within the metropolitan area. Margo finds that size was a significant determinant of rental price, as was location in the metropolitan area. He also finds that the price of housing increased relative to a general index of wholesale prices over the period.

Rosenbloom extends previous research on labor market integration to all male manufacturing workers in 114 cities from 1879 to 1919. He uses average earnings adjusted for differences in living costs, and finds that a well-integrated market for manufacturing labor existed in the North as early as 1879. The earnings data also suggest the emergence of a unified labor market in the South at this time. However, large and persistent North–South differentials indicate that, despite the integration of regional labor markets after the Civil War, a unified national labor market had not yet developed.

Fishback and **Kantor** trace the political–economic history of the success of compulsory state insurance in Minnesota, Ohio, and Washington from 1910–20. State insurance gained broad support in these states because a coalition of progressive legislators took control of their respective legislatures, bringing with them the idea that government had the unique ability to correct market imperfections. The authors argue that the government's dramatic expansion after the 1932 federal election was not unprecedented. In fact, the ideological roots of New Deal activism were planted during the debates over compulsory state insurance and workers' compensation in the 1910s.

Calomiris and **Mason** use individual bank data to address the question of whether solvent Chicago banks failed during the June 1932 panic because of confusion by depositors. They divide Chicago banks into three groups: panic failures, failures outside the panic window, and survivors. They then compare the characteristics of the three groups, and conclude that banks that failed during the panic were similar to others that failed, and different from the survivors. The special attributes of failing banks were distinguishable at least six months before the panic, and were reflected at least that far in advance in stock prices, failure probabilities, debt composition, and interest rates. During the panic, failures reflected relative weakness in the face of common asset value shock, rather than contagion. However, cooperation among solvent Chicago banks was a key factor in avoiding unwarranted bank failures.

Engerman and **Sokoloff** highlight the relevance of substantial differences in the degree of inequality in wealth, human capital, and political power in accounting for the variation in records of growth of Canada and the United States versus other New World economies. They suggest that the roots of these disparities in inequality lay in differences in the initial factor endowments of the respective colonies, particularly their suitability for the cultivation of sugar and other crops with economies of production in the use of slaves, and the presence of large concentrations of Native Americans. Their greater equality in wealth, human capital, and political power may have predisposed the United States and Canada toward earlier realization of sustained economic growth, the authors conclude.

Derivative Securities and Risk Management

Members of the NBER's Asset Pricing Program and their guests met at the Bureau's Cambridge office on March 3 to discuss "derivative securities and risk management." Program Director John Y. Campbell, also of Harvard University, and Kenneth S. Rogoff, NBER and Princeton University, organized this program:

Paul Kupiec and **James O'Brien,** Federal Reserve Board, "A Precommitment Approach to Capital Requirements for Market Risk"
Discussants:
Franklin Allen, University of Pennsylvania, and
Victor Ng, International Monetary Fund

Gregory Duffee, Federal Reserve Board, "On Measuring Credit Risks of Derivative Instruments"
Discussants:
Fischer Black, Goldman Sachs, and
Jeremy C. Stein, NBER and MIT

Sanjiv R. Das, Harvard University, and
Peter Tufano, NBER and

Harvard University, "Pricing Credit-Sensitive Debt When Interest Rates, Credit Ratings, and Credit Spreads Are Stochastic"
Discussants:
Steven Strongin, Goldman Sachs, and
George M. Constantinides, NBER and University of Chicago

Robert J. Shiller, NBER and Yale University, and
Stefano Athanasoulis, Yale University, "World Income Components: Measuring and Marketizing International Income Risks"
Discussants:
Kenneth S. Rogoff, and
David Backus, NBER and New York University

At present, there is no regulatory capital requirement for the market risk exposures a bank takes in its trading account activities. **Kupiec** and **O'Brien** develop a "precommitment approach" under which the bank specifies an amount of capital adequate to cover its desired level of risk exposure over a fixed subsequent period, and commits to managing its trading portfolio so as to limit cumulative losses at any time during that period to an amount less than its capital allocation. In this scheme, a bank has incentives to allocate capital commensurate with the regulator's desired level of risk exposure, and to manage its losses within its capital commitment. The incentives come from penalties that are imposed if losses exceed the capital allocation, for example, a capital surcharge in the period(s) following a violation of the capital commitment, a pecuniary penalty, or a combination of the two.

Duffee reviews current practices for measuring the credit risks of derivative instruments. He argues that there are two major problems with the standard approach. First, it uses models of the stochastic behavior of financial variables, while ignoring both their inherent oversimplification and the uncertainty in their parameters. Second, it ignores the correlations among exposures on derivative instruments and the probabilities of counterparty default. He demonstrates that these practices can produce large errors in the estimation of distributions of both future credit exposures and future credit losses.

Das and **Tufano** develop a model for pricing credit-sensitive debt contracts. These contracts, including credit-sensitive notes, spread-adjusted notes, and floating-rate notes, adjust investors' exposures to three risks: fluctuating interest rates; changes in the credit rating of the issuer of the debt; and changes in spreads on the debt, even when ratings have not changed. Das and Tufano's pricing model incorporates all three risks, emphasizing credit risks in particular. It also allows for pricing contracts between parties with varying credit ratings, such as swaps.

Shiller and **Athanasoulis** decompose the variance of world national incomes into components that show the most important risk-sharing opportunities, and the most important risk markets that need to be established. Using data on national incomes for large countries from 1950 to 1990, they are unable to estimate the requisite variance matrix of national incomes. However, their results suggest important new markets that actually could be created, and show that there may be large welfare gains to creating some of them.

Also participating in this meeting were: Stephen G. Cecchetti, NBER and Boston College; Robert F. Engle, NBER and University of California, San Diego; Martin Feldstein and Kenneth A. Froot, NBER and Harvard University; Gary B. Gorton, NBER and University of Pennsylvania; Blake D. LeBaron, NBER and University of Wisconsin, Madison; Bonnie Loopesko, J. P. Morgan; and Stanley E. Zin, NBER and Carnegie–Mellon University.

Behavioral Labor Economics

About 30 NBER economists and their guests met at the Bureau's California offices on March 3–4 to discuss papers on behavioral labor economics. Robert S. Gibbons of the NBER and Cornell University, and Lawrence F. Katz, NBER and Harvard University, organized this program:

Linda Babcock and
Colin Camerer, California Institute of Technology;
Richard H. Thaler, NBER and MIT; and
George Loewenstein, Carnegie–Mellon University, "Daily Labor Supply Decisions of New York Cab Drivers: Why You Can't Find a Cab on a Rainy Day"
Discussant:
Henry S. Farber, NBER and Princeton University

Casey B. Mulligan, University of

Chicago, "Pecuniary and Nonpecuniary Incentives to Work in the United States During World War II"
Discussant:
Claudia Goldin, NBER and Harvard University

Robert Frank, Cornell University, "Local Status, Fairness, and Wage Compression Revisited"
Discussant:
Kevin Lang, Boston University

Chip Heath and **Mark Knez,** University of Chicago, "Employee Attitudes and Task Performance: A Longitudinal Study"
Discussant:
George Baker, Harvard University

Truman Bewley, Yale University, "A Field Study on Downward Wage Rigidity" (See "Economic Fluctuations Research Meeting" earlier in this section of the *NBER Reporter*)
Discussant:
Lawrence F. Katz

Ronald Burt, University of Chicago, "Social Capital at the Top of the Firm"
Discussant:
Edward L. Glaeser, NBER and Harvard University

James Baron and **Joel Podolny,** Stanford University, "Make New Friends and Keep the Old? Social Networks, Mobility, and Satisfaction in the Workplace"
Discussant:
Canice Prendergast, NBER and University of Chicago

Alvin Roth and **Xiaolin Xing,** University of Pittsburgh, "Turnaround Time and Bottlenecks in Market Clearing: A Comparative Analysis of Labor Market Institutions"
Discussant:
James Montgomery, Northwestern University

Most New York cab drivers rent their cabs for a 12-hour period. They pay a flat rate and keep all their fares. **Babcock, Camerer, Thaler,** and **Loewenstein** investigate the daily decision of how long drivers work. The standard theory predicts that drivers work longer on days when wages are higher. But if they choose a daily income target, and quit when they reach it, then they will work shorter hours when wages are high. The authors find support for the target income theory, because the elasticity of hours with respect to the hourly wage rate is significantly negative. This implies that drivers could earn more, and drive less, by working the same number of hours every day. It also implies that when demand is particularly high—as on rainy days—wages are high, drivers quit early, and wages stay high.

Mulligan argues that changes in workers' budget sets cannot explain the dramatic increases in civilian work effort in the United States during World War II. Although money wages grew during that period, aftertax real wages were lower than either before or after the war. Evidence from the 1940s does not suggest other pecuniary explanations, such as the effects on wealth of government policies, unfulfilled expectations, or changes in the nonmarket price of time. Propaganda and patriotism emerge as tempting explanations for wartime work effort.

The distribution of compensation within firms is more compressed than the corresponding distribution of productivity. This may be explained either by workers' concerns about fairness or by their concerns about status. **Frank** finds that concerns about fairness alone cannot sustain a stable equilibrium with pay compression, because high-ranked workers in every firm would prefer to accept better-paid positions with lower rank that are available in firms with higher average productivity. By contrast, when certain workers value rank for its own sake, some of them will be willing to remain in high-ranked positions even though they could obtain higher salaries in firms with higher average productivity.

Heath and **Knez** study new customer service representatives at a telephone customer service center, and measure their job satisfaction, intention to stay in the organization, and sense of obligation toward the organization, their coworkers, and customers. The authors use these attitudes to predict performance on one objective measure: the average time it takes to handle a customer's call. During a stable period in the organization, they find, changes in employees' conscientiousness predict changes in performance. During an organizational change, though, the level of conscientiousness instead predicts which employees will respond most positively to the change.

Burt uses network data on a sample of senior managers to illustrate three conclusions: 1) social capital matters for the relative success of managers; 2) social capital matters more where individuals matter more; and 3) social capital matters differently for minorities, who are deemed suspect. The returns to social capital can be used to sort managers into those accept-

ed as legitimate players in the population and those deemed suspect, most notably women in the population Burt analyzes.

Baron and **Podolny** ask how the structure and content of individuals' on-the-job "networks" affect their prospects for mobility and work-related satisfaction. In a random sample of 236 exempt employees of a high-technology firm, they observe that mobility prospects are enhanced by large and sparse information networks. Large and sparse dependency networks hinder mobility prospects, and have a negative effect on work-related satisfaction. Further, the duration of ties to strategic information appears to enhance mobility prospects, while long-lived ties to task-advice hinder mobility. Finally, there is no net benefit for mobility from mentor relations, but there are strong socioemotional benefits for the protegé.

Roth and **Xing** consider the rejected job offers that must be evaluated before an equilibrium offer can be identified. After an initial phase in which many offers can be received at once, there is a stage in which a new offer cannot be made until an outstanding offer is rejected. Then, even the little time required to process offers and rejections may cause bottlenecks. In many decentralized labor markets, this means that transactions have to be finalized before there is time for the market to clear (that is, before all of the potential transactions that would need to be evaluated in order to reach a stable outcome can be considered). Roth and Xing focus on two specific forms of market organization: the centralized entry-level market for American physicians, and the decentralized market for clinical psychologists.

Health Care Program Meeting

The NBER's Program on Health Care met in Cambridge on March 14. These papers, selected by Program Director Alan M. Garber, also of Stanford University, were discussed:

Michael D. Hurd, NBER and State University of New York, Stony Brook, and **Kathleen M. McGarry**, NBER and University of California, Los Angeles, "Medical Insurance and the Use of Health Care Services by the Elderly"

Laurence C. Baker, NBER and Stanford University; **Joel Cantor**, Robert Wood Johnson Foundation; **Stephen Long** and **Susan Marquis**, RAND Corporation, "Does Competition from HMOs Lower Conventional Insurance Premiums?" (NBER Working Paper No. 4920)

Louise Sheiner, Federal Reserve Board, "Health Care Costs, Wages, and Aging: The Impact of Community Rating"

Martin Gaynor, NBER and Johns Hopkins University, and **Stephen Parente**, Project HOPE Center for Health Affairs, "Physician Effects in Medical Technology Choice"

Discussion: **Alan M. Garber**; **Mark B. McClellan**, NBER and Harvard University; and **Thomas E. MaCurdy**, NBER and Stanford University, "Update on Health Care Program Research Initiatives"

How does health care insurance influence the use of health care services by the elderly? **Hurd** and **McGarry** use the first wave of a new survey of those aged 70 and over, and find practically no relationship between either the propensity to hold or to pay for private insurance and observable health measures, including self-assessed health status and objective episodes of disease. Apparently the purchase of private insurance by the elderly is determined mainly by economic status: those with more income and wealth have more private insurance and a greater tendency to purchase insurance. The authors also find that those who are the most heavily insured use the most health care services. This is interpreted as an effect of the incentives embodied in the insurance.

Baker, Cantor, Long, and **Marquis** analyze data on indemnity and preferred provider organization premiums charged to employers, along with data on the level of HMO market share. At first, they find that increases of 10 percent in HMO market share are associated with decreases of about \$3.50 (2.5 percent) in the monthly premium for a single individual. Using a second methodology, they find that increases of 10 percent in HMO market share are associated with decreases of about \$5.00 (5.5 percent) in the single premium.

The effect of mandating community rating of health insurance across age groups depends on how much of health insurance costs are passed on to workers. **Sheiner** uses cross-sectional variation in

city health insurance costs and finds that older workers do pay for their higher health costs in the form of reduced wages. This implies that mandating community rating across age groups would involve significant redistribution from young and future workers to current older workers.

Gaynor and **Parente** use claims data from Blue Cross/Blue Shield of Rochester to analyze physicians' choices regarding C-sections versus vaginal deliveries. Since Blue Cross/Blue Shield has an 80 percent market share in the Rochester area, the vast majority of physicians and deliveries in that area are represented. The sample includes 3261 primary deliveries performed by 126 physicians. The authors find that physicians do tend to favor a particular delivery method, although the patient's condition (breech, fetal distress, and the like) has the greatest impact on the delivery method used. This study provides evidence on the existence of a "physician practice style," although the source of the practice style remains unexplained.

Also attending the meeting were: Ernst R. Berndt, NBER and MIT; David F. Bradford, NBER and Princeton University; David M. Cutler, Martin Feldstein, Richard Frank, Lawrence F. Katz, Brigitte C. Madrian, and David A. Wise, NBER and Harvard University; Daniel R. Feenberg and Richard Woodbury, NBER; Jonathan Gruber, NBER and MIT; Judith Hellerstein, NBER and Northwestern University; Jonathan S. Skinner, NBER and University of Virginia; and Amy Taylor, Agency for Health Care Policy.

International Finance and Macroeconomics

The NBER's Program in International Finance and Macroeconomics held its spring meeting in Cambridge on March 17. The organizers were Program Director Jeffrey A. Frankel, and Andrew K. Rose, both of the NBER and University of California, Berkeley. These papers were discussed:

Holger C. Wolf, NBER and New York University, and
Atish Ghosh, Princeton University, "Pricing in International Markets: Lessons from *The Economist*" (NBER Working Paper No. 4806)
Discussants:
Michael M. Knetter, NBER and Dartmouth College, and
Charles M. Engel, NBER and University of Washington

Allan Drazen, NBER and University of Maryland, and
Leonardo Bartolini, International Monetary Fund, "Capital Account Liberalization as a Signal"
Discussants:
Nouriel Roubini, NBER and Yale University, and
Marianne Baxter, NBER and University of Virginia

Linda S. Goldberg, NBER and New York University, and
Jose Campa, New York University, "Investment, Markups, and Exchange Rates: A Cross-Country Comparison"
Discussants:
Richard H. Clarida, NBER and Columbia University, and
Gordon Bodnar, NBER and University of Pennsylvania

Patrick K. Asea, NBER and University of California, Los Angeles, and
Colin Rose, Theoretical Research Institute (Sydney), "Sharks, Unnecessary Attacks, and the Hump-Shaped Distribution"
Discussants:
Robert J. Hodrick, NBER and Northwestern University, and
David Backus, NBER and New York University

Aaron Tornell and
Andres Velasco, both of NBER and Harvard University, "Fixed Versus Flexible Exchange Rates: Which Provides More Fiscal Discipline?"
Discussants:
William H. Branson, NBER and Princeton University, and
Rudiger W. Dornbusch, NBER and MIT

In order to protect their market share, export firms may stabilize prices in the destination market in the face of changes in the nominal exchange rate. To see whether this actually occurs, **Wolf** and **Ghosh** examine the characteristics and determinants of changes in the cover price of *The Economist* magazine for a sample of 12 countries over the floating rate period. They find that the actual administrative costs of changing prices, rather than strategic pricing, appear to explain deviations from the law of one price.

Drazen and **Bartolini** present a model in which governments use liberalization of capital controls to signal their future policies. Controls on the outflows of capital evolve in response to news about technolo-

gy, and depend on government attitudes toward the taxation of capital. When there is uncertainty about the type of government, removing controls on capital outflows sends a positive signal that actually may trigger an *inflow* of capital. This is what happened in several countries that recently liberalized their capital accounts.

Using data from the United States, Canada, the United Kingdom, and Japan, **Goldberg** and **Campa** show that the effects of exchange rates on physical investment and price-over-cost markups depend on the industry's competitive structure and on the variation over time in producers' exposure to exchange rates, through imported inputs, dependence on the export market, and import competition. The investment response to movements in actual and anticipated exchange rates differs across high- and low-markup sectors and is specific to countries. Investment in low-markup sectors is more responsive to exchange rates than investment in high-markup sectors. In the United States, Japan, and the United Kingdom, markups in high-markup sectors are significantly more responsive to exchange rates than markups in low-markup sectors.

Asea and **Rose** develop a model with two classes of foreign exchange traders: one class, called "fundamentalists," trade on a regular basis; the other class, "sharks," do not. Sharks are discretionary traders who enter the market only when they believe there is a high probability of a speculative attack on the currency. Sharks' beliefs are triggered by the position of the exchange rate within the bands. By examining the strategies available to the central bank in defending its currency against possible attack, Asea and Rose show that the most effective range of intervention is intramarginal, even in a regime that is ostensibly credible.

In recent years the conventional wisdom has held that fixed rates provide more fiscal discipline than flexible rates do. **Tornell** and **Velasco** show that this need not be true if fiscal policy is determined by a rational fiscal authority whose objectives need not coincide with those of the population at large. Under flexible rates, bad fiscal behavior has its costs: flexible rates allow the effects of unsound fiscal policies to manifest themselves immediately through movements in the exchange rate. If fiscal authorities are impatient, flexible rates—by forcing the costs to be paid up front—provide more fiscal discipline and higher welfare for the representative private agent than fixed rates do.

Also attending this meeting were: Richard E. Cumby, NBER and Georgetown University; Jorge Braga de Macedo, NBER and Universidade Nova de Lisboa; Kathryn M. E. Dominguez and Kenneth A. Froot, NBER and Harvard University; Michael P. Dooley, NBER and University of California, Santa Cruz; Jonathan Eaton, NBER and Boston University; Francesco Giavazzi, NBER and Università Bocconi; Takatoshi Ito, visiting at the International Monetary Fund; Michael W. Klein, NBER and Tufts University; Karen K. Lewis and Richard C. Marston, NBER and University of Pennsylvania; Robert E. Lipsey, NBER; and Richard K. Lyons, NBER and University of California, Berkeley.

International Trade and Investment

Members and guests of the NBER's Program on International Trade and Investment met in Cambridge on March 25. Their agenda, organized by Program Director Robert C. Feenstra, also of the University of California, Davis, was:

James R. Markusen, NBER and University of Colorado, and **Anthony J. Venables,** London School of Economics, "Multinational Firms and the New Trade Theory" (NBER Working Paper No. 5036)

Robert W. Staiger, NBER and University of Wisconsin, and **Kyle Bagwell,** Northwestern University, "Protection and the Business Cycle"

James E. Rauch, NBER and University of California, San Diego, "Trade and Search: Social Capital, Sogo Shosha, and Spillovers"

Michael M. Knetter, NBER and Dartmouth College, "Why Are Retail Prices in Japan So High? Evidence from German Export Prices" (NBER Working Paper No. 4894)

Markusen and **Venables** construct a model in which multinational firms may arise endogenously. In equilibrium, multinationals exist when transport and tariff costs are high, incomes are high, and firm-level scale economies are important relative to plant-level scale economies. Less obvious, multinationals are more important in total economic activity when countries are more similar in incomes, relative factor endowments, and technologies. This model may explain why direct investment becomes increasingly important over time relative to trade among the developed countries, and why the ratio of investment-to-trade among the developed countries is larger than the same ratio for "North–South" or "South–South" countries. The model also predicts that trade first rises and then falls as countries converge in incomes, relative endowments, and technologies.

Staiger and **Bagwell** propose a business cycle model of protection, driven by cyclical variations in how effective countries are at avoiding inefficient beggar-thy-neighbor trade policies. They find theoretical support for countercyclical movements in protection levels: the rapid growth in trade volume associated with a boom facilitates maintaining more liberal trade policies than can be sustained during a recession, when growth is slow. However, the acyclical increases in the level of trade volume also give rise to protection. Thus whether rising imports are met with greater liberalization or increased protection depends on whether they are part of a cyclical upward trend in trade volume or an acyclical increase in import levels.

Rauch argues that, for differentiated products, prices are not informative enough to allow "globally scanning" traders to substitute for organized markets. Instead, connections between buyers and sellers are made through a search process; because of its costliness, it does not proceed until the best match is achieved. This search is conditioned by proximity and preexisting "ties," and results in trading networks rather than "markets." Rauch shows that this can explain the importance of ethnic and extended family ties in trade, the success of diversified trading intermediaries, and the ubiquity of government export promotion policies, including subsidized trade missions.

Retail prices in Japan are higher than in other countries for similar products. The two main competing explanations for this fact are a relatively high degree of discriminatory practices against imports, and relatively high distribution costs associated with getting goods to the final point of sale in Japan. For the vast majority of the 37 seven-digit German export industries that **Knetter** studies, the data are consistent with the first explanation. Prices on shipments to Japan appear to be significantly higher than prices on shipments to the United States, the United Kingdom, and Canada.

Program Meeting on Corporate Finance

The NBER's Program on Corporate Finance, directed by Robert W. Vishny, also of the University of Chicago, met in Cambridge on March 31. The agenda was:

Jeremy C. Stein, NBER and MIT, "Internal Capital Markets and the Competition for Corporate Resources"
Discussant:
Bengt Holmstrom, MIT

Luigi Zingales, NBER and University of Chicago, "Survival of the Fittest or the Fattest? Exit and Financing in the Trucking Industry"
Discussant:
Sheridan Titman, Boston College

Li-Lan Cheng, MIT, "Equity Issue Underperformance and the Timing of Security Issues"
Discussant:
Laurie Bagwell, Northwestern University

Michael J. Alderson, St. Louis University, and **Brian Betker,** Ohio State University, "Liquidation Costs and Capital Structure"
Discussant:
Steven N. Kaplan, NBER and University of Chicago

Raghuram G. Rajan, NBER and University of Chicago, and **Luigi Zingales,** "Power Struggles and Inefficiency"
Discussant:
David Hirshleifer, University of Michigan

Stein examines the role of corporate headquarters in allocating scarce resources to competing projects in an internal capital market. Unlike a bank lender, headquarters has control rights that give it both the authority and the incentive to engage in "winner picking": the practice of actively shifting funds from one project to another. By doing a good job in picking winners, headquarters can create value even when its own relationship with the outside capital market is fraught with agency problems, and it cannot help to relax firmwide credit constraints. Thus internal capital markets may function more efficiently when companies choose relatively focused strategies.

Zingales analyzes the impact of imperfections in the capital market on the survival of firms in a changed competitive environment. He finds that highly leveraged trucking firms are less likely to survive the shock of deregulation; this is true even after he controls for the probability of default and for some measures of efficiency. This effect is somewhat stronger in the less competitive segment of the motor carrier industry. He also finds that the prederegulation level of leverage negatively impacts the price per ton-mile that a carrier charges during the price war that follows deregulation.

Cheng analyzes the performance of stocks of firms that made seasoned equity and bond issues. He finds that equity issuers that do not use the proceeds for capital investment severely underperform the market for three to five years after an issue; equity issuers that invest the proceeds do not. Firms that do not invest the proceeds may know that their stocks are overpriced, and issue when such overpricing is most severe. The use of proceeds can be predicted using such preissue information as issuers' stock price runups, yearly issue volumes, and short-term market reactions to issue events. This makes it possible to predict postissue performance at issue time without actually observing whether proceeds are invested. Furthermore, the stocks of bond issuers do not underperform the market after issue; and, the difference between the investing and the noninvesting bond issuers is not significant.

Alderson and **Betker** investigate the relationship between liquidation costs of assets and the composition of capital structure for firms that reorganized under Chapter 11 of the Bankruptcy Code. Firms with high liquidation costs emerge from Chapter 11 with relatively low debt ratios. The debt of these firms is more likely to be public and unsecured, and to have less restrictive covenant terms. These firms are also more likely to raise new equity capital. Assets with high liquidation costs thus lead firms to choose capital structures that make financial distress less likely.

Rajan and **Zingales** develop a theory of organizations based on the notion that resource allocation is the outcome of negotiations between subunits, each maximizing its own objective. Current investment decisions will affect a subunit's bargaining power in future negotiations, and hence its ability to appropriate future allocations. The authors show that organizations can be structured so that subunits' quest for power provides the incentives for investments that otherwise would not be rewarded in the marketplace. Unfortunately, such a structure also opens the door to inefficient power struggles.

Also attending this conference were: Geoffrey Carliner, NBER; Judith A. Chevalier, NBER and University of Chicago; Florencio Lopez-de-Silanes, Harvard University; and Richard S. Ruback and Peter Tufano, NBER and Harvard University.

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"The Economics of Health Care: What Have We Learned? What Have I Learned?" by **Martin Feldstein**

"Reserve Cycles," by **Robert P. Flood, William Perraudin,** and **Paolo Vitale**

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1939. "A Nonparametric Approach to Pricing and Hedging Derivative Securities Via Learning Networks," by **James M. Hutchinson, Andrew W. Lo,** and **Tomaso Poggio** (NBER Working Paper No. 4718)

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1944. "Issues in the Industrial Organization of the Market for Physician Services," by **Martin Gaynor** (NBER Working Paper No. 4695)

1945. "Competition and Price Dispersion in the U.S. Airline Industry," by **Severin Borenstein** and **Nancy L. Rose** (NBER Working Paper No. 3785)

1946. "A Reconsideration of Investment Behavior Using Tax Reforms as Natural Experiments," by **Jason G. Cummins, Kevin A. Hassett,** and **R. Glenn Hubbard**

1947. "The Effect of Health Insurance on Retirement," by **Brigitte C. Madrian**

Bureau Books

Coordination and Information, Historical Perspectives on the Organization of Enterprise

Coordination and Information, edited by Naomi R. Lamoreaux and Daniel M. G. Raff, is available from the University of Chicago Press for $18.95. This volume, which concentrates on the period around the beginning of the 20th century, includes eight case studies on how firms coordinate economic activity within, at, and outside their borders. Methods of coordination vary with production technique; they also can be affected by intellectual movements; and regulation can have important consequences for coordination.

A sequel to Peter Temin's *Inside the Business Enterprise,* this volume should be of interest to economists and business historians who want to see what activities are coordinated better within firms, or among cooperating firms, and to determine the best form of coordination.

Lamoreaux is an NBER research associate and a professor of history at Brown University. Raff is an NBER faculty research fellow and an associate professor of management at the Wharton School, University of Pennsylvania.

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NBER Working Papers

The Causes and Effects of Liability Reform: Some Empirical Evidence

Daniel P. Kessler, Thomas J. Campbell, and George B. Shepherd

NBER Working Paper No. 4989
January 1995
Law and Economics

This paper provides empirical evidence on the causes and effects of liability reforms. Using a newly collected dataset of state tort laws and a panel dataset containing industry-level data by state for 1969–90, we first identify the characteristics of states that are associated with liability reforms, and then examine whether liability reforms influence productivity and employment.

We present two central findings. First, reductions in liability levels are associated with increases in measured productivity and employment in most industries that we studied. Second, liability reforms that reduce legal liability are generally correlated positively with measures of political conservatism.

Diversification, Integration, and Emerging Market Closed-End Funds

Geert Bekaert and Michael S. Urias

NBER Working Paper No. 4990
January 1995
Asset Pricing

Using an extensive new dataset on U.S.- and U.K.-traded closed-end funds, we examine the diversification benefits from emerging equity markets, and the extent of their integration with global capital markets. We find significant diversification benefits for the U.K. country funds, but *not* for the U.S. funds. The difference appears to be related to portfolio holdings. To investigate global market integration, we compute the reduction in expected returns an investor would be willing to accept to avoid investment barriers in six countries. We find evidence of investment restrictions for Indonesia, Taiwan, and Thailand, but not for Korea, the Philippines, or Turkey.

Using Electoral Cycles in Police Hiring to Estimate the Effect of Police on Crime

Steven D. Levitt

NBER Working Paper No. 4991
January 1995
JEL Nos. K42, H72
Public Economics

Previous empirical studies typically have uncovered little evidence that police reduce crime. One problem with those studies is a failure to deal adequately with the "simultaneity" between police and crime: while police may or may not

reduce crime, there is little doubt that expenditures on police forces are an increasing function of the crime rate.

In this study, I use the timing of mayoral and gubernatorial elections to identify the effect of police on crime. I first demonstrate that increases in the size of police forces occur disproportionately in mayoral and gubernatorial election years. This relationship previously had gone undocumented. After controlling for changes in government spending on other social programs, there is little reason to think that elections will be correlated otherwise with crime.

Using a panel of large U.S. cities from 1970–92, I show that police reduce crime for six of the seven categories examined. I estimate that each additional police officer eliminates eight to ten serious crimes. Existing estimates of the costs of crime suggest that the social benefit of reduced crime is approximately $100,000 per officer per year, implying that the current number of police is below the optimal level.

Economic Risk and Political Risk in Fiscal Unions

Alberto Alesina and Roberto Perotti

NBER Working Paper No. 4992
January 1995
International Finance and Macroeconomics, Public Economics

A fiscal program that redistributes income from rich to poor individuals indirectly redistributes tax revenues from regions hit by a favorable shock to regions hit by an unfavorable one. Therefore centralized fiscal redistribution has been advocated as a way to insure individuals against region-specific shocks. In this paper, we argue that a centralized fiscal policy, while reducing the uncertainty about the tax base, *creates* uncertainty about the tax rate. This occurs because regions hit by different shocks have contrasting interests regarding the choice of the policy instrument. Using a simple model with two regions and linear taxes, we show that the higher uncertainty about the policy instrument might more than offset the lower uncertainty about the tax base, thus making a majority of agents in each region worse off in a centralized regime.

The model is a special case of a more general idea. Heterogeneous entities can reap numerous advantages from integration: for example, mutual insurance (on which we focus); economies of scale; and more bargaining power. However, the same process of integration can increase the unpredictability of any endogenous policy, because more diverse entities participate in the decisionmaking process. Therefore the opportunities for disagreement increase. In principle, this second effect might offset the advantages of integration.

The Decline of Traditional Banking: Implications for Financial Stability and Regulatory Policy

Franklin R. Edwards and Frederic S. Mishkin

NBER Working Paper No. 4993
January 1995
JEL Nos. G21, G1
Monetary Economics

This paper outlines the fundamental economic forces that have led to the decline in traditional banking, that is, the process of making loans and funding them by issuing short-dated deposits. The declining competitiveness of traditional banking may threaten financial stability in two ways: by increasing bank failures; and by increasing the incentives for banks to take on more risk, either by making more risky loans, or by engaging in "nontraditional" financial activities that promise higher returns but greater risk.

We argue that most nontraditional activities, for example banks acting as derivatives' dealers, expose banks to risks and moral hazard problems that are similar to those associated with banks' traditional activities. Also, these activities can be regulated as effectively as traditional activities can.

One regulatory approach to maintaining financial stability and strengthening the banking system is to adopt a system of structured bank capital requirements with early corrective action by regulators. An important element in this approach is that market-value accounting principles be applied to banks, and that there be increased public disclosure by banks of the risks associated with their trading activities. With this regulatory structure in place, banks could be permitted greater freedom to expand into nontraditional activities.

Pollution Abatement Costs, Regulation, and Plant-Level Productivity

Wayne B. Gray and Ronald J. Shadbegian

NBER Working Paper No. 4994
January 1995
JEL Nos. D24, Q28
Productivity

We analyze the connection among productivity, pollution abatement expenditures, and other measures of environmental regulation for plants in three industries: paper, oil, and steel. We examine data from 1979 to 1990, considering both levels of total factor productivity and growth rates. Plants with higher abatement costs have sig-

nificantly lower productivity. The magnitude of the impact is somewhat larger than expected: $1 higher abatement costs appear to be associated with the equivalent of $1.74 in lower productivity for paper mills, $1.35 for oil refineries, and $3.28 for steel mills. However, these results apply only to variation across plants in productivity levels.

Looking at productivity variation within plants over time, or using productivity growth rates, the estimates show a smaller (and insignificant) relationship between abatement costs and productivity. Other measures of environmental regulation faced by the plants—compliance status, enforcement activity, and emissions—are not significantly related to productivity.

By Force of Habit: A Consumption-Based Explanation of Aggregate Stock Market Behavior

John Y. Campbell and John H. Cochrane

NBER Working Paper No. 4995
January 1995
Asset Pricing, Economic Fluctuations

We present a consumption-based model that explains the procyclical variation of stock prices, the long-horizon predictability of excess stock returns, and the countercyclical variation of stock market volatility. Our model captures much of the history of stock prices, given only data on consumption. Since our model captures the equity premium, it implies that fluctuations have important welfare costs. Unlike many habit-persistence models, our model does not necessarily produce cyclical variation in the risk-free interest rate, nor does it produce an extremely skewed distribution or negative realizations of the marginal rate of substitution.

Income and Wealth of Older American Households: Modeling Issues for Public Policy Analysis

Alan L. Gustman and F. Thomas Juster

NBER Working Paper No. 4996
January 1995
JEL Nos. D31, H5, J14
Aging, Labor Studies

This paper evaluates the extent to which current knowledge of retirement, savings, pension, and related behavior is sufficient for determining the effects of major policy initiatives on the incomes and wealth of the aged population of the United States. We present data from two new surveys—the Health and Retirement Study, and the Asset and Health Dynamics Among the Oldest Old Survey—describing the distributions of the major components of income and wealth to be explained by these behavioral models. The data suggest that the amount of wealth held by the older population has been understated severely in earlier surveys. Disagreements and inconsistencies in models of savings indicate that there is no agreed-upon behavioral model on which to base policy analysis. Similar problems characterize the pension literature.

Most strikingly, central features of these three major branches of behavioral analysis are mutually inconsistent. Although there are important linkages among the behaviors that determine retirement, savings, and pension outcomes, in each area the research ignores or misspecifies the related behavior from other areas. Consequently, significant advances are required before we can confidently predict the effects on income and wealth in retirement of contemplated changes in policies.

On the Predictability of Stock Returns: An Asset-Allocation Perspective

Shmuel Kandel and Robert F. Stambaugh

NBER Working Paper No. 4997
January 1995
JEL Nos. G11, G12
Asset Pricing

We investigate the predictability of monthly stock returns from the perspective of a risk-averse investor who uses the data to update initially vague beliefs about the conditional distribution of returns. The investor's optimal allocation of stocks-versus-cash can depend on the current value of a predictive variable, such as dividend yield, even though such a variable may not be predictable. When viewed in this economic context, the empirical evidence indicates a strong degree of predictability in monthly stock returns.

Antitrust and Higher Education: Was There a Conspiracy to Restrict Financial Aid?

Dennis W. Carlton, Gustavo E. Bamberger, and Roy J. Epstein

NBER Working Paper No. 4998
January 1995
Industrial Organization

In 1991, the Antitrust Division sued MIT and the eight schools in the Ivy League under Section 1 of the Sherman Act for engaging in a conspiracy to fix the prices that students pay. The Antitrust Division claimed that the schools conspired on financial aid policies in an effort to reduce aid and to raise their revenues. The schools justified their cooperative behavior by explaining that it enabled them to concentrate aid on only those in need, and thereby helped the

schools to achieve their goals of need-blind admission, coupled with financial aid to all needy admittees.

This paper analyzes the empirical determinants of tuition, and finds that the schools' agreement had no effect on average tuition paid. The paper also analyzes the appropriate application of the antitrust laws to not-for-profit institutions. The Court of Appeals found that it is appropriate for the courts to consider nonprofit institutions' justifications for collective action (in this case, to enable the poor to attend school) under a Rule of Reason. The Court of Appeals overturned the District Court's opinion against MIT, citing the failure of the District Court to properly apply the Rule of Reason.

The Adding Up Problem: A Targeting Approach

Kala Krishna

NBER Working Paper No. 4999
January 1995
JEL No. F13
International Trade and Investment

This paper looks at the problem of making multiple lending decisions that affect the supply of the product when the consequences of those decisions are related through their effect on the world price of the product. This is termed the "adding up problem." I argue that thinking of this problem from the point of view of the targeting literature helps to clarify the nature of optimal policies.

First, though, three factors need to be specified: 1) the objective function of the lender (the bank) compared to that of the borrowers (the countries); 2) the extent of the lender's ability to influence total investment in the product, and the instruments available to it; and 3) the distortions present in the environment.

The lender tries to implement policies that maximize its objective function, and distortions in the system prevent this function from being maximized automatically. These distortions could arise because the lender's objectives do not match the borrowers', or because of borrowers' misconceptions about how the system operates, or a lack of access to funds on the part of the borrowers relative to the lender. The environment and policies available to the lender limit its ability to influence the outcome.

In this context, I argue that targeting models can be used to help guide policy. The basic rule is to correct the distortions where they occur using the appropriate instrument. If instruments are limited, those available are used to target multiple distortions, and the "first best" need not be attainable.

Behavioral Responses to Tax Rates: Evidence from TRA86

Martin Feldstein

NBER Working Paper No. 5000
January 1995
JEL Nos. H2, H31
Public Economics

This paper uses the experience after the Tax Reform Act of 1986 to examine how taxes affect three aspects of individual taxpayer behavior: labor supply, total taxable income, and capital gains. The substantial sensitivity of married women's labor supply implies that the efficiency of the tax system could be increased significantly by reducing the marginal tax rates of these women relative to their husbands' marginal tax rates. More generally, the sensitivity of taxable income to the net-of-tax share implies that lower marginal tax rates would involve much less revenue loss than is assumed traditionally, and would bring a much more substantial reduction in the deadweight loss of the tax system. The sharp fall in the real value of realized capital gains since the 1986 rise in tax rates on them confirms earlier research indicating the substantial sensitivity of capital gains realizations to tax rates. A comparison with projections by the Treasury and Congressional Budget Office made in 1988 shows that the current official model greatly understates the sensitivity of capital gains to tax rates.

Empirical Matching Functions: Estimation and Interpretation Using Disaggregate Data

Patricia M. Anderson and Simon M. Burgess

NBER Working Paper No. 5001
January 1995
JEL No. J6
Labor Studies

In this paper, we estimate matching functions using disaggregate data. We find strong support for the matching approach, with most specifications implying slightly increasing returns to scale. This finding does not appear to arise from our inclusion of additional controls, or from the level of disaggregation. Thus we conclude that earlier findings of constant returns in the United States may be the result of various approximations needed to construct an aggregate time series. We also find evidence of endogenous job competition between the employed and nonemployed, so that the estimated parameters from a matching function cannot be interpreted as structural parameters.

The Impact of Federal Spending on House Election Outcomes

Steven D. Levitt and James M. Snyder, Jr.

NBER Working Paper No. 5002
January 1995
JEL No. H50
Public Economics

While it is widely believed by academics, politicians, and the popular press that incumbent congressmen are rewarded by the electorate for bringing federal dollars to their district, the evidence supporting that claim is extremely weak. One explanation for the failure to find the expected relationship between federal spending and election outcomes is that incumbents who expect to have difficulty being reelected are likely to exert greater effort in obtaining federal outlays. Since it is generally impossible to adequately measure this effort, the estimated impact of spending is biased downward because of omitted variables.

We address this estimation problem using instrumental variables. For each House district, we use spending *outside* the district but *inside* the state containing the district as an instrument for spending in the district. Federal spending is affected by a large number of actors (for example, governors, senators, mayors, and other House members in the state delegation), leading to positive correlations in federal spending across the House districts within states. However, federal spending outside of a district is not likely to be correlated strongly with that district's electoral challenge. Thus, spending in other districts is a plausible instrument.

In contrast to previous studies, ours finds strong evidence that nontransfer federal spending benefits congressional incumbents: an additional $100 per capita in such spending is worth as much as 2 percent of the popular vote. Additional transfer spending, on the other hand, does not appear to have any electoral effects.

Public Employment, Taxes, and the Welfare State in Sweden

Sherwin Rosen

NBER Working Paper No. 5003
January 1995
Labor Studies

All employment growth in Sweden since the early 1960s is attributable to labor market entry of women, working in local public sector jobs that implement the welfare state. Sweden has "monetized" or "nationalized" the family. Women are paid at public expense to provide household services for other families. Subsidizing purchased household services encourages labor force participation of women through substitution of market services for self-provided services. It also reduces the marginal cost prices of household goods, and encourages substitution of household goods for material goods. A kind of social *cross-hauling* occurs: when subsidies are increased and taxes raised to finance them, production of material goods declines and production of household goods increases. Women enter the market and work more in each other's households and less in the material goods sector. Efficiency distortions of current child policies in Sweden may be as large as half of total expenditures on childcare. The current 90 percent subsidies to public childcare probably involve large deadweight losses. A 1 percent decline in the rate of subsidy, accompanied by balanced budget tax decreases, would reduce the deadweight losses of tax distortions by 1 percent, at current policy levels.

Spatial Productivity Spillovers from Public Infrastructure: Evidence from State Highways

Douglas Holtz-Eakin and Amy Ellen Schwartz

NBER Working Paper No. 5004
February 1995
JEL Nos. H54, H72, R5
Public Economics

Is public sector infrastructure a key determinant of productivity? Traditional, project-based analyses of costs and benefits typically do not find large rates of return on infrastructures. But proponents of infrastructure spending point to regression-based analyses that imply large productivity effects from public spending. The disparity in estimated returns often is attributed to geographic spillovers in productivity benefits that are not captured by disaggregated analyses.

We examine the degree to which state highways provide productivity benefits beyond the narrow confines of each state's borders. Despite the fact that state highways—especially the interstate highway system—are designed at least in part with interstate linkages in mind, we find no evidence of quantitatively important productivity spillovers.

Common Interests or Common Polities? Reinterpreting the Democratic Peace

Henry S. Farber and Joanne Gowa

NBER Working Paper No. 5005
February 1995
JEL No. F02
Labor Studies

The central claim of a rapidly growing literature in international relations is that members of pairs of democratic states are much less

likely to engage each other in war or in serious disputes short of war than are members of other pairs of states.

Our analysis does not support this claim. Instead, we find that the dispute rate between democracies is *lower* than that of other country pairs only after World War II. Before 1914 and between the world wars, there is no difference between the war rates of members of democratic pairs of states and of members of other pairs of states. We also find that there is a *higher* incidence of serious disputes short of war between democracies than between nondemocracies before 1914.

We attribute this crosstemporal variation in dispute rates to changes in patterns of common and conflicting interests across time. We use alliances as an indicator of common interests to show that crosstemporal variation in dispute rates conforms to variations in interest patterns for two of the three time periods in our sample.

A Panel Project on Purchasing Power Parity: Mean Reversion Within and Between Countries

Jeffrey A. Frankel and Andrew K. Rose

NBER Working Paper No. 5006
February 1995
JEL No. F30
International Finance and Macroeconomics

Previous time-series studies have shown that there is mean reversion in real exchange rates. Deviations from purchasing power parity (PPP) appear to have half-lives of approximately four years. However, the long samples required for statistical significance are not available for most currencies, and may be inappropriate because of changes in regime.

In this study, we reexamine deviations from PPP using a panel of 150 countries and 45 annual observations. Our panel shows strong evidence of mean reversion similar to what is found in long time series. PPP deviations are eroded at a rate of approximately 15 percent annually: that is, their half-life is around four years. Such findings can be masked in time-series data, but are relatively easy to find in cross-sections.

Holdups, Standard Breach Remedies, and Optimal Investment

Aaron S. Edlin and Stefan Reichelstein

NBER Working Paper No. 5007
February 1995
JEL No. K1
Law and Economics

We consider a bilateral trading problem in which one or both parties make relationship-specific investments before trade. Without adequate contractual protection, the prospect of later holdups discourages investment. We postulate that the parties can sign noncontingent contracts prior to investing, and can freely renegotiate them after uncertainty about the desirability of trade is resolved. We find that such contracts can induce one party to invest efficiently when either a breach remedy of *specific performance* or *expectation damages* is applied. However, expectation damages are poorly suited to two-investor problems. Specific performance can induce both parties to invest efficiently if a separability condition holds.

Regional Cost-of-Living Adjustments in Tax-Transfer Schemes

Louis Kaplow

NBER Working Paper No. 5008
February 1995
JEL Nos. H24, H53
Public Economics

The federal income tax and major welfare programs do not take into account significant cost-of-living variations among regions. This paper considers what adjustments might be appropriate in light of the distributive purposes of tax and welfare systems and concerns about the efficiency of the interregional allocation of resources. I consider price index problems, differences in amenities, and heterogeneity of individuals' locational preferences.

Tax Projections and the Budget: Lessons from the 1980s

Alan J. Auerbach

NBER Working Paper No. 5009
February 1995
JEL Nos. H30, H61
Public Economics

Some economists have argued that the disincentive effects of increases in the marginal tax rate in the 1980s caused revenue to rise by less than had been anticipated. To evaluate that hypothesis, this paper considers revenue forecasts from the Office of Management and Budget and forecast errors for 1982–93. If the revenue gains from tax increases, and the revenue losses from tax cuts, were overstated because of inadequate allowance for behavioral responses, then the forecast errors should be related negatively to the initial revenue estimates of the impact of policy changes.

For both excise taxes and corporate income taxes, it turns out that the systematic overprediction of revenues during the period can be explained in part by an underestimate of behavioral responses to taxation.

Differential Information and Dynamic Behavior of Stock Trading Volume

Hua He and Jiang Wang

NBER Working Paper No. 5010
February 1995
Asset Pricing

This paper develops a multiperiod rational expectations model of stock trading in which investors have differential information concerning the underlying value of the stock. Investors trade competitively in the stock market based on their private information and the information revealed by the market-clearing prices, as well as other public news. We examine how trading volume is related to the information flow in the market, and how investors' trading reveals their private information.

Do Firms Smooth the Seasonal in Production in a Boom? Theory and Evidence

Stephen G. Cecchetti,
Anil K. Kashyap, and
David W. Wilcox

NBER Working Paper No. 5011
February 1995
JEL Nos. E32, C49
Economic Fluctuations,
Monetary Economics

Using disaggregated production data, we show that the size of seasonal cycles will change significantly over the course of the complete business cycle. In particular, during periods of high activity throughout the economy, some industries will smooth seasonal fluctuations while others will exaggerate them. In our model, seasonal fluctuations can be disentangled from cyclical fluctuations safely only when the marginal cost of production is linear, and the variation in demand and cost satisfy certain (restrictive) conditions. Our model also suggests that inventory movements can be used to isolate the role of demand shifts in generating any interaction between seasonal cycles and business cycles.

Thus, the empirical analysis involves studying the variation in seasonally *unadjusted* patterns of production and inventory accumulation over different phases of the business cycle. Our finding, that seasonals shrink during booms and that firms carry more inventories into high sales seasons during a boom, leads us to conclude that for several industries, marginal cost slopes up at an increasing rate. Conversely, in a couple of industries we find that seasonal swings in production are exaggerated during booms, and that inventories are drawn down prior to high sales seasons, suggesting that marginal costs curves flatten as production increases. Overall, we find considerable evidence that there are nonlinear interactions between business cycles and seasonal cycles.

Price, Tobacco Control Policies, and Smoking Among Young Adults

Frank J. Chaloupka and
Henry Wechsler

NBER Working Paper No. 5012
February 1995
JEL No. I1
Health Economics

We estimate the effects of cigarette prices and tobacco control policies (including restrictions on smoking in public places, and limits on the availability of tobacco products to youths) on cigarette smoking among youths and young adults using data from a nationally representative survey of students in U.S. colleges and universities. Our estimates indicate that college students are quite sensitive to the price of cigarettes: the average estimated price elasticity of smoking participation is –0.66 and the overall average estimated price elasticity of cigarette smoking is –1.43. In addition, relatively stringent restrictions on smoking in public places reduce smoking participation rates among college students. The quantity of cigarettes consumed by smokers is lowered by any restrictions on public smoking. Finally, limits on the availability of tobacco products to underage youths have no impact on college students, almost all of whom can purchase these products legally.

Economic Growth in a Cross-Section of Cities

Edward L. Glaeser,
José A. Scheinkman, and
Andrei Shleifer

NBER Working Paper No. 5013
February 1995
JEL Nos. O40, R11
Growth

We examine the relationship between urban characteristics in 1960 and urban growth (income and population) between 1960 and 1990. Our major findings are that income and population growth move together. Both types of growth are positively related to initial schooling, negatively related to initial unemployment, and negatively related to the share of employment initially in manufacturing. These results are unchanged qualitatively if we examine cities (a smaller political unit), or Standard Metropolitan Statistical Areas (a larger "economic" unit). We also find that racial composition and segregation basically are uncorrelated with urban growth across all cities. But in communities with large nonwhite populations, segregation is correlated positively with white population growth. Government expenditures (except for sani-

tation) are uncorrelated with urban growth. Government debt is correlated positively with later growth.

Are Lifetime Jobs Disappearing? Job Duration in the United States, 1973–93

Henry S. Farber

NBER Working Paper No. 5014
February 1995
JEL No. J60
Labor Studies

The public believes that job security has deteriorated dramatically in the United States. In this study, I examine job durations from eight supplements to the Current Population Survey administered between 1973 and 1993 in order to determine if, in fact, there has been a systematic change in the likelihood of long-term employment. In order to measure changes in the distribution of job durations, I examine changes in selected quantiles (the median and the 0.9 quantile) of the distribution of duration of jobs in progress. I also examine selected points in the cumulative distribution function including the fraction of workers who have been with their employer less than one year, more than ten years, and more than 20 years.

The central findings are clear. By the measures I examine, there has been no systematic change in the overall distribution of job duration over the last two decades, but the distribution of long-term jobs across the population has changed in two ways. First, individuals, particularly men, with little education (less than 12 years) are substantially less likely to be in long jobs today than they were 20 years ago. Second, women with at least a high-school education are substantially more likely to be in long jobs today than they were 20 years ago.

The Deficit Gamble

Laurence M. Ball, Douglas W. Elmendorf, and N. Gregory Mankiw

NBER Working Paper No. 5015
February 1995
Economic Fluctuations

The historical behavior of interest rates and growth rates in the United States suggests that, with a high probability, the government can run temporary budget deficits and then roll over the resulting government debt forever. We document this finding and examine its implications. We show that whenever a perpetual rollover of debt succeeds, policy can make every generation better off. This does not imply that deficits are good policy, because an attempt to roll over debt forever might fail. But the adverse effects of deficits, rather than being inevitable, only occur with a small probability.

Measuring Aggregate Human Capital

Casey B. Mulligan and Xavier Sala-i-Martin

NBER Working Paper No. 5016
February 1995
JEL Nos. C43, C82, O49
Growth

In this paper we construct a set of human capital indexes for the states of the United States for each Census year starting in 1940. In order to do so, we propose a new methodology for the construction of index numbers in panel datasets. Our method is based on an optimal approach with which we choose the "best" set index numbers by minimizing the expected estimation error subject to some search constraints.

We find that the stock of human capital in the United States grew twice as rapidly as the average years of schooling, and that human capital inequality across states went up during the 1980s (while the dispersion of schooling actually fell). We conclude that using the average years of schooling for the empirical study of existing growth models may be misleading

The Illusion of Failure: Trends in the Self-Reported Health of the U.S. Elderly

Timothy Waidmann, John Bound, and Michael Schoenbaum

NBER Working Paper No. 5017
February 1995
Aging, Health Care, Health Economics

Data from the National Health Interview Survey and elsewhere showed a trend toward worsening (self-reported) health among American men and women in middle age and older during the 1970s. This evidence—combined with the significant declines in age-specific *mortality* observed since the 1960s —has led some researchers to suggest that, on average, the health of the older population is declining. We examine recent trends in self-reported health and find that the health declines observed during the 1970s generally reversed during the 1980s. This shift would appear to belie the notion that lower adult mortality necessarily implies worse health. We argue further that the reversals observed during the 1980s also call into question whether trends in self-reported health during the 1970s reflected actual health declines. We suggest that changes in the social and economic forces influencing the options available for responding to health problems, combined with earlier diagnosis of preexisting conditions, provide a more plausible explanation for these trends, an explana-

tion that is consistent with data from both the 1970s and 1980s.

A Labor-Income-Based Measure of the Value of Human Capital: An Application to the States of the United States

Casey B. Mulligan and Xavier Sala-i-Martin

NBER Working Paper No. 5018
February 1995
JEL Nos. C82, O49
Growth

We argue that a sensible measure of the aggregate value of human capital is the ratio of total labor income per capita to the wage of a person with zero years of schooling. That is because total labor income incorporates not only human capital, but also physical capital; given human capital, regions with higher physical capital will tend to have higher wages for all workers and, therefore, higher labor income. We find that one way to net out the effect of aggregate physical capital on labor income is to divide labor income by the wage of a worker with no schooling.

For the average U.S. state, our measure suggests that the value of human capital during the 1980s grew at a much larger rate than schooling. The reason for this is movements in the relative productivities of the different workers: in some sense, some workers and some types of schooling became a lot more relevant in the 1980s; as a result, measured human capital increased.

The International Diversification Puzzle Is Worse Than You Think

Marianne Baxter and Urban J. Jermann

NBER Working Paper No. 5019
February 1995
JEL Nos. F40, G11
International Finance and Macroeconomics

Although international financial markets are highly integrated across the more well-developed countries, investors nevertheless hold portfolios that consist nearly exclusively of domestic assets. This violation of the predictions of standard theories of portfolio choice is known as the "international diversification puzzle." In this paper, we show that the presence of nontraded risk associated with variations in the return to human capital has dramatic implications for the optimal fraction of domestic assets in an individual's portfolio. Our analysis suggests that the returns to human capital are highly correlated with the returns to domestic financial assets. Hedging the risk associated with nontraded human capital involves a short position in national equities in an amount approximately 1.5 times the value of the national stock market. Thus, optimal and value-weighted portfolios very likely involve a short position in domestic marketable assets.

Strategic Trade Policy

James A. Brander

NBER Working Paper No. 5020
February 1995
JEL No. F10
International Trade and Investment

This paper reviews the literature on strategic trade policy: trade policy that conditions or alters a strategic relationship between firms, implying that it focuses primarily on trade in the presence of oligopoly. The key point is that strategic relationships between firms introduce additional motives for trade policy, over and above terms of trade and other effects that arise in all market structures. This paper makes the well-known point that slight differences in the structure of a model can give rise to strikingly different implications for trade policy, but also seeks to emphasize the robust general points that emerge from the literature.

International Trade and Open-Access Renewable Resources: The Small Open Economy Case

James A. Brander and M. Scott Taylor

NBER Working Paper No. 5021
February 1995
JEL Nos. F10, Q20
International Trade and Investment

This paper develops a two-sector general equilibrium model of an economy with an open-access renewable resource. We characterize the autarkic steady state, showing that autarky prices (and "comparative advantage") are determined by the ratio of intrinsic resource growth to labor. Under free trade, steady-state trade and production patterns for a small open economy are determined by whether the resource good's world price exceeds its autarky price. Strikingly, if the small country exports the resource good while remaining diversified, then steady-state utility is lower than in autarky, and increases in the world price of exports reduce welfare.

Measuring Business Cycles Approximate Band-Pass Filters for Economic Time Series

Marianne Baxter and Robert G. King

NBER Working Paper No. 5022
February 1995
JEL Nos. C82, E17, E32
Economic Fluctuations

We develop a set of approxi-

mate band-pass filters designed for use in a wide range of economic applications. In particular, we design and implement a specific filter that isolates business-cycle fluctuations in macroeconomic time series. This filter was designed to isolate fluctuations in the data that persist for periods of two through eight years. This filter also "detrends" the data, in the sense that it will render stationary time series that are integrated of order two or less, or that contain deterministic time trends. We apply our filter to several of the key macroeconomic time series, and describe the picture of the U.S. postwar business cycle that emerges from our analysis. We also provide detailed comparisons with several alternative detrending methods

Taxation and Labor Supply of Married Women: The Tax Reform Act of 1986 as a Natural Experiment

Nada Eissa

NBER Working Paper No. 5023
February 1995
JEL Nos. H24, H31
Public Economics

This paper uses the Tax Reform Act of 1986 as a natural experiment to identify the responsiveness of the labor supply of married women to changes in the tax rate. The Tax Reform Act of 1986 reduced the top marginal tax rate by 44 percent (from 50 percent to 28 percent), but created less of a change in the marginal tax rate for those further down the income distribution. I analyze the response of married women at or above the 99th percentile of the income distribution, using women from the 75th percentile as a control group. In that way, I can identify the tax effect as the difference between the change in labor supply of women with large versus small reductions in tax rates.

I find that the labor supply of high-income, married women increased because of the Tax Reform Act of 1986. The increase in total labor supply of married women at the top of the income distribution (relative to married women at the 75th percentile of the income distribution) implies an elasticity with respect to the aftertax wage of approximately 0.8. At least half of this elasticity is the result of changes in labor force participation. Use of a second control group supports the response in participation, but is inconclusive regarding the response in hours of work.

Sex Discrimination in Restaurant Hiring: An Audit Study

David Neumark, Roy J. Bank, and Kyle D. Van Nort

NBER Working Paper No. 5024
February 1995
JEL Nos. J16, J24, J71
Labor Studies

This paper reports on a small-scale audit study that investigates sex discrimination in restaurant hiring. Comparably matched pairs of men and women applied for jobs as waiters and waitresses at 65 restaurants in Philadelphia The 130 applications led to 54 interviews and 39 job offers. The results provide statistically significant evidence of sex discrimination against women in high-price restaurants. In high-price restaurants, women who applied had an estimated probability of receiving a job offer that was about 0.5 lower, and an estimated probability of receiving an interview that was about 0.4 lower, than men who applied. These hiring patterns appear to have implications for sex differences in earnings, because informal survey evidence indicates that earnings are higher in high-price restaurants.

International Trade and Business Cycles

Marianne Baxter

NBER Working Paper No. 5025
February 1995
JEL Nos. F41, F32
International Finance and Macroeconomics, Economic Fluctuations

Virtually all economies experience recurrent fluctuations in economic activity that persist for periods of several quarters to several years. Further, there is a definite tendency for the business cycles of developed countries to move together: that is, there is a world component to business cycles. I argue that capital accumulation and international capital flows are central to understanding world trade and business cycles. In particular, fluctuations in net exports and the current account are dominated by trade in capital goods.

The paper develops a two-country model of international trade, within which capital accumulation and international investment flows play a central role. I explore the channels by which technology shocks and fiscal shocks are transmitted to the domestic and foreign economies, and discuss the extent to which these results are sensitive to individuals' opportunities for international trade in financial assets. Overall, I find that the models capture many of the salient features of international business cycles. However, it has proven consistently difficult to generate sufficient comovement across countries in labor input and investment.

Crime and Social Interactions

Edward L. Glaeser, Bruce Sacerdote, and José A. Scheinkman
NBER Working Paper No. 5026
February 1995
JEL Nos. K42, D00
Growth, Labor Studies

The high degree of variance of crime rates across space (and time) is one of the oldest puzzles in the social sciences. Our empirical work strongly suggests that this variance is not the result of geographic differences. We present a model in which social interactions create enough covariance across individuals to explain the high variance across cities in crime rates. This model provides a natural index of social interactions that can be used to compare the degree of social interaction across crimes, geographic units, and time. Our index gives similar results for different data samples, and suggests that the amount of social interaction is highest in petty crimes (such as larceny and auto theft), moderate in more serious crimes (assault, burglary, and robbery), and almost negligible in murder and rape. We also apply the index of social interaction to noncriminal activities, and find that there is substantial interaction in the choice of attending school.

Maximizing Predictability in the Stock and Bond Markets

Andrew W. Lo and A. Craig MacKinlay
NBER Working Paper No. 5027
February 1995
JEL No. G12
Asset Pricing

We construct portfolios of stocks and bonds that are maximally predictable with respect to a set of observable economic variables. We show that these levels of predictability are statistically significant, even after we control for data-snooping biases. We disaggregate the sources for predictability by using several asset groups, including industry-sorted portfolios. We find that the sources of maximal predictability shift considerably across asset classes and sectors as the return-horizon changes. Using three out-of-sample measures of predictability, we show that the predictability of the maximally predictable portfolio is genuine, and is economically significant.

Capital Income Taxation and Long-Run Growth: New Perspectives

Assaf Razin and Chi-Wa Yuen
NBER Working Paper No. 5028
February 1995
JEL Nos. F2, H2, O4
International Finance and Macroeconomics, Public Economics

We study the effects of capital income taxation on long-run growth in a framework in which population is endogenous and capital is internationally mobile. Endogenizing population growth introduces a new channel for taxes to affect economic growth. It also enables us to discriminate the effects of taxes on growth of *total* versus *per capita* income. Allowing for capital mobility in the open economy, we show how the effects of taxes on growth of both population and income will vary across countries in specific ways. This variation depends on the international income tax regimes and on the relative preferences of people toward the quantity and "quality" of children. Based on our model for the G-7 countries, we find that, although the effects of liberalizing capital flows on long-run growth may not be very sizable, the effects of changes in capital income tax rates can be magnified tremendously by cross-border capital flows and spillovers of policy effects.

Exploring New Markets: Direct Investment, Contractual Relations, and the Multinational Enterprise

Ignatius J. Horstmann and James R. Markusen
NBER Working Paper No. 5029
February 1995
JEL No. F23
International Trade and Investment

We consider the multinational firm's decision about whether to enter a new market immediately via direct investment, or to contract initially with a local agent and (possibly) invest later. Use of a local agent allows the multinational to avoid costly mistakes by finding out if the market is large enough to support direct investment. However, the agent is able to extract information rents from the multinational because of being better informed about market characteristics. We find that direct investment is the desirable mode of entry when the market is large on average, and there is little downside risk in expected profits.

Is High School Employment Consumption or Investment?

Christopher J. Ruhm
NBER Working Paper No. 5030
February 1995
JEL Nos. I2, J2
Labor Studies

Using data from the National Longitudinal Survey of Youth, I examine whether employment by high school students improves or

worsens economic attainment six to nine years after the scheduled date of high school graduation. There is no indication that light to moderate job commitments ever have a detrimental impact. Hours worked during the senior grade are correlated positively with future earnings, fringe benefits, and occupational status. These results hold for a variety of specifications. This suggests that employment increases net investments in human capital and facilitates the school-to-work transition, particularly toward the end of high school and for students not continuing on to college.

Some Lessons from the Yield Curve

John Y. Campbell

NBER Working Paper No. 5031
February 1995
JEL Nos. E43, G12
Asset Pricing, Monetary Economics

This paper reviews the literature on the relationship between short- and long-term interest rates. It summarizes the mixed evidence on the expectations hypothesis of the term structure: when long rates are high relative to short rates, short rates tend to rise as implied by the expectations hypothesis, but long rates tend to fall, which is contrary to the expectations hypothesis. This paper discusses the response of the U.S. bond market to shifts in monetary policy in the spring of 1994, and reviews the debate over the optimal maturity structure of the U.S. government debt.

Purchasing Power *Dis*parity During the Floating Rate Period: Exchange Rate Volatility, Trade Barriers, and Other Culprits

Shang-Jin Wei and David C. Parsley

NBER Working Paper No. 5032
February 1995
JEL No. F21
International Finance and Macroeconomics

Using a panel of 12 tradable sectors in 91 OECD country pairs (14 countries), we study deviations from purchasing power parity (PPP) during the recent floating exchange rate period. We find some evidence that the deviations are related positively to exchange rate volatility, as well as to transportation costs. Once we have controlled for these two factors, free trade areas, including the EC and the EFTA, do not seem to reduce significantly the deviations from PPP relative to other OECD countries. Although using only the post-1973 data, we are able to find strong evidence of mean reversion toward PPP. The estimated half-lives of the deviation from PPP are about four and three-quarter years for the non-EMS countries in the sample, and four and one-quarter years for the EMS countries. We find evidence of nonlinearity in the rate of mean reversion, though: the convergence occurs faster for country pairs with larger initial deviations from PPP.

Is the Japanese Extended Family Altruistically Linked? A Test Based on Engel Curves

Fumio Hayashi

NBER Working Paper No. 5033
February 1995
JEL Nos. D11, D12, E21
Aging, Economic Fluctuations

Altruism has the well-known neutrality implication that the family's demand for commodities does not vary according to the division of resources within the family. We test this on a sample of Japanese extended families that are forming two-generation households. We find that the pattern of food expenditure is affected significantly by the division of resources. The budget share of certain food components—precisely those favored by the old, such as cereal, seafood, and vegetables—increases with the older generation's share of household income.

To Comfort Always: The Prospects of Expanded Social Responsibility for Long-Term Care

Alan M. Garber

NBER Working Paper No. 5034
February 1995
JEL No. I12
Health Care

Long-term care is an important means of providing basic and humanitarian treatment for elderly Americans who are severely disabled. The demand for long-term care is likely to increase dramatically as babyboomers begin to reach advanced ages. Long-term care has been a focus of health care reform because its current financing—largely a combination of out-of-pocket payments and Medicaid—is viewed as inadequate. Only a small fraction of long-term care is financed by private insurance, which is expensive, in part because moral hazard and adverse selection may create greater distortion in the utilization of long-term care than in the use of hospital and physician services. Increased government financing does not appear

to be a feasible option for the coming decades, since the ratio of retirees to working age adults will decline at the time the demand for long-term care rises. Furthermore, there is little prospect that the costs of existing federal entitlement programs can be reduced enough to finance a greatly expanded government role in long-term care. Although there are likely to be roles for private insurance, especially if it can be made more efficient, and for publicly funded catastrophic coverage, federal efforts to improve the financing of long-term care are most likely to be successful if they promote private savings.

Quality-Adjusted Prices for the American Automobile Industry: 1906–40

Daniel M. G. Raff and Manuel Trajtenberg

NBER Working Paper No. 5035
February 1995
JEL Nos. L6, N6, O3
Productivity

We push the span of hedonic price calculations for automobiles backwards toward the industry's birth. Most of the real change that occurred between 1906 and 1982 took place between 1906 and 1940, when hedonic prices fell at an average annual rate of 5 percent. The pace of price decline was even brisker during the first 8–12 years of that period. Our measured declines can be decomposed into price and quality components. Our calculations suggest that 60 percent of the overall decline from 1906–40 was caused by process innovation, and only 40 percent by product innovation or quality change per se.

Multinational Firms and the New Trade Theory

James R. Markusen and Anthony J. Venables

NBER Working Paper No. 5036
February 1995
JEL Nos. F12, F23
International Trade and Investment

We construct a model in which multinational firms may arise endogenously. Multinationals exist in equilibrium when transport and tariff costs and incomes are high, and when firm-level relative to plant-level scale economies are important. Less obvious, multinationals are more important in total economic activity when countries are more similar in incomes, relative factor endowments, and technologies. Thus the model may be useful in explaining several stylized facts, including: 1) the growing importance of direct investment relative to trade among the developed countries over time; and 2) the greater ratio of investment to trade among the developed countries relative to that ratio for "north–south" or "south–south" economic relationships. The model predicts the volume of trade, in contrast with the "new trade theory," as first rising and then falling as countries converge in incomes, relative endowments, and technologies. We also consider welfare, and show that direct investment makes the smaller (or high-cost) country better off, but may make the larger (or low-cost) country worse off.

The Effects of Trade and Foreign Direct Investment on Employment and Relative Wages

Robert E. Baldwin

NBER Working Paper No. 5037
February 1995
JEL No. F10
International Trade and Investment, Labor Studies

This paper summarizes and assesses recent studies on the impact of current trends in trade and direct investment on employment and wages in OECD countries. The general conclusion is that factors such as changes in labor supplies, technology, and demand are more important than changes in trading patterns in explaining shifts in employment and relative wages. However, further studies are needed to understand better the employment and wage impact of foreign direct investment.

The Effects of Cocaine and Marijuana Use on Marriage and Marital Stability

Robert Kaestner

NBER Working Paper No. 5038
February 1995
JEL No. J12
Health Economics

This paper examines the relationship between illicit drug use and marital status. It begins with an overview of the relevant economic theory for this problem. Then, using data from the National Longitudinal Survey of Labor Market Experiences, I present estimates of the effect of marijuana and cocaine use on marital status, age at first marriage, and duration of first marriage. The results indicate that, in general, drug users are more likely to be unmarried because they delay their first marriage, and their marriages are shorter. The findings are not uniform, however, and differ according to the gender, race, and age of the sample.

Economic Convergence and Economic Policies

Jeffrey D. Sachs and Andrew M. Warner

NBER Working Paper No. 5039
February 1995

International Finance and Macroeconomics, Growth

Many of the crucial debates in development economics are encapsulated in questions about *economic convergence:* that is, is there a tendency for poorer countries to grow more rapidly than richer countries, and thereby to converge in living standards? Some recent research on growth has emphasized increasing returns as a possible reason not to expect convergence. Other research has suggested that convergence may be achieved only after poor countries attain a threshold level of income or human capital. This paper shows that a *sufficient* condition for higher-than-average growth of poorer countries, and therefore for convergence, is that poorer countries follow reasonably efficient economic policies, particularly open trade and protection of private property rights.

Quality-Adjusted Cost Functions for Child Care Centers

H. Naci Mocan

NBER Working Paper No. 5040
February 1995
JEL Nos. J13, L30
Health Economics, Labor Studies

Using a newly compiled dataset, this paper estimates cost functions for 399 child care centers in California, Colorado, Connecticut, and North Carolina. The quality of child care is measured by an index that is positively related to outcomes for children. Nonprofit centers that receive public money, either from the state or the federal government, have total variable costs that are 18 percent higher than other centers, keeping quality of services constant.

I find no statistically significant differences between general categories of for-profit and nonprofit centers. Furthermore, various types of nonprofits are not distinguishable from their for-profit counterparts. As shown in previous studies, the average quality of center-based child care is between "minimal" and "good." It costs 13 cents per hour per child to increase this average quality to the level considered developmentally appropriate by child care experts.

Investment in New Activities and the Welfare Cost of Uncertainty

Joshua Aizenman

NBER Working Paper No. 5041
February 1995
JEL Nos. F12, F15, F21
International Trade and Investment

Recent literature has highlighted the importance of "new activities" in development and growth. Trade distortions, including tariffs, are associated with costs that stem from the induced drop in the formation of new activities. I demonstrate here that uncertainty may induce similar costs.

I illustrate this argument in the context of Romer's model of a dependent economy, in which foreign direct investment is needed to enable the importation of capital goods and intermediate products used in domestic production. Uncertainty acts as an implicit tax on new activities, the incidence of which (in a certain sense) is worse than that of a tariff in Romer's framework. As with a tariff, uncertainty inhibits the formation of new activities. Unlike the tariff, however, uncertainty does not benefit the government with revenue. The welfare cost of uncertainty also applies for a closed economy. I show that entrepreneurs who are averse to uncertainty discount using a "hurdle rate" that exceeds the risk-free interest rate. The gap between the two rates increases with the uncertainty embodied in the investment, being determined by the vagueness of the information and by the range of possible outcomes. Hence, growth may be inhibited by business uncertainty, when the "rules of the game" for new activities are vague.

Aggregate Employment Dynamics: Building from Microeconomic Evidence

Ricardo J. Caballero, Eduardo M. R. A. Engel, and John C. Haltiwanger

NBER Working Paper No. 5042
February 1995
JEL Nos. E24, E30, J6
Economic Fluctuations, Labor Studies

We study the quarterly employment flows of approximately 10,000 large U.S. manufacturing establishments from 1972:1 to 1980:4. After estimating the extent of short-run substitution between employment and hours per worker (hours–week), we construct measures of the deviation between actual and desired employment based on the observed behavior of establishments' hours–week. These deviations then are used in firms' decisions about employment adjustments (or their microeconomic policy). We conclude that: 1) Microeconomic employment adjustment policies are nonlinear, with firms adjusting to large deviations proportionally more than to small ones. 2) Employment adjustments often are either large or nil, suggesting the presence of nonconvexities in the adjustment cost technologies. 3) Between 60 and 90 percent of aggregate employment fluctuations are caused by changes in the cross-sectional distribution of employment deviations, while the remainder are

caused by changes in microeconomic policies. 4) The bulk of net aggregate employment fluctuations caused by changes in the cross-sectional distribution are explained by aggregate shocks. This holds in spite of significant fluctuations in the distribution of idiosyncratic shocks and the marked countercyclical nature of their second moment (that is, reallocation shocks). 5) Similarly, the bulk of net aggregate employment fluctuations caused by changes in microeconomic policies are explained by aggregate shocks. 6) Aggregate shocks also are the dominant source of job destruction, but account for less than half of the fluctuations in job creation. 7) A simple version of the aggregate model suggested by the microeconomic nonlinearities described here has a mean square error that is 50 percent lower than that of its linear counterpart.

The Rational Expectations Revolution: A Review Article of Preston J. Miller, ed., *The Rational Expectations Revolution, Readings from the Front Line*

Frederic S. Mishkin

NBER Working Paper No. 5043
February 1995
JEL No. E1
Economic Fluctuations, Monetary Economics

This review of Preston Miller's *The Rational Expectations Revolution, Readings from the Front Line* focuses on the impact of his research on macroeconomic policymaking. Although policymakers generally have not accepted the equilibrium business cycle models advocated in many of the articles in the Miller volume, and even continue to use traditional Keynesian macroeconometric models for policy analysis, several of the lessons from the rational expectations revolution have become central in thinking about policymaking. Policymakers now recognize the importance of expectations and credibility to the outcomes of particular policies. This means that they are more cautious in their use of econometric models, and are less likely to advocate discretionary activist stabilization policies. They are also more willing to design policymaking to avoid the time-inconsistency problem and take a long- rather than a short-run view, thereby avoiding myopic policies that produce undesirable outcomes.

Relative Income Concerns and the Rise in Married Women's Employment

David Neumark and Andrew Postlewaite

NBER Working Paper No. 5044
February 1995
JEL Nos. D1, J16, J21
Labor Studies

We ask whether women's decisions to be in the labor force may be affected by the decisions of other women in ways not captured by standard models. We develop a model that augments the simple neoclassical framework by introducing concerns about relative income into women's (or families') utility functions. In this model, the entry of some women into paid employment can spur the entry of other women, independent of wage and income effects. This mechanism may help to explain why, over some periods, women's employment appeared to rise faster than could be explained by the simple neoclassical model..

In particular, we look at the effects of sisters' employment on women's own employment. We find strong evidence that women's employment decisions are related positively to their sisters' employment decisions. We also take account of the possibility that this positive relationship arises from differences across families in unobserved variables affecting the employment decision. We conduct numerous empirical analyses to reduce or eliminate this bias. Finally, we look at the relationship between husbands' relative income and wives' employment decisions. In our view, the evidence largely supports the relative income hypothesis.

Are Banks Dead? Or Are the Reports Greatly Exaggerated?

Mark Gertler and John H. Boyd

NBER Working Paper No. 5045
February 1995
Corporate Finance, Monetary Economics

This paper reexamines the conventional wisdom that commercial banking is an industry in severe decline. We find that a careful reading of the evidence does not justify this conclusion. It is true that on-balance-sheet assets held by commercial banks have declined as a share of total intermediary assets. But this measure overstates any drop in banking, for three reasons. First, it ignores the rapid growth in commercial banks' off-balance-sheet activities. Second; it fails to take account of the substantial growth in offshore commercial and industrial lending by foreign banks. Third, it ignores the fact that over the last several decades financial intermediation has grown rapidly relative to the rest of the economy. After adjusting the measure of bank assets to account for these considerations, we find that there is no clear evidence of secular decline. To corroborate these findings, we

also construct an alternative measure of the importance of banking, using data from the national income accounts. Again, we find no clear evidence of a sustained decline. At most, the industry may have suffered a slight loss of market share over the last decade. But as we discuss, this loss may reflect a transitory response to a series of adverse shocks and the phasing in of new regulatory requirements, rather than the beginning of a permanent decline.

The Quantitative Analytics of the Basic Neomonetarist Model

Miles S. Kimball

NBER Working Paper No. 5046
February 1995
JEL Nos. E30, E50
Economic Fluctuations, Monetary Economics

I construct a dynamic macroeconomic model with less-than-perfect price flexibility and a real side that is consistent with Real Business Cycle Theory, augmented by investment adjustment costs, increasing returns to scale, and a new flexible formalization of imperfect competition. I then develop a new mode of approximation useful for any model in which one state variable adjusts quickly, while another state variable adjusts slowly. Even with investment adjustment costs, monetary expansions *raise* the real interest rate. Finally, I investigate the determinants of real rigidity and the macroeconomic rate of price adjustment.

Do Airlines in Chapter 11 Harm Their Rivals? Bankruptcy and Pricing Behavior in U.S. Airline Markets

Severin Borenstein and Nancy L. Rose

NBER Working Paper No. 5047
February 1995
JEL Nos. L1, L93, G33
Industrial Organization

The behavior of firms in financial distress has attracted considerable interest in recent years. The turmoil in the U.S. airline industry has triggered much of the public policy discussion, as some observers have argued that airlines in financial distress, particularly those operating under Chapter 11 bankruptcy protection, reduce prices to the point of harming themselves and their competitors. This study investigates the pricing strategies of bankrupt airlines and their rivals. The data suggest that an airline's prices typically decline somewhat before it files for bankruptcy protection, and remain slightly depressed over the subsequent two or three quarters. We find no evidence that competitors of the bankrupt airline lower their prices, however, nor that they lose passengers to their bankrupt rival. These results indicate that bankrupt carriers do not harm the financial health of their competitors.

North–South R and D Spillovers

David T. Coe, Elhanan Helpman, and Alexander W. Hoffmaister

NBER Working Paper No. 5048
March 1995
International Trade and Investment, Productivity

We examine the extent to which developing countries that do little if any R and D themselves benefit from R and D that is performed in the industrial countries. When trading with an industrial country with large "stocks of knowledge" from its cumulative R and D activities, a developing country can boost its productivity by importing a larger variety of intermediate products and capital equipment that embody foreign knowledge, and by acquiring useful information that otherwise would be costly to obtain. Our empirical results, based on observations over 1971–90 for 77 developing countries, suggest that R and D spillovers from the industrial countries in the North to the developing countries in the South are substantial.

Trade in Ideas: Patenting and Productivity in the OECD

Jonathan Eaton and Samuel Kortum

NBER Working Paper No. 5049
March 1995
JEL Nos. F43, O14, O31
Growth, International Trade and Investment, Productivity

We develop and estimate a model of technological innovation and its contribution to growth at home and abroad. International patents indicate where innovations come from and where they are used. Countries grow at a common steady-state rate. A country's relative productivity depends upon its capacity to absorb technology. We estimate that, except for the United States, OECD countries derive almost all of their productivity growth from abroad.

On the Number and Size of Nations

Alberto Alesina and Enrico Spolaore

NBER Working Paper No. 5050
March 1995
Monetary Economics

This paper studies the equilibrium determination of the number of political jurisdictions in different political regimes, democratic or not, and in different economic environments, with more or less eco-

nomic integration. We focus on the trade-off between the benefits of large jurisdictions, in terms of economies of scale, and the costs of heterogeneity of large and diverse populations. Our model implies that: 1) democratization leads to secessions; 2) without an appropriate redistributive scheme (which we characterize) in equilibrium, there will be an inefficiently large number of countries; and 3) the equilibrium number of countries increases with the amount of economic integration. We also study the welfare effects of economic integration and free trade when the number of countries is endogenous.

Estimating the Effects of Trade Policy

Robert C. Feenstra

NBER Working Paper No. 5051
March 1995
JEL Nos. F12, F14
International Trade and Investment

This paper reviews empirical methods used to estimate the impact of trade policies under imperfect competition. We decompose the welfare effects of trade policy into four possible channels: 1) a deadweight loss from distorting consumption and production decisions; 2) a possible gain from improving the terms of trade; 3) a gain or loss caused by changes in the scale of firms; and 4) a gain or loss from shifting profits between countries. For each channel, we discuss the appropriate empirical methods for determining the sign or magnitude of the effect, and we illustrate the results using recent studies. We also discuss two other channels by which trade policy affects social or individual welfare: changes in wages, and changes in product variety. Finally, we review recent developments in the analysis of trade policies under perfect competition.

Health Insurance Eligibility, Utilization of Medical Care, and Child Health

Janet Currie and Jonathan Gruber

NBER Working Paper No. 5052
March 1995
JEL Nos. I18, H51
Health Care, Public Economics

The poor health of children in the United States relative to children in other industrialized nations has motivated recent efforts to extend insurance coverage to underprivileged children. However, there is little past evidence that extending eligibility for public insurance to previously ineligible groups will improve their health or even increase their use of medical resources. Using data from the Current Population Survey, the National Health Interview Survey, and state-level data on child mortality, we examine the effects on utilization and health of eligibility for public insurance. We focus on the recent expansions of the Medicaid program to low-income children. We find that these expansions roughly doubled the fraction of children eligible for Medicaid between 1984 and 1992; by 1992, almost one-third of all children were eligible. "Takeup" of these expansions was much less than complete, however, even among otherwise uninsured children.

Despite this problem with takeup, we find that eligibility for Medicaid significantly increased the utilization of medical care along a number of dimensions. Medicaid eligibility was associated with large increases in care delivered in physicians' offices; there was some increase in care in hospital settings as well. While eligibility had no effect on parentally assessed subjective health measures, it was linked with significant reductions in child mortality. Finally, we find that rising Medicaid eligibility is associated with reductions in racial disparities in the number of doctor and hospital visits and in child mortality. However, there is some evidence of increased racial disparities in the site at which care is delivered.

The Incidence of Payroll Taxation: Evidence from Chile

Jonathan Gruber

NBER Working Paper No. 5053
March 1995
JEL No. H22
Labor Studies, Public Economics

Despite the growing reliance worldwide on payroll taxation, there is limited evidence on the incidence of payroll taxes. To provide new evidence, I examine the experience of Chile before and after the privatization of its Social Security system. This change in policy led to a sharp exogenous reduction in the payroll tax burden on Chilean firms: the average payroll tax rate in my sample fell from 30 percent to 5 percent over this six-year period. I use data from a census of manufacturing firms, containing information on firm-specific tax payments and average wages. I find that payroll taxation had its full effect on wages, with no effect on employment. A potential weakness with this approach is that some of the variation in firm-specific tax rates may be spurious, for example because of measurement error in wages. I attempt to surmount this problem by using a variety of different estimators, all of which yield consistent evidence of full shifting.

Social Security and Saving: New Time-Series Evidence

Martin Feldstein

NBER Working Paper No. 5054

March 1995
JEL No. H55
Public Economics

This paper reexamines the results of my 1974 paper on Social Security and saving with the help of an additional 21 years of data. The estimates presented in this paper reconfirm that each dollar of Social Security wealth (SSW) reduces private saving by between two and three cents. The parameter estimates for the postwar period and for the entire sample since 1930 are very similar. Therefore, the correction of the error in the original SSW series between 1958 and 1971 does not affect the original results significantly. The estimated effect of SSW is robust with respect to the addition of a variety of variables that have been suggested in previous critiques of the original study. In the aggregate, the parameter values imply that the Social Security program currently reduces overall private saving by nearly 60 percent.

Tax Avoidance and the Deadweight Loss of the Income Tax

Martin Feldstein

NBER Working Paper No. 5055
March 1995
JEL No. H21
Public Economics

The traditional method of analyzing the distorting effects of the income tax greatly underestimates the total and the incremental deadweight loss of an increase in income tax rates. Deadweight losses are substantially greater than these conventional estimates, because the traditional framework ignores the effect of higher income tax rates on tax avoidance through changes in the form of compensation (for example, employer-paid health insurance) and changes in the patterns of consumption (for example, owner-occupied housing). The deadweight loss caused by the increased use of exclusions and deductions can be calculated easily. Because the relative prices of leisure, excludable income, and deductible consumption are fixed, all of them can be treated as a single Hicksian composite good. The compensated change in taxable income induced by changes in tax rates therefore provides all of the information that is needed to evaluate the deadweight loss of the income tax.

Using TAXSIM calibrated to 1994, I estimate that the deadweight loss per dollar of revenue from using the income tax rather than a lump-sum tax is more than 12 times as large as Harberger's classic estimate. A marginal increase in tax revenue achieved by a proportional rise in all personal income tax rates involves a deadweight loss of nearly two dollars per incremental dollar of revenue. Repealing the 1993 increase in tax rates for high income taxpayers would reduce the deadweight loss of the tax system by $24 billion while actually increasing tax revenue.

Collusion Over the Business Cycle

Kyle Bagwell and Robert W. Staiger

NBER Working Paper No. 5056
March 1995
JEL No. L1
Economic Fluctuations, Industrial Organization

We present a theory of collusive pricing in markets subject to business cycle fluctuations. In the business cycle model that we adopt, market demand alternates stochastically between fast- and slow-growth (boom and recesssion) phases. We provide a complete characterization of the most collusive prices and show that: 1) the most collusive prices may be procyclical (countercyclical) when growth rates of demand are positively (negatively) correlated through time; and 2) the amplitude of the collusive pricing cycle is larger when the expected duration of boom phases decreases and the expected duration of recession phases increases. We also offer a generalization of Rotemberg and Saloner's (1986) model, and interpret their findings in terms of transitory demand shocks that occur within broader business cycle phases.

How Does Foreign Direct Investment Affect Economic Growth?

Eduardo Borensztein, José De Gregorio, and Jong-Wha Lee

NBER Working Paper No. 5057
March 1995
JEL Nos. F43, O19, O40
Growth, International Trade and Investment

We test the effect of foreign direct investment (FDI) on economic growth in a cross-country regression framework, using data on FDI flows from industrial countries to 69 developing countries over the last two decades. Our results suggest that FDI is an important vehicle for the transfer of technology, contributing relatively more to growth than domestic investment does. However, the higher productivity of FDI holds only when the host country has a minimum level of human capital stock. In addition, FDI increases total investment in the economy more than one for one, suggesting the predominance of complementarity effects with domestic firms.

Is Workers' Compensation Covering Uninsured Medical Costs? Evidence from the "Monday Effect"

David Card and Brian P. McCall

NBER Working Paper No. 5058
March 1995
JEL No. J28
Labor Studies

Steady increases in the costs of medical care, coupled with a rise in the fraction of workers who lack medical insurance, have led to a growing concern that the workers' compensation system is paying for off-the-job injuries. Many analysts have interpreted the high rate of "Monday injuries"—especially for hard-to-monitor ailments, such as back sprains—as evidence of this phenomenon. In this paper, we propose a test of the hypothesis that higher Monday injury rates are the result of fraudulent claims. Specifically, we compare the daily injury patterns for workers who are more and less likely to have medical insurance coverage, and the corresponding differences in the fraction of injury claims that are disputed by employers. Contrary to expectations, we find that workers without medical coverage are no more likely to report a Monday injury than other workers. Similarly, employers are no more likely to challenge a Monday injury claim, even for workers who lack medical insurance.

Public R and D Policies and Cost Behavior of the U.S. Manufacturing Industries

Theofanis P. Mamuneas and M. Ishaq Nadiri

NBER Working Paper No. 5059
March 1995
JEL Nos. O32, H25
Growth, Productivity

This paper estimates and evaluates the contributions of R and D tax incentives and publicly financed R and D investment policies in promoting growth of output and privately funded R and D investment in U.S. manufacturing industries. Publicly financed R and D induces cost savings, but crowds out privately financed R and D investment; the incremental R and D tax credit and the immediate deductibility provision of R and D expenditures have a significant impact on privately financed R and D investment. The optimal mix of both instruments is important to sustaining balanced growth in output and productivity in the manufacturing sector.

Government Interventions and Productivity Growth in Korean Manufacturing Industries

Jong-Wha Lee

NBER Working Paper No. 5060
March 1995
JEL Nos. O40, O53
Growth, International Trade and Investment

This paper investigates the impact of government industrial policy and trade protection of the manufacturing sector in Korea. Using four-period panel data for 1963–83 for 38 Korean industries, I show that trade protection reduced growth rates of labor productivity and total factor productivity. Industrial policies, such as tax incentives and subsidized credit, were not correlated with total factor productivity growth in the promoted sectors. Thus the evidence implies that less government intervention in trade is linked to higher growth in productivity.

Exact Hedonic Price Indexes

Robert C. Feenstra

NBER Working Paper No. 5061
March 1995
JEL No. C43
Productivity

This paper identifies conditions under which hedonic price indexes provide an exact measure of consumer welfare. The results provide a rationale for existing practices in the case in which prices equal marginal costs. In that case, both the marginal value of characteristics and a fixed-weight price index can be estimated from a hedonic regression.

Using the marginal value of characteristics, I show how to construct bounds on the exact hedonic price index. When prices are above marginal costs, the bounds still apply, but the value of characteristics cannot be measured as easily. Since the price–cost markups are an omitted variable in the hedonic regression, they will bias the coefficients obtained. For a special class of utility functions, a linear regression still will provide a measure of the marginal value of characteristics, but a log-linear regression will *overstate* these values.

Cumulation and ITC Decisionmaking: The Sum of the Parts Is Greater Than the Whole

Thomas J. Prusa and Wendy L. Hansen

NBER Working Paper No. 5062
March 1995
JEL Nos. F0, K2
International Trade and Investment

In 1984 Congress amended the antidumping (AD) and countervailing duty (CVD) laws, mandating that the International Trade Commission (ITC) "cumulate" imports across countries when determining

injury. Since 1984 the cumulation provision has been invoked in over 50 percent of the AD and CVD cases. We estimate that cumulation increases the probability of an affirmative injury determination by 20 to 30 percent, and has changed the ITC's decision (from negative to affirmative) for about one-third of cumulated cases. We also show that the protective effect of cumulation increases as the number of countries involved increases, holding import market share constant. That is, cumulated imports have a super-additive effect on ITC decisionmaking.

Product Development and the Timing of Information Disclosure Under U.S. and Japanese Patent Systems

Thomas J. Prusa and Reiko Aoki

NBER Working Paper No. 5063
March 1995
JEL Nos. F0, K2
International Trade and Investment

This paper examines the consequences of the differences in the timing of information disclosure between the U.S. and Japanese patent systems. Under the Japanese system it is possible for a firm to apply for a patent knowing the exact specifications of a rival's patent *application*. In contrast, in the United States the only way a firm learns about a rival's innovation is upon the actual granting of the rival's patent. We argue that this difference enables Japanese firms to coordinate their efforts better than their U.S. counterparts. This, in turn, leads to smaller quality improvements under the Japanese system. We show that the creation/diffusion trade-off of patents can be influenced not only by the scope and length of patent protection but also by other features of the patenting process.

Modern Approaches to Central Banking

Stanley Fischer

NBER Working Paper No. 5064
March 1995
Monetary Economics

Modern theory has delivered both the conservative central banker and the principal-agent approaches as rationales for the independence of the central bank. The principal-agent approach directs attention to the importance of clearly defining both the goals of the central bank and its command in order to meet the targets assigned to it. The empirical evidence shows not only that greater independence is associated with lower inflation, but also that the central bank's rights not to finance the government and to set interest rates independently increase its effectiveness. The role of inflation targeting and the distinction between price level and inflation targeting also are analyzed.

Parental Leave Policies in Europe and North America

Christopher J. Ruhm and Jackqueline L. Teague

NBER Working Paper No. 5065
March 1995
JEL Nos. I18, J38
Labor Studies

Despite widespread international implementation, there is limited information currently available on the economic impact of mandated family leave policies. This paper increases our understanding of the nature and effects of parental leave entitlements in several ways. First, we provide a brief history of family leave legislation in Europe and North America, and summarize arguments relating to the efficiency and incidence of mandated leave. Second, we have constructed a longitudinal dataset detailing durations of job-protected leave in 17 countries, during 1960–89, and we use this information to examine recent trends in the regulations. The data indicate that family leave durations grew rapidly during the 1970s, with more modest increases since that time. Third, we provide an exploratory investigation of the relationship between mandated leave policies and macroeconomic outcomes. The econometric estimates provide little support for the view that moderate periods of parental leave reduce economic efficiency, but rather hint at a modest beneficial impact, particularly when considering paid time off work.

The Effect of Medicaid Abortion Funding Restrictions on Abortions, Pregnancies, and Births

Phillip B. Levine, Amy B. Trainor, and David J. Zimmerman

NBER Working Paper No. 5066
March 1995
Labor Studies, Health Economics

We consider whether restrictions on state Medicaid abortion funding affect the likelihood of getting pregnant, having an abortion, and bearing a child. Both aggregate, state-level data and microdata from the National Longitudinal Survey of Youth are used in the empirical work. Changes in laws resulting from Supreme Court decisions create a natural experiment that we use to examine fertility choices. We find that restrictions on Medicaid funding are associated with a reduction in the number of both abortions and pregnancies, resulting in either no change or a reduction in births.

Production Functions: The Search for Identification

Zvi Griliches and Jacques Mairesse

NBER Working Paper No. 5067
March 1995
JEL Nos. B23, C33, D24
Productivity

We discuss some aspects of the econometric estimation of production functions, focusing primarily on the issue of simultaneity, and reviewing the stream of criticisms of Douglas's work and the response to it. In particular, we look at the work that uses panel data on microdata for plants or firms, and at some more recent multi-equation extensions of it. We find that researchers, in trying to evade the simultaneity problem, have shifted to the use of thinner and thinner slices of data, thereby exacerbating other problems and misspecifications. We describe the need for better data, especially on product prices at the individual observation level and on relevant cost and demand shifters, and for better behavioral theories that would encompass the large amount of heterogeneity observed at the micro level.

Universities as a Source of Commercial Technology: A Detailed Analysis of University Patenting, 1965–88

Rebecca Henderson, Adam B. Jaffe, and Manuel Trajtenberg

NBER Working Paper No. 5068
March 1995
JEL Nos. O31, O34, L31
Productivity

This paper explores changes in university patenting between 1965 and 1988. We show that university patents have increased 15-fold, while real research spending by universities almost tripled. The causes of this increase are unclear, but may include increased focus on commercially relevant technologies, increased industry funding of university research, a 1980 change in federal law that facilitated patenting of results from federally funded research, and the widespread creation of formal technology licensing offices at universities.

Up until approximately the mid-1980s, university patents were cited more, and by more technologically diverse patents, than a random sample of all patents. This difference is consistent with the notion that university inventions are more important and more basic than the average invention. The differences between the two groups disappeared, however, in the middle part of the 1980s, in part because of a decline in the citation rates for all universities, and in part because of an increasing share of patents going to smaller institutions, whose patents are cited less highly throughout this period. Moreover, at both large and small institutions there was a large increase in the fraction of university patents receiving no citations. Our results suggest that the rate of increase of important patents from universities is much less than the overall rate of increase of university patenting in the period covered by our data.

Debt Usage and Mortgage Choice: Sensitivity to Default Insurance Costs

Patric H. Hendershott and William C. LaFayette

NBER Working Paper No. 5069
March 1995
JEL Nos. G11, R20
Public Economics

Purchase of a house requires three interrelated household financial decisions: what level of debt to obtain; whether to select an adjustable- or fixed-rate mortgage (ARM or FRM); and whether to choose an FHA or a conventional loan. While some have analyzed the mortgage debt decision and the ARM/FRM choice, virtually no one has studied the FHA/conventional mortgage choice, or the interrelation among the decisions on mortgage debt and instrument. In our sample of 819 young home purchasers, debt and mortgage choice is driven by a need to both finesse the downpayment and payment-constraint ratios and to lower the costs of mortgage insurance.

Wealth Accumulation and Housing Choices of Young Households: An Exploratory Investigation

Donald R. Haurin, Patric H. Hendershott, and Susan M. Wachter

NBER Working Paper No. 5070
March 1995
JEL Nos. D91, R20
Public Economics

This paper describes the wealth accumulation of American youth, and relates this to their eventual choices of housing. We develop a dataset that links wealth profiles of youth with constant-quality house prices and tenure choice. We compile a panel dataset for individuals aged 20–33 in 1985 through 1990. We construct wealth profiles for each household over the six-year period, and indicate how wealth varies with labor supply, marriage, fertility, gender, education, race/ethnicity, and tenure choice. We find that renters' wealth accumulates rapidly in the year before and first year of homeownership. This increase in wealth is related to marriage, increased labor supply by married women, and gifts/inheritances.

Of particular interest, we find an inverse U-shaped relationship between the local real price of housing and the wealth of middle- and upper-income renters and the labor supply of married women. Also, youth in localities with high housing costs tend to live in groups at a greater rate than those in low-cost areas.

Selling Price and Selling Time: The Impact of Seller Motivation

Michel Glower, Donald R. Haurin, and Patric H. Hendershott

NBER Working Paper No. 5071
March 1995
JEL Nos. R21, D83
Public Economics

This study considers the role of seller motivation in determining home sales prices and selling times. We find that sale prices are related directly to the estimated value of the property *and* to the amount of overpricing, which is related directly to the seller's level of motivation. Further, a seller who has a planned date to move will overprice less (that is, set lower list prices relative to market value) and sell more quickly than a seller with no definite move date. A seller who is willing to move later will overprice more and sell more slowly than one who wants to move sooner.

The Effects of School and Family Characteristics on the Return to Education

Joseph G. Altonji and Thomas A. Dunn

NBER Working Paper No. 5072
March 1995
JEL Nos. J20, J24, J30
Labor Studies

We measure the effects of parental education on the education profile of wages, using sibling pairs from the Panel Study of Income Dynamics and the National Longitudinal Surveys of Labor Market Experience of Young Men and Young Women. We also use the variance in school characteristics across siblings to estimate the effects of school inputs on wages, holding family background constant. The evidence is mixed on whether parental education raises the return to education. We find that teacher's salary, expenditures per pupil, and a composite index of school quality measures have a substantial positive effect on the wages of high school graduates, though.

Are Apparent Productive Spillovers a Figment of Specification Error?

Susanto Basu and John G. Fernald

NBER Working Paper No. 5073
March 1995
JEL Nos. C43, D24, E32
Economic Fluctuations

Using data on gross output for two-digit manufacturing industries, we find that an increase in the output of one manufacturing sector has little or no significant effect on the productivity of other sectors. Using value-added data, however, we confirm the results of previous studies that find that output spillovers are large. We then explain these differences by showing that with imperfect competition, the use of value-added data leads to a spurious finding of large external effects.

Endogenous Mortgage Choice, Borrowing Constraints, and the Tenure Decision

William C. LaFayette, Donald R. Haurin, and Patric H. Hendershott

NBER Working Paper No. 5074
March 1995
JEL Nos. R20, G11
Public Economics

Earlier research has shown that lender income and wealth-constraint ratios discourage homeownership. This empirical research was based on home purchasers using an 80 percent loan-to-value (LTV) fixed-rate conventional loan. Under the same assumption, we find that the constraints lowered the ownership rate of our 1,919 young home purchasers by about 20 percentage points. However, households are not restricted to putting 20 percent down and choosing a fixed-rate loan. When we allow households to select the optimal LTV and mortgage type (adjustable- or fixed-rate, with FHA or conventional insurance), the percentage of our sample that is credit constrained declines from 71 to 49. Moreover, the measured impact on the homeownership rate of the constraints falls to only 4 percentage points. Further, FHA loans are estimated to increase homeownership by only 0.1 to 0.2 percentage points.

Two Fallacies Concerning Central Bank Independence

Bennett T. McCallum

NBER Working Paper No. 5075
March 1995
JEL Nos. E58, E31
Economic Fluctuations, Monetary Economics

This paper takes issue with two basic conclusions prevalent in the literature on central bank behavior. First, the paper argues that it is inappropriate to presume that central banks will, in the absence of any precommitment technology, necessarily behave in a "discretionary" fashion that implies an inflationary bias. Since there is no functional

connection between average rates of money creation (or inflation) and policy responsiveness to cyclical disturbances, it is entirely feasible for the bias to be avoided. In other words, there is no necessary trade-off between "flexibility and commitment."

Second, to the extent that the absence of any absolute precommitment technology is nevertheless a problem, it will apply to a consolidated central-bank-plus-government entity as well as to the central bank alone. Thus contracts between governments and central banks do not overcome the motivation for dynamic inconsistency; they merely relocate it.

The Growing Importance of Cognitive Skills in Wage Determination

Richard J. Murnane, John B. Willett, and Frank Levy

NBER Working Paper No. 5076
March 1995
JEL No. J3
Labor Studies

Using data from two longitudinal surveys of American high school seniors, we shov that basic cognitive skills had a larger impact on wages for 24-year-old men and women in 1986 than in 1978. For women, the increase in the return to cognitive skills between 1978 and 1986 accounts for all of the increase in the wage premium associated with post-secondary education. We also show that high school seniors' mastery of basic cognitive skills had a much smaller impact on wages two years after graduation than on wages six years after graduation.

Product Quality and Worker Quality

John M. Abowd, Francis Kramarz, and Antoine Moreau

NBER Working Paper No. 5077
April 1995
JEL Nos. J30, L15
Labor Studies

We study the relationship between product quality and worker quality using an economic model that, under certain conditions, provides a direct link between product price, product quality, and work force quality. Our measures of product quality are the evolution in the detailed product price relative to its product group, and the level of the product price relative to this group. Our measures of worker quality are the firm's average person effect, and the personal characteristics effect from individual wage rates. Using detailed firm-level data from the French Producer Price Index surveys, we find a very weak, generally positive, relationship between worker quality and product quality.

Mortgage Default Risk and Real Estate Prices: The Use of Index-Based Futures and Options in Real Estate

Karl E. Case, Robert J. Shiller, and Allan N. Weiss

NBER Working Paper No. 5078
April 1995
JEL No. G21
Asset Pricing

Using U.S. data on foreclosures by state from 1975–93, we show that periods of high default rates on home mortgages tend to follow real estate price declines, or interruptions in real estate price increases. When we model the relationship between price decline and foreclosure rates, we find that holders of residential mortgage portfolios could hedge some of the risk of default by taking positions in futures or options markets for residential real estate prices, if such markets were established.

Benefits of Control, Managerial Ownership, and the Stock Returns of Acquiring Firms

R. Glenn Hubbard and Darius Palia

NBER Working Paper No. 5079
April 1995
JEL No. G3
Corporate Finance

We examine the effect of the benefits to managers of corporate control on the relationship between managerial ownership and the stock returns of acquiring firms in corporate control transactions. At low levels of managerial ownership, the agency costs of equity (such as consumption of perquisites), reduce the returns earned by acquirers. As the managerial stake in the acquiring firm increases, the interests of managers are aligned more closely with those of shareholders, reducing the acquisition premium. At sufficiently high levels of managerial ownership, managers value a reduction in the risk of their nondiversified financial portfolio. However, managers enjoy nonassignable private benefits of control at high levels of ownership that they are not willing to lose by selling their ownership stake in the financial markets. These benefits of control increase with the managerial ownership stake, and can lead to managers "overpaying" even when they own a substantial fraction of the firm. Examining mergers that occurred from 1985 to 1991, we find a nonmonotonic relationship between the stock returns earned by acquirers and their level of man-

agerial ownership. Further, we find that acquiring firms with high levels of managerial ownership tend to diversify more than acquiring firms with low levels of managerial ownership.

An Empirical Examination of the Fisher Effect in Australia

Frederic S. Mishkin and John Simon

NBER Working Paper No. 5080
April 1995
JEL Nos. E4, G0
Economic Fluctuations, Monetary Economics

This paper analyzes the Fisher effect in Australia. Initial testing indicates that both interest rates and inflation contain unit roots. Furthermore, there are indications that the variables have nonstandard error processes. To overcome problems associated with this, and to derive the correct small sample distributions of test statistics, we use Monte Carlo simulations. These tests indicate that while a long-run Fisher effect seems to exist, there is no evidence of a short-run Fisher effect. This suggests that, while short-run *changes* in interest rates reflect changes in monetary policy, longer-run *levels* indicate inflationary expectations. Thus, the longer-run level of interest rates should not be used to characterize the stance of monetary policy.

Is There a Trade-Off Between Unemployment and Productivity Growth?

Robert J. Gordon

NBER Working Paper No. 5081
April 1995
JEL Nos. D24, E24
Economic Fluctuations, International Finance and Macroeconomics, Labor Studies, Productivity

This paper shows how misleading is the facile contrast of Europe—following a path of high productivity growth, high unemployment, and relatively greater income equality—to the United States, pursuing the opposite path. While structural shocks initially may create a positive trade-off between productivity and unemployment, they also set in motion a dynamic path of adjustment involving capital accumulation or decumulation that in principle can eliminate the trade-off.

The main theoretical contributions of this paper are to show how a productivity–unemployment trade-off might emerge, and how it might disappear subsequently as this dynamic adjustment path is set in motion. The empirical work develops a new database for levels and growth rates of output per hour, capital per hour, and multifactor productivity in the G-7 nations, both for the aggregate economy and for nine subsectors. Regression estimates decompose observed differences in productivity growth across sectors. I find that much of the productivity growth advantage of the four large European countries over the United States can be explained by convergence and by more rapid capital accumulation. The only significant effect of higher unemployment is to cause capital accumulation to decelerate, thus reducing the growth rate of output per hour relative to multifactor productivity.

Does Public Insurance Crowd Out Private Insurance?

David M. Cutler and Jonathan Gruber

NBER Working Paper No. 5082
April 1995
JEL No. H42
Health Care, Health Economics, Public Economics

One popular option for health care reform in the United States is to make particular groups, such as children, eligible for public health insurance coverage. A key question in assessing the cost of this option is the extent to which public eligibility will crowd out the private insurance coverage of these groups. We estimate the extent of crowd-out arising from the dramatic expansions of the Medicaid program during 1987–92. Over this time period, Medicaid eligibility for children increased by 50 percent and eligibility for pregnant women doubled. We estimate that between 50 percent and 75 percent of the increase in Medicaid coverage was associated with a reduction in private insurance coverage. This occurred largely because employees took up employer-based insurance less frequently, although employers may have encouraged them to do so by contributing less for insurance. There is some evidence that workers dropped coverage for their family and switched into individual policies.

Credit Cycles

Nobuhiro Kiyotaki and John Moore

NBER Working Paper No. 5083
April 1995
JEL Nos. E32, E44
Economic Fluctuations

This paper is a theoretical study of how credit constraints interact with aggregate economic activity over the business cycle. We construct a model of a dynamic economy in which lenders cannot force borrowers to repay their debts unless the debts are secured. In such an economy, durable assets such as land, buildings,and machinery play a dual role: they are not only factors of production, but they also serve as collateral for loans. Bor-

rowers' credit limits are affected by the prices of the collateralized assets. At the same time, these prices are affected by the size of the credit limits. The dynamic interaction between credit limits and asset prices turns out to be a powerful transmission mechanism by which the effects of shocks persist, amplify, and spill over to other sectors. We show that small, temporary shocks to technology or income distribution can generate large, persistent fluctuations in output and asset prices.

Free Trade Agreements Versus Customs Unions

Anne O. Krueger

NBER Working Paper No. 5084
April 1995
International Trade and Investment, International Finance and Macroeconomics

Until NAFTA, analyses of preferential trading arrangements began by assuming a customs union with a common external tariff. The differences between customs unions and free trade agreements (FTAs) have not been analyzed much. This paper points to some of the differences between FTAs and customs unions, and shows that a customs union is always Pareto-superior on welfare grounds to an FTA. Moreover, the political economy of FTAs will lead to more opposition to further multilateral trade liberalization than customs union will.

Settling for Coupons: Discount Contracts as Compensation and Punishment in Antitrust Suits

Severin Borenstein

NBER Working Paper No. 5085
April 1995
JEL Nos. L40, K41, D4
Industrial Organization

A number of recent antitrust lawsuits have been settled with contracts in which the defendants agree to sell to the plaintiffs in the future at a discount off the price they offer to other buyers. Economists often object to such settlements, arguing that the sellers will offset these discounts partially or fully by increasing the baseline price from which the discount is calculated. This paper shows that poorly structured discount contracts indeed will result in price increases for other buyers and that other buyers, not the sellers, are likely to bear most of the cost imposed by the settlement. Carefully formulated discount settlements, however, can avoid giving the sellers an incentive to raise prices to buyers not covered by the settlement. In such cases, the defendant bears the full cost of the settlement. I suggest that poorly structured settlements still take place because their costs are borne primarily by consumers who are not parties to these cases.

Supply-Side Economics in a Global Economy

Enrique G. Mendoza and Linda L. Tesar

NBER Working Paper No. 5086
April 1995
JEL Nos. E62, F41
International Finance and Macroeconomics, Public Economics

Recent quantitative studies predict large welfare gains from reducing tax distortions in a closed economy, despite the costly dynamics of transition to more efficient tax systems. This paper examines transitional dynamics and the gains of tax reforms for countries in a global economy. In a global economy, tax reforms cause cross-country externalities through capital flows in response to consumption-smoothing and debt-servicing effects. Taxes on world payments affect the distribution of welfare gains. Within the class of tax rates that do not vary over time, the gains of replacing income taxes with consumption taxes are large. In the absence of taxes on foreign assets, the monopoly distortion separating cooperative and noncooperative equilibriums is negligible. Our analysis starts from a benchmark reflecting current G-7 fiscal policies, and considers the effects of tax reforms on real exchange rates and interest differentials.

Generational Accounts, Aggregate Saving, and Intergenerational Distribution

Willem H. Buiter

NBER Working Paper No. 5087
April 1995
JEL Nos. E62, E44, E21, H62
Public Economics

Are generational accounts informative about the effect of the budget on the intergenerational distribution of resources and (when augmented with generation-specific propensities to consume out of lifetime resources) on aggregate consump-tion and saving? This paper makes three points: First, the usefulness of generational accounts lives or dies with the strict life-cycle model of household consumption. Voluntary intergenerational gifts or liquidity constraints therefore may affect adversely or even destroy their informativeness. Second, even when the life-cycle model holds, generational accounts only measure the effect of the budget on the lifetime consumption of *private* goods and services. They ignore the intergenerational (re)distribution associated with the government's provision of public

goods and services. Third, generational accounting ignores the effect of the budget on beforetax and before-transfer quantities and prices, including beforetax and -transfer distribution of lifetime resources across generations and intertemporal relative prices. That is, it does not handle *incidence* or *general equilibrium repercussions* very well. Although useful, generational accounts therefore should carry the label "handle with great care."

Historical Factors in Long-Run Growth

A Comparison of the Stability and Efficiency of the Canadian and American Banking Systems, 1870–1925

Michael D. Bordo, Angela Redish, and Hugh Rockoff

NBER Historical Paper No. 67
January 1995
JEL Nos. N21, N22
Monetary Economics

We compare the performance, in terms of stability and efficiency, of the U.S. and Canadian banking systems from 1870–1925. In an earlier study, we found that between 1920 and 1980 the Canadian banking system, based on nationwide branch banking, dominated the U.S. system, based on unit banking, on both criteria. In this study, we find that there is little significant difference between the two systems in the earlier 50 years.

We attribute the difference between the two periods to the merger movement in Canada after 1900. This allowed the Canadian banking system to evolve from one with incomplete regional diversification, and hence subject to a significant risk of an occasional failure by a large bank, to one characterized by national diversification and greater stability. The greater stability in turn allowed the financial structure of the banking system to evolve in a more efficient direction.

Technical Papers

Jackknife Instrumental Variables Estimation

Joshua D. Angrist, Guido W. Imbens, and Alan B. Krueger

NBER Technical Paper No. 172
February 1995
Labor Studies

Two-stage-least-squares (2SLS) estimates are biased toward ordinary-least-squares (OLS) estimates. This bias grows with the degree of overidentification, and can generate highly misleading results. In this paper, we propose two simple alternatives to 2SLS and limited-information-maximum-likelihood (LIML) estimators for models with more instruments than endogenous regressors. These estimators can be interpreted as instrumental variables procedures using an instrument that is independent of disturbances, even in finite samples. Independence is achieved by using a "leave-one-out" jackknife-type fitted value in place of the usual first-stage equation. The new estimators are first-order equivalent to 2SLS but with finite-sample properties superior to those of 2SLS and similar to LIML when there are many instruments. Moreover, the jackknife estimators appear to be less sensitive than LIML to deviations from the linear reduced form used in classical simultaneous equations models.

Modeling Volatility Dynamics

Francis X. Diebold and Jose A. Lopez

NBER Technical Paper No. 173
February 1995
JEL No. C1
Asset Pricing, Economic Fluctuations

Recently there has been a great deal of interest in modeling fluctuations in volatility. ARCH models, among others, provide parsimonious approximations to the dynamics of volatility. In this paper, we discuss certain aspects of conditional volatility modeling that are particularly relevant in macroeconomics and finance. First, we sketch the rudiments of a rather general univariate time-series model, allowing for dynamics in both the conditional mean and the variance. Then, we discuss both the economic and the statistical motivation for the models, characterize their properties, and discuss issues related to estimation and testing. Finally, we discuss a variety of applications and extensions of the basic models.

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