NBER Reporter

Program Report

Conference on Research in Income and Wealth

The Conference on Research in Income and Wealth (CRIW) began over 50 years ago as a distinct program within the NBER. The CRIW's goal is to bring together economists from government agencies and universities to discuss problems of economic measurement. The CRIW has its own membership, its own executive committee, and its own by-laws. It holds scientific conferences, usually focused on one specific area of economics, approximately once a year. The papers presented at these conferences are reviewed carefully and then published with discussants' comments in a special series entitled **Studies in Income and Wealth.** Volume Number 53 in the series is forthcoming.

Within the last few years, Martin David and Timothy M. Smeeding organized a conference and edited the resultant volume on *Horizontal Equity, Uncertainty, and Economic Well-Being.* Stanley L. Engerman and Robert E. Gallman edited a collection of papers on *Long-Term Factors in American Economic Growth.* Two more volumes will be published in 1989: *Productivity Growth in Japan and the United States,* edited by Charles R. Hulten; and *The Measurement of Saving, Investment, and Wealth,* edited by Robert E. Lipsey and Helen Stone Tice.

Two future volumes in this series are still in the planning stage. Peter Hooper and J. David Richardson have begun organizing a conference, scheduled for fall 1989, on the measurement of international flows of goods and capital. Finally, Zvi Griliches and Ernst R. Berndt are organizing a conference on measuring output and productivity in the service sector, to be held in spring 1990.

This issue of the *Reporter* highlights the Bureau's Conference on Research in Income and Wealth. Next, Alberto Giovannini describes his work on prices and exchange rates, and Christina D. Romer discusses her studies of U.S. business cycles between the two World Wars. After the quarterly Economic Outlook Survey are biographical sketches, news of NBER conferences, the Conference Calendar, and other NBER news and reports. The *Reporter* concludes with short summaries of recent NBER Working Papers.

CRIW's Fiftieth Anniversary

Nearly 200 economists attended the 50th Anniversary Conference on Research in Income and Wealth in Washington on May 12–14. NBER Research Associates Ernst R. Berndt of MIT and W. Erwin Diewert of the University of British Columbia, and Jack E. Triplett of the Bureau of Economic Analysis, organized the event, which featured a luncheon honoring participants in the first Income and Wealth Conference.

Among the honored guests at this meeting who participated in the first Income and Wealth Conference, and whose work appears in *Studies in Income and*

Wealth, Volume 1, were: Solomon Fabricant, Carl S. Shoup, Roy Blough, and Robert Nathan.

In his opening remarks, NBER President Martin Feldstein noted that the Conference on Research in Income and Wealth is a very special part of the Bureau's activities, in two unique ways. First, it is a partnership between economists in government and economists in the universities. The Conference continues to provide a unique forum for interaction within the profession, and a unique opportunity for government statisticians, government economists, and academic economists to work together to improve the conceptual and operational basis of economic statistics. Second, the Conference on Research in Income and Wealth focuses on improving economic measurement: not only measurement of income and wealth, but also of the activities that contribute to the generation of income and wealth in the economy—employment and unemployment, productivity, trade, and the like. The need to improve our economic statistics in these areas is as important today as it was 50 years ago, although much progress has been made.

The Research Program

The program for the balance of the May meeting was as follows:

Charles R. Hulten, NBER and University of Maryland, "Issues in the Measurement of Capital"
Discussant: Ernst R. Berndt

Michael J. Boskin, NBER and Stanford University, "A Survey of Some Important Issues in the Measurement and Interpretation of Saving and Wealth" (NBER Working Paper No. 2633)
Discussant: Frank de Leeuw, Bureau of Economic Analysis

Luncheon Address: Dale W. Jorgenson, Harvard University, "Productivity and Economic Growth"

Zvi Griliches, NBER and Harvard University, "Hedonic Price Indexes and the Measurement of Capital and Productivity: Some Historical Reflections" (NBER Working Paper No. 2634)

Left to right: Roy Blough, Carl Shoup,
and Eleanor Lansing Dulles
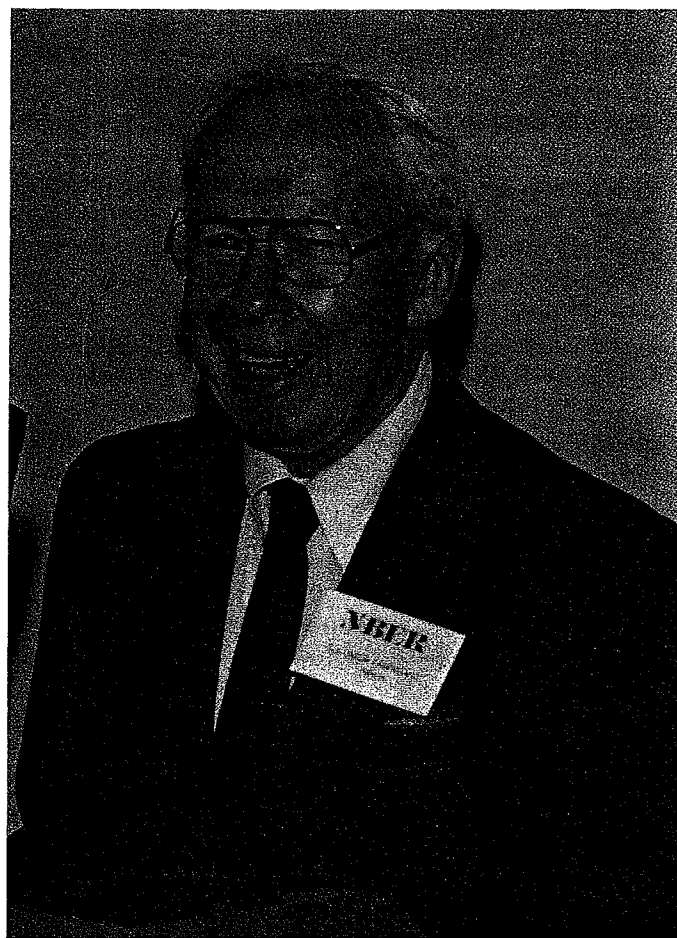
Solomon Fabricant

Discussant: Robert E. Lipsey, NBER and Queens College

Jack E. Triplett, "Price Index Research and Its Influence on Data: A Historical Review"
Discussant: W. Erwin Diewert

Paul J. Pieper, NBER and University of British Columbia, "The Measurement of Structures Prices: Retrospect and Prospect"
Discussant: Robert B. Parker, Bureau of Economic Analysis

Daniel S. Hamermesh, NBER and Michigan State University, "Data Difficulties in Labor Economics" (NBER Working Paper No. 2622)
Discussant: Sherwin Rosen, NBER and University of Chicago

Clifford S. Russell, Vanderbilt University, and V. Kerry Smith, North Carolina State University, "Demands for Data and Analysis Induced by Environmental Policy"
Discussant: Thomas H. Tietenberg, Colby College

Barbara K. Atrostic and James R. Nunns, Office of Tax Analysis, "Measuring Tax Burden: A Historical Perspective"
Discussants: Joseph Pechman, The Brookings Institution, and Martin David, University of Wisconsin

Robert H. McGuckin and George Pascoe, U.S. Bureau of the Census, "The Longitudinal Research Database (LRD): Status and Research Possibilities"
Discussant: Raymond Kopp, Resources for the Future

G. Donald Wood, U.S. Bureau of Labor Statistics, "A New Measure of the Cost of Compensation Components"
Discussants: Alice and Masao Nakamura, University of Alberta

Peter Koumanakos, Statistics Canada, "The Capital Stock Project: An Integrated System for the Measurement of Capital"
Discussant: Jacques Mairesse, NBER and Institut National de la Statistique et des Etudes Economiques

Zoltan Kenessey, Federal Reserve Board, "Experimental Indexes of Service Production"
Discussant: Robert F. Gillingham, Office of Policy Analysis, U.S. Department of the Treasury

Robert B. Avery, Gregory E. Elliehausen, and Arthur R. Kennickell, Federal Reserve Board, "Savings and Wealth: Evidence from the 1986 Survey of Consumer Finances"
Discussant: Lawrence J. Lau, Stanford University

Timothy M. Smeeding, Vanderbilt University, and Lee Rainwater, Harvard University, "Comparative Cross-National Research on Income and Economic Well-Being: The Luxembourg Income Study (LIS)"
Discussant: Katharine G. Abraham, NBER and University of Maryland

Michael C. Wolfson, Stephen Gribble, Michael Bordt, Brian Murphy, and Geoff Rowe, Statisics Canada, "The Social Policy Simulation Database: An Example of Survey and Administrative Data Integration"
Discussant: Fritz Scheuren, Internal Revenue Service

Roger Herriot, Chester Rowin, and Dan Kasprzyk, Bureau of the Census, and Sheldon Haber, George Washington University, "Enhanced Demographic Datasets with Employer Characteristics"
Discussant: Walter Y. Oi, University of Rochester

Hulten reviews the theory and practice of capital measurement. He examines the theoretical underpinnings of the perpetual inventory method and then turns to the problem of valuing capital stocks and flows. He also discusses aggregation, the use of hedonic price techniques, and new developments in measurement theory, including the Berndt–Fuss approach to capital utilization and the Diewert model of endogenous depreciation. Hulten then deals with three practical issues in the measurement of capital: the measurement of investment flows; price deflators; and the measurement of depreciation. He concludes with a recommendation for a national wealth benchmark and for the integration of income and wealth accounts.

Boskin develops alternatve measures of saving and compares them to the traditional National Income and Product Accounts (NIPA) estimates. Adjustments for net saving in durables, government capital, capital

Robert Nathan

Historically, the major measurement issues for price and quantity indexes have been treated as distinct, although not unrelated, topics. One topic concerns the aggregation method (often termed the index "formula") that produces an overall index out of appropriately measured components. The second topic treats the measurement of the components—housing, vegetables, medical care, and so forth—that are to be aggregated. Among the latter measurement issues, quality change always has received much attention. Triplett's review treats these two issues—aggregation, or index number structure, and quality change—separately.

The deflation of structures is one of the most difficult and most important areas of national income accounting. Accurate deflation is essential for a number of issues, including the measurement of construction productivity and the capital stock. Pieper looks at past construction deflation methods and at ways to improve the existing deflators. Although the present Department of Commerce deflators are an improvement over those of 25 years ago, major problems still remain. In particular, over two-thirds of new construction is deflated either by cost indexes, which make no allowance for productivity change, or by proxy indexes (that is, indexes based on a different type of construction than the one they are used to deflate). All of the alternative deflators suggest an overdeflation by the Department of Commerce, most significant in 1972–82 and amounting to 1 percent per year by some estimates. Pieper concludes that there is no single best method of deflation; rather, the best method depends upon the type of construction.

Hamermesh presents a generalized framework for analyzing how the available data can allow us to draw robust inferences about underlying hypotheses on labor supply, labor demand, labor market studies, and trade union goals. In the past 20 years, there have been major advances in our understanding of labor supply; the labor market studies of the late 1940s through early 1960s also taught us a lot. In both cases, though, the advances came because of the development of microdata. Unfortunately, microdata appropriate for studying other areas of labor economics have not been so widely available. Hamermesh calls for a number of developments in data collection and outlines a project involving monthly panel data on firms and their workers that would shed light on issues in labor demand, union behavior, and labor market dynamics.

Russell and Smith argue that the demands for data and analysis arising in environmental regulation go well beyond the boundaries within which economists are most comfortable. Analysis requires knowledge of baseline environmental quality and the ability to predict how that quality will respond to changes in policies. A balanced approach to the analysis of environmental programs may involve the systematic transfer of benefit functions from one place or situation to another. Part of the paper by Russell and Smith discusses the results of a statistical analysis for one facet of environmental economics: the results of travel cost demand for recreation sites.

gains and losses, and revaluations are substantial: for example, government capital and durables adjustments raise the NIPA estimate of net national saving in 1985 from 4.7 percent to 8.8 percent. New estimates of saving, developed and measured as the change in real net worth based on data from the Federal Reserve Flow of Funds National Balance Sheets, also differ substantially from the NIPA estimates. The NIPA net national saving measure is 1.8 percent and 1.9 percent for 1986 and 1987, respectively, whereas Boskin's estimates are 11.5 percent and 3.3 percent.

Griliches describes the background for his original "hedonics" paper (1961) and discusses some of the issues raised by the subsequent literature on this range of topics. He goes on to consider some of the implications of this work for the measurement of capital services and connects it to the Jorgenson–Griliches (1967) paper on the "explanation of productivity change." Griliches cautions against interpreting the recent slowdown in the growth of total factor productivity as implying a parallel slowdown in the technological potential of the economy.

Measures of tax burden indicate how well tax policy meets one of its primary goals: equitably raising the revenues needed to run government. Atrostic and Nunns discuss four categories of tax burden measurement: representative taxpayer measures; aggregate data measures; microdata measures; and general equilibrium measures. All except aggregate data measures are used currently in forming federal tax policy. Atrostic and Nunns show how the major social and economic forces of the last 50 years, as well as advances in economic theory, data availability, and computational equipment, shaped the development of these measures. They conclude with an evaluation of the current constraints on the development of improved measures of tax burden.

The Longitudinal Research Database (LRD) is a large microdatabase of establishment-level data constructed by pooling information from the Census of Manufactures and the Annual Survey of Manufactures. McGuckin and Pascoe outline the origins and the development of this database, its structure and current status, and the possibilities for its use in economic research. They use examples of past and current research to illustrate the kinds of activity the LRD will support. These include research on: mergers and their impact on profits and production; measurement of high technology trade, market concentration, and international competition; plant level productivity; firm entry and exit; and productivity differences between large and small firms.

Wood describes a new measure of the cost of compensation published by the Bureau of Labor Statistics (BLS): the cost per hour worked for compensation components—wages and salaries, and benefit costs by type of benefit, such as paid vacations, insurance, and Social Security payments—for private industry workers. Cost level estimates are based on data collected from the Employment Cost Index (ECI) and do not place any additional reporting burden on establishments. The estimates are aggregated using employment counts obtained by allocating March 1987 employment by industry, as reported by the BLS Current Employment Statistics Program, among occupations using the occupational distribution of the ECI sample. Standard errors associated with the cost estimates also are provided, and the estimates are expressed as percentages of total compensation costs. The estimates and standard errors will be published annually in mid-June, with a March reference date. In March 1987, private industry compensation costs per hour worked averaged $13.42. The relative error associated with that estimate was 1.8 percent. The costs were determined by collecting benefit provisions and evaluating what the benefit would cost as of March 1987. The costs differ in concept from expenditures that measure actual payments made over some time period. However, the costs are quite close to measures of expenditures such as those available from the national income accounts.

Koumanakos discussed the Capital Stock project, established in early 1982 by Statistics Canada, the Bank of Canada, the Economic Council of Canada, and the Department of Finance. This project developed a Pilot Survey of Fixed Assets; visited 125 companies to discuss the availability of information on economic lives of fixed assets, sales of used assets, levels of asset, asset retirement policies, and so on; and sent the pilot survey to over 1000 establishments. These efforts resulted in the introduction of a new capital expenditures survey that is expected to form the basis for the creation of an integrated system for the measurement of capital. Koumanakos then reported that the price–age profiles of used assets in manufacturing and nonmanufacturing sectors, reported in the revised capital expenditure survey, were used to estimate the form and rates of economic depreciation. Depreciation patterns appear close to the geometric form for the manufacturing sector and to be accelerated, vis-à-vis straight line, for the nonmanufacturing sector.

The basic premise of Kenessey's paper is that the monthly measures now available on industrial production (IP) need to be supplemented by a similar indicator for service activities. The preliminary service index was developed at the Industrial Output Section of the Federal Reserve Board. This paper describes the methodology applied, contains the tabulation of results, considers the problems of data sources, and discusses the directions of future work. The experimental results appear to alleviate some of the doubts concerning the practicality of estimating service indexes in a cost-effective manner. The new indexes closely follow the IP methodology, but their annual levels are benchmarked to the aggregates for Gross Product Originating by Industry in the NIPA.

Avery, Elliehausen, and Kennickell present preliminary data from the 1983 and 1986 panels of the Survey of Consumer Finances on the wealth and saving behavior of U.S. households. The survey instruments gathered exhaustive detail on assets, and the sample was designed to oversample the very wealthy, who hold a vastly disproportionate share of total wealth. The variability of wealth associated with changes in
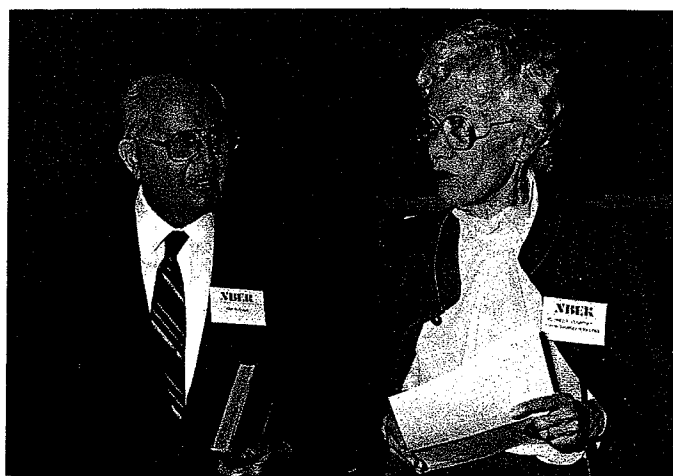
Roy Blough and Mildred Courtney

household composition is particularly striking; a substantial number of families experienced major changes and those households determine a substantial fraction of total wealth and saving. The three authors find that changes in wealth are not well predicted using only the data available in cross sections. However, despite the weakness of wealth models for describing change, their cross-section descriptive power appears to have been fairly stable. Apparently, cross-section data are simply too noisy to be useful in predicting saving; this argues very strongly for panel data, which can measure changes in wealth directly.

The Luxembourg Income Study (LIS) has gathered and made comparable several recent large microdatasets that contain comprehensive measures of income and economic well-being for a set of modern industrialized welfare states: Australia, Canada, Germany, Israel, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, and the United States (with Italy, France, and Finland soon to be added). Smeeding and Rainwater describe the LIS dataset and the remote computer telecommunications system that can be used to access it from the United States, Australia, and Europe. They also summarize recent comparative research results on child poverty, tax policy, and equivalence scales, based on the LIS.

Wolfson and his coauthors describe the construction of a prototype database explicitly designed to support analysis of personal income and sales tax policies and income transfer policies. The Social Policy Simulation Database/Model combines individual administrative data from personal income tax returns and histories of unemployment insurance claimants with survey data on family incomes and expenditure patterns. Input-output data also were applied in modeling sales taxes and duties as they relate to personal consumption. The techniques used to create the database and to avoid disclosure of confidential data include various forms of categorical matching and stochastic imputation.

Herriot and his coauthors explore the possible development and uses of datasets that combine demographic survey and census data matched with economic census or administrative (IRS) information. They describe the 1984 Survey of Income and Program Participation (SIPP) and various pilot projects to augment the SIPP data with information about the establishments and firms. The authors present various applications of such datasets, including: wage determination, structural unemployment, and technology difference among firms. The paper also discusses issues of access to these enhanced datasets and describes several new programs at the Census Bureau to increase researchers' ability to perform analysis with these data.

Prices and Exchange Rates

Alberto Giovannini

From the end of World War II until 1972, the Western world operated under a system of fixed exchange rates ratified at Bretton Woods. Between 1950 and 1970, the United States maintained a current account surplus of about $5 billion per year, inflation was low, and indexes of international competitiveness—such as the relative price indexes—were remarkably stable.

Since 1972, flexible exchange rates have replaced the fixed-rate system. The U.S. inflation rate rose sharply in the late 1970s. The value of the dollar—and the relative price of U.S. goods—rose dramatically in the early 1980s: by 55 percent between late 1981 and mid-1985.[1] In 1985 the United States recorded a current account deficit of $160 billion. All these developments have been linked, directly or indirectly, to the regime of flexible exchange rates. Some observers have even suggested that flexible rates have *caused* these problems and contributed to a process of deindustrialization of the United States. While the fixed-rate regime of the immediate postwar years was regarded as some form of "institutionalized discipline" imposed on member countries by the rest of the world, sometimes flexible rates are characterized as "institutionalized anarchy," the painful effects of which are felt increasingly by the United States and its trading partners.[2]

This experience has led some economists to search for alternatives to the current flexible exchange rates regime: the current proposals for reform of the international monetary system are all based on some form of fixed exchange rates.[3] However, our knowledge of the relative merits of these two regimes unfortunately is very limited. To evaluate the performance of flexible exchange rates properly, and to assess the desirability

of returning to some form of fixed exchange rates, we first need to study the effects of monetary policy and the linkages among exchange rate fluctuations, domestic prices, and international competitiveness. How do changes in the exchange rate feed domestic inflation? Does stabilizing the nominal exchange rate also stabilize a country's competitiveness? These questions have kept me and many other empirical researchers busy in the past few years. The results of this research are starting to provide a relatively consistent picture, which is summarized here.

Monetary Policy, Exchange Rates, and Prices in the Short Run

The most remarkable aspect of flexible exchange rates is their volatility, especially relative to the volatility of goods prices. Large movements of exchange rates, given the relative stability of goods prices, are associated with large movements in *relative* prices, or real exchange rates, which measure the international competitiveness of domestic versus foreign goods.

One explanation is that the rates of return on financial assets traded in the world market adjust much more quickly than the prices of goods produced at home and abroad to news about changes in monetary and fiscal policies, politics, and any other relevant variables. This interpretation implies that monetary policy, in principle, can have sizable effects on international competitiveness and international trade, at least until domestic and foreign prices adjust fully.

An alternative explanation of the different behavior of prices and exchange rates is that changes in competitiveness are affected exclusively by shifts in demand and supply for domestic and foreign goods but are completely unrelated to changes in the supply of money. According to this view, competitiveness moves with the nominal exchange rate because the former affects equilibrium in the asset markets, which in turn determines fluctuations of the latter.

In my work with Julio J. Rotemberg,[4] I have tried to determine whether the different behavior of price-setters in goods markets and financial markets is at the root of the different behavior of prices and exchange rates, and therefore whether the fluctuations in the relative prices of U.S. and West German goods affected, at least in part, by U.S. and German monetary policies. We estimated and simulated a model that allowed us to test directly the proposition that money cannot affect the real exchange rate, and we were able to reject that hypothesis quite strongly. We then simulated the model out of sample and found, to our surprise, that it correctly predicted all significant turning-points in the data, although it underpredicted the recent episode of dollar depreciation.

The Effects of Exchange Rate Changes on Domestic Inflation

Changes in monetary policy in principle can have an effect on international competitiveness. However, some of my more recent results suggest that monetary innovations do not necessarily play a major role in the overall fluctuations of external competitiveness. In a recent paper, I studied the short-run and long-run covariances of exchange rates and prices, and obtained evidence that was relevant to assessing the importance of monetary shocks.[5]

For example, I document that West Germany's real exchange rate can be approximated satisfactorily by a nonstationary stochastic process: that is, transitory components in the fluctuations of the Deutsche Mark real exchange rate are less pervasive than long-run movements. This suggests that other shocks, in addition to monetary disturbances, must be affecting exchange rate fluctuations, since monetary policy would have only a transitory effect on real exchange rates.[6]

The relative importance of monetary policy and other disturbances—such as fiscal policy, commodity price fluctuations, productivity shocks, and so on—is also the crucial determinant of the so-called pass-through of exchange rate movements on the aggregate rate of inflation. Clearly, if the only sizable shocks in modern industrial economies were originated by monetary policies, then the long-run pass-through of exchange rate changes into changes in domestic price levels would be 100 percent, since monetary changes plausibly should not have any permanent effect on real variables. Instead, I have found that the correlation between changes in the exchange rate and the rate of inflation range from 10 to 35 percent in the long run in the case of West Germany: that is, only about 25 percent of the long-run fluctuations in the nominal exchange rate on average are reflected in the rate of inflation. The lack of synchronization between long-run changes in the exchange rate and in inflation rates once again is an indication of the importance of factors other than monetary policy in affecting competitiveness.

In summary, there is strong evidence that monetary policy can have powerful but transitory effects on external competitiveness. This evidence is all the more interesting, given the heated controversies still engaging "closed-economy" macroeconomists on whether monetary policy affects real variables. The important implication of this result is that alternative international monetary regimes—fixed and flexible exchange rates—by affecting real variables, and hence the allocation

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[4] *A. Giovannini and J. J. Rotemberg, "Exchange Rate Dynamics with Sticky Prices: The Deutsche Mark, 1974–82," NBER Working Paper No. 1281, February 1984, and Journal of Business and Economic Statistics, forthcoming.*

[5] *A. Giovannini, "The Macroeconomics of Exchange Rate and Price Level Interactions: Empirical Evidence for West Germany," NBER Working Paper No. 2544, March 1988.*

[6] *This conclusion also was reached by J. Y. Campbell and R. H. Clarida, "The Dollar and Real Interest Rates," NBER Working Paper No. 2151, February 1987. For a survey of the effects of fiscal disturbances in real exchange rates, see the papers in International Aspects of Fiscal Policies, J. A. Frenkel, ed. Chicago: University of Chicago Press, 1988.*

of resources, affect welfare. However, the data also suggest that monetary policy in fact probably explains a minor fraction of the total variation of real exchange rates. Hence, whether or not monetary rules can be used reliably to smooth the swings in external competitiveness and, more generally, whether a return to fixed exchange rates would be sustainable, remains an open question for both empirical and theoretical research.

The Law of One Price

How much fluctuations in the exchange rate can affect relative prices and the external balance depends also on the degree of competition among internationally trading firms, and on the ability of domestic consumers to arbitrage away price differentials between domestic and foreign markets. A look at the prices of individual, homogeneous commodities indicates that the scope for international arbitrage of homogeneous goods might be quite limited.[7] I have found that the ratio of domestic and export prices of goods—such as ball bearings, nuts and bolts, and screws—produced in Japan fluctuated as much as 25 percent. These fluctuations prove that exporters can discriminate between domestic and foreign prices. My analysis shows that the interaction of pricing and invoicing policies can produce quite definite patterns in the relative prices of traded goods. Recent work by fellows and associates of the NBER further extends the analysis of exchange rates and prices, and links the failure of traded goods prices to adjust to exchange rate changes to profit-maximizing pricing policies of monopolistic competitive firms.[8]

A growing body of empirical research at the NBER suggests that international trade and prices are affected significantly by the exchange rate regime. This empirical evidence is adding new relevance to the old question of the choice between fixed and flexible exchange rates.

U.S. Business Cycles Between the Two World Wars

Christina D. Romer

The Great Depression and other pre–World War II economic collapses hold a particular fascination for economists and laymen. The bank runs, foreclosures, and soup kitchens that figured so prominently in pre-war depressions seem to arouse tremendous interest and perhaps some fear in both those who lived through these periods and those who have only read or heard about them. For macroeconomists, these depressions are not only dramatic episodes of human suffering and eventual triumph; they also are crucial laboratories for analyzing economic behavior. To an economist trying to understand the workings of the modern macroeconomy, these economic events from times of different economic institutions and policies can be extremely revealing.

In two of my recent research projects I investigate the nature and causes of pre–World War II depressions and analyze the implications of these experiences for the modern economy. One examines the severity and causes of the downturn in 1920-1;[1] the other asks why the economy declined so severely in 1930, the first year of the Great Depression.[2]

The downturns of 1920–1 and 1929–33 are especially interesting to analyze because many people believe that they were the most severe depressions in U.S. history. Thus, it is important to discover what caused these two downturns. At the same time, many analysts stress that the two depressions were fundamentally different from one another: in 1920–1 prices fell dramatically and the economy recovered from the downturn very quickly; in 1929–33 there was very little movement in prices and the economy sank deeper and deeper into a depression. Some economists believe this contrast suggests that a fundamental change in the U.S. economy in the 1920s may explain why the Great Depression was so different from earlier depressions.

I challenge both of the conventional characterizations of these two important prewar business cycles. I find that the downturn of 1921 was actually much mild-

[7]A. Giovannini, "Exchange Rates and Traded Goods Prices," Journal of International Economics 24 (1988), pp. 45–68.

[8]See, for example, R. Dornbusch, "Exchange Rates and Prices," NBER Reprint No. 893, August 1987, and American Economic Review 77, 1 (March 1987), pp. 93–106; J. Aizenman, "Monopolistic Competition, Relative Prices, and Output Adjustment in the Open Economy," NBER Working Paper No. 1787, January 1986; P. R. Krugman, "Pricing to Market When the Exchange Rate Changes," NBER Working Paper No. 1926, May 1986; R. C. Feenstra, "Symmetric Pass-Through of Tariffs and Exchange Rates under Imperfect Competition: An Empirical Test," NBER Working Paper No. 2453, December 1987; and R. Baldwin, "Hysteresis in Import Prices: The Beachhead Effect," NBER Working Paper No. 2545, March 1988.

[1]C. D. Romer, "Gross National Product, 1909–28: Existing Estimates, New Estimates, and New Interpretations of World War I and Its Aftermath," NBER Working Paper No. 2187, March 1987; also published under the title, "World War I and the Postwar Depression: A Reinterpretation Based on Alternative Estimates of GNP," in Journal of Monetary Economics (July 1988), pp. 91–115.

[2]C. D. Romer, "The Great Crash and the Onset of the Great Depression," NBER Working Paper No. 2639, June 1988.

er than some conventional cyclical indicators suggest. My analysis of new data indicates that the downturn of 1921 should not be thought of as a severe depression, but rather as a moderate recession. More importantly, my research shows that differences in the nature of the shocks to the economy and not in the underlying structure of the economy explain why the 1920-1 and 1929-33 episodes were so different from each other.

The depression of 1920-1 typically is viewed as a short but very sharp downturn because two of the most commonly used indicators of economic performance —the Federal Reserve Board (FRB) index of industrial production and the Commerce Department estimates of GNP—show output falling dramatically in this period. However, I find that neither of these indicators is accurate for 1920-1.

First, the FRB index of industrial production prior to 1923 is based almost exclusively on the output of heavy industries such as iron and steel. After 1923 the index includes many more finished products and covers a much broader range of manufactured goods. Because heavy industry tends to be more cyclically sensitive, the pre-1923 FRB index shows more extreme fluctuations than in later years simply because of its method of construction. This excess volatility in part explains why 1920-1 appears to be such a severe depression when compared to later downturns. One way to illustrate that much of the severity of the 1920-1 depression is caused by this inconsistency in the data is to note that using an index similar to the early FRB index, the decline in production between May 1923 and July 1924, which is rarely mentioned, is nearly two-thirds as severe as that between January 1920 and July 1921.

Second, the Commerce Department's estimates of real GNP also appear to overstate the fall in output in 1921. The Commerce Department series for 1909-28, which is published in a special table of the *National Income and Product Accounts*, represents an attempt in the 1950s to estimate GNP for pre-1929. It is based on a hodgepodge of sources, including preliminary estimates of consumption expenditures derived by Simon Kuznets. Subsequent work by Kuznets and John Kendrick has provided estimates of real GNP for this period that are based on a wider array of data and are vastly better documented.[3] Thus, there is every reason to believe that the Kuznets–Kendrick estimates are more reliable than the Commerce Department estimates. For 1920-1, the Kuznets–Kendrick series shows a dramatically smaller fall in real GNP than the Commerce Department series does.

While much of the apparent depth of the depression of 1920-1 can be attributed to errors in the data, even good data show very large declines in real output and employment for some industries in this period. For example, annual pig iron production, which is measured very accurately in the prewar era, fell 55 percent between 1920 and 1921. Similarly, a thorough survey conducted by the National Industrial Conference Board shows that employment in each of the iron and steel, electrical machinery, and automobile industries fell over 40 percent between 1920 and 1921.[4] How can the large declines in these industries be reconciled with the fall in real GNP of only 2 percent shown by the final Kuznets-Kendrick series over the same year?

I believe that the answer to this puzzle is that the economy was buffeted by a unique combination of negative aggregate demand shocks and positive aggregate supply shocks in 1920-1 that had the effect of driving down prices substantially while leaving real output only slightly depressed. The demand shocks in this period are well documented. Following World War I, government expenditures remained high through 1919 and then were cut substantially. At the same time, the Federal Reserve Board followed a deliberate policy of very tight money, which drove up real interest rates. The two demand shocks naturally tended to depress the economy, especially the durable goods sector which is particularly sensitive to movements in the real interest rate. This can explain why the iron and steel and durable machinery industries sank into a deep decline in 1921.

At the same time, the U.S. economy was affected by two positive supply shocks. World agricultural production surged in 1920 as European farms began producing again while American farms maintained their wartime production levels. This agricultural boom generated a glut of farm products and drove prices down substantially. In addition, between 1917 and 1919 large quantities of primary goods, such as leather, silk, and wool, were stockpiled in the producing countries because shipping was disrupted by the war. In 1920 and 1921 these goods started to enter the U.S. market in large quantities and again this tended to depress their prices. The fact that a wide variety of raw materials became much less expensive in the United States in 1920 and 1921 tended to counteract the depressing effects of the aggregate demand shocks. Industries that used these raw materials, such as the textile, food processing, and boot and shoe industries, did quite well in 1920 and 1921. Favorable conditions in these industries, as well as record agricultural production, explain why total GNP did not fall dramatically despite the severe depression in certain industries.

My analysis of 1929-30 suggests that, in contrast to

[3] The final Kuznets estimates of real GNP for 1869-1958 are described in S. Kuznets, Capital in the American Economy, NBER Studies in Capital Formation and Financing, No. 9. Princeton, NJ: Princeton University Press, 1961. The Kendrick revisions to the final Kuznets series are described in J. Kendrick, Productivity Trends in the United States, NBER General Series, No. 71. Princeton, NJ: Princeton University Press, 1961.

[4] The NICB employment survey is described in M. A. Beney, Wages, Hours, and Employment in the United States, 1914-36, Washington, DC: National Industrial Conference Board, 1936.

1921, the only major shock to the economy in the first year of the Great Depression was a severe aggregate demand shock. I find that the stock market crash of October 1929 had an extremely adverse effect on consumption spending and that this explains why real GNP fell nearly 10 percent in the first year of the Great Depression.

Linking the Great Depression and the Great Crash is important because 1930 is in many ways the most mysterious year of the Great Depression. Following the collapse of the stock market, monetary policy, which had been tight throughout 1928 and 1929, loosened substantially. As a result, real interest rates appear to have fallen through most of late 1929 and early 1930. Furthermore, while the drop in stock prices in late 1929 was dramatic, the actual fraction of total wealth that was destroyed by the Great Crash was relatively small. As a result, the loss of wealth in late 1929 cannot account for a substantial slowdown in spending under any plausible estimate of the impact of wealth on consumption. Thus, using conventional Keynesian models of the business cycle, output should not have been falling rapidly in late 1929 and early 1930.

I believe that consumption dropped following the Great Crash because the highly publicized stock market crash made consumers very uncertain about the likely course of future income. As a result, consumers decided to forgo purchasing durable goods, such as automobiles, furniture, and even shoes and clothing, until they were more certain whether the economy was going to slip into a depression. In this way, they avoided the possibility that if a depression occurred, they would be caught with unwanted, unmarketable durable goods. Unfortunately, this waiting also ensured that the economy would slide into a depression. The drop in consumer spending eventually lowered production and generated unemployment.

Three types of evidence support this explanation for the fall in output in 1930. First, immediately following the Great Crash, consumer spending on irreversible durable goods fell precipitously, while spending on perishable goods and durable goods with established resale markets did not decline. This is exactly what the uncertainty hypothesis would predict. Second, over 1889–1928, other episodes of extreme stock market movement, both up and down, also were associated with drops in consumer spending on durable and semi-durable goods. Indeed, the usual association over the pre-1929 period was such that almost all of the fall in consumption in 1930 can be explained by the dramatic rise in stock market volatility in late 1929 and early 1930. Third, forecasters and analysts of the 1920s became very uncertain of their forecasts immediately following the Great Crash. They also believed that consumers were uncertain, and that uncertainty had an important effect on spending. Moreover, these uncertainties did not occur at other times of major economic change during the 1920s. Thus, both the statistical evidence and the analyses of contemporary observers support the hypothesis that the stock market crash, through its effect on consumer confidence, was the central cause of the precipitous fall in output during the first year of the Great Depression.

Examining the causes of these two important interwar downturns indicates that the depression of 1921 was quite mild while the downturn in the first year of the Great Depression was severe because the shocks were very different in the two periods. In 1921 the United States was lucky: negative aggregate demand shocks were moderated by positive supply shocks. In 1929 the United States was particularly unlucky: a collapse in consumer spending was not countered by a beneficial supply shock, such as a drop in the price of raw materials. Thus, the differences in the behavior of the economy in these two downturns does not indicate that the fundamental structure of the economy changed between 1921 and 1929. Rather, it suggests that what changed was our luck.

What can this analysis tell us about postwar economic behavior and the possibility for preventing major downturns today? The experience of 1921 indicates that if the economy is going to experience a decrease in aggregate demand, it is very convenient for it to experience a drastic fall in the prices of raw materials at the same time. Unfortunately, there is probably very little that the government can do to bring about such a positive supply shock. Thus, the experience of 1921 can help us to understand how the economy operates but probably provides little direction for policymakers.

In contrast, the experience of 1929–30 probably provides policymakers with important information about preventing severe depressions. In 1929 the fall in stock prices caused tremendous uncertainty because consumers did not know whether the collapse of securities prices would depress the economy and whether the Federal Reserve Board would intervene if the economy did begin a rapid decline. This rising uncertainty had disastrous effects on consumer spending and eventually on real output and employment. In 1987 a similarly large fall in stock prices did not push the economy into a depression. While consumer expenditures dropped sharply in the fourth quarter of 1987, consumers appear to have regained their confidence quickly this time and to have begun spending more freely in early 1988. One reason for the very different response this time is that the last several decades of activist government policy may have convinced consumers that in the event of a severe crisis, the Federal Reserve and the fiscal authorities would step in to prevent further declines. This suggests that fostering an expectation that the government will intervene if needed may prevent a rise in uncertainty and hence may make actual intervention unnecessary.

Economic Outlook Survey

Third Quarter 1988

Victor Zarnowitz

According to the September survey of 18 professional forecasters taken by the NBER and the American Statistical Association, real Gross National Product (GNP) will gain 4 percent in 1987–8 and 2.7 percent in 1988–9. These GNP numbers are considerably higher than their counterparts in the previous (June) survey: 3.4 percent and 2.3 percent, respectively. The corresponding inflation forecasts are 3.1 percent for 1987–8 and 4.2 percent for 1988–9, only slightly higher than June. It should be noted, however, that these predictions were made in late August and early September, prior to the September 21 release of new GNP data for the second quarter, which revised previous estimates of economic growth (downward) and inflation (upward).

More Growth Seen This Year, Less the Next

The median predictions of real GNP growth are 2.7 percent, 2.9 percent, 2.4 percent, 3.1 percent, and 1.9 percent for the five successive quarters 1988:3–1989:3 (all at annual rates). The individual forecasts of growth between 1988:3 and 1989:3 average 2.7 percent. with a range of -0.1 to 6.4 percent and a standard deviation (s.d.) of 1.3 percent. The implied degree of uncertainty remains relatively moderate. There is a possibility of a serious slowdown in late 1989 (one forecast suggests a mild recession), but all predictions of real GNP are higher for 1989 than for 1988.

Probabilistic Forecasts Show More Optimism in 1988

The following percentage distributions show the means of the probabilities the forecasters attach to different outcomes for growth.

Chances in 100 of Real GNP Growing by	1987–8 (June 1988 survey)	1987–8 (September 1988 survey)	1988–9 (June 1988 survey)	1988–9 (September 1988 survey)
4 percent or more	12	36	12	10
2.0–3.9 percent	71	55	47	56
0–1.9 percent	13	8	26	27
Less (negative)	3	2	14	7

The shift from lower to higher categories in the tabulations for 1987–8 reinforces the trend already noted in June. The distributions for 1988–9 differ less, but the change also is in a positive direction (more in the 2–3.9 percent class, less in the negative range).

Chances of a Recession Are Seen Lower and More Distant

The individual assessments of the probability that real GNP will decline in the near future are lower on average now than in the previous survey for the corresponding quarters. The probabilities increase in the direction of the more distant future.

	June 1988	September 1988
1988:3	14	5
1988:4	18	9
1989:1	25	14
1989:2	29	21
1989:3	n.a.	25

Little Change in Unemployment

The civilian unemployment rate is expected to increase from 5.4 percent to 5.7 percent between 1988:3 and 1989:3, and from 5.5 percent to 5.6 percent between 1988 and 1989. The range for 1989:3 is 5.0 to 6.3 percent; the mean ±1 s.d. is 5.7 ±0.3 percent. Most forecasters continue to expect the jobless rate to hold fairly steady in the near future; few see large changes in either direction.

Inflation Forecasts Vary, but Most Point Upward

The GNP implicit price deflator (IPD) will rise at annual rates of 4.3 percent, 3.9 percent, 4.1 percent, 4.5 percent, and 4.0 percent in the five quarters, from 1988:3 through 1989:3, according to the group's median forecasts. A year from now, IPD is predicted to be about 4.2 percent higher. This would be less than the latest estimate of the IPD inflation rate (5.5 percent for 1988:2). Again, there is much dispersion across individuals in these forecasts: about 60 percent of the respondents predict rises, and 40 percent predict declines in inflation.

The probabilistic forecasts show shifts toward higher inflation when compared with the June survey, particularly for 1988–9:

Chances in 100 of IPD Increasing by	1987–8 (June 1988 survey)	1987–8 (September 1988 survey)	1988–9 (June 1988 survey)	1988–9 (September 1988 survey)
6 percent or more	5	6	12	15
4.0–5.9 percent	15	22	36	52
2.0–3.9 percent	72	63	42	28
Less than 2 percent	9	9	9	4

Projections of GNP and Other Economic Indicators, 1988-9

		Annual		Percent Change	
	1987 Actual	1988 Forecast	1989 Forecast	1987 to 1988	1988 to 1989
1. Gross National Product ($ billions)	4526.7	4850.0	5173.3	7.1	6.7
2. GNP Implicit Price Deflator (1982 = 100)	117.7	121.3	126.4	3.1	4.2
3. GNP in Constant Dollars (billions of 1982 dollars)	3847.0	3999.7	4106.0	4.0	2.7
4. Unemployment Rate (percent)	6.2	5.5	5.6	-0.7[1]	0.1[1]
5. Corporate Profits After Taxes ($ billions)	142.9	155.0	164.0	8.5	5.8
6. Nonresidential Fixed Investment (billions of 1982 dollars)	445.1	491.2	517.5	10.4	5.4
7. New Private Housing Units Started (annual rate, millions)	1.62	1.48	1.43	-8.58[2]	-3.61[2]
8. Change in Business Inventories (billions of 1982 dollars)	34.4	44.0	27.3	9.6[3]	-16.7[3]
9. Treasury Bill Rate (3-month, percent)	5.83	6.50	7.40	0.67[1]	0.90[1]
10. Consumer Price Index (annual rate)	3.6	4.2	5.0	0.6[1]	0.8[1]

			Quarterly				Percent Change	
	1988 Q2 Actual	1988 Q3	1988 Q4	1989 Q1	1989 Q2	Q3	Q2 88 to Q2 89	Q3 88 to Q3 89
		Forecast						
1. Gross National Product ($ billions)	4806.9	4891.0	4972.8	5056.1	5129.6	5204.3	6.7	6.4
2. GNP Implicit Price Deflator (1982 = 100)	120.6	121.9	123.1	124.3	125.7	127.0	4.3	4.2
3. GNP in Constant Dollars (billions of 1982 dollars)	3986.3	4012.8	4042.2	4066.3	4097.8	4117.5	2.8	2.6
4. Unemployment Rate (percent)	5.4	5.4	5.4	5.5	5.6	5.7	0.2[1]	0.3[1]
5. Corporate Profits After Taxes ($ billions)	158.3	157.5	162.0	163.5	164.0	165.0	3.6	4.8
6. Nonresidential Fixed Investment (billions of 1982 dollars)	489.2	498.0	504.0	510.0	515.0	516.0	5.3	3.6
7. New Private Housing Units Started (annual rate, millions)	1.47	1.50	1.47	1.42	1.41	1.40	-4.08[2]	-6.67[2]
8. Change in Business Inventories (billions of 1982 dollars)	45.0	35.0	30.0	30.0	27.1	26.0	-17.9[3]	-9.0[3]
9. Treasury Bill Rate (3-month, percent)	6.23	6.95	7.20	7.35	7.40	7.34	1.17[1]	0.39[1]
10. Consumer Price Index (annual rate)	4.8	4.8	4.9	5.0	5.1	4.9	0.3[1]	0.1[1]

SOURCE: The National Bureau of Economic Research and American Statistical Association, Business Outlook Survey, Sepember 1988. The figures on each line are medians of eighteen individual forecasts.

[1] Change in rate, in percentage points.
[2] Possible discrepancies in percentage changes are caused by rounding.
[3] Change in billions of dollars.

The group projects higher but more stable inflation rates for the consumer price index (CPI), averaging 4.8-4.9 percent for the last two quarters of 1988 and 4.9-5.1 percent for 1988:3-1989:3. The annual figures are 4.2 percent for 1987-8 and 5.0 percent for 1988-9. The range of the individual predictions for 1989:3 is 4.0 to 6.4 percent; the mean ±s.d. is 5.0 ±0.6 percent.

Interest Rates Higher and Rising

The three-month Treasury bill rate is forecast to be close to 7 percent in 1988:3, up sharply from 6.2 percent in 1988:2. It is expected to rise to 7.2 percent in 1988:4 and stay near 7.4 percent next year. These median forecasts from the September survey are much higher than their June counterparts (6.2 percent for 1988, 6.6 percent for 1989). There is much dispersion among the individual predictions of the bill rate. The range for 1989:3, for example, is 6.0 to 9.5 percent, and nearly half the responses fall outside (mostly above) the central interval of 6.5-7.7 percent.

The average forecasts of the yield on new high-grade corporate bonds increase from 10.2 percent in 1988:3 to 10.7 percent in 1989:3. They are about half of one percentage point above the corresponding figures in the June survey. The range for 1989:3 is 9.5 to 12.5 percent.

Gains in Net Exports, Business Investment, and Industrial Production

Net exports of goods and services in billions of 1982 dollars are expected to average -84 in 1988:3 and -65 in 1989:3, -90 for 1988 a a whole, and -67.5 for 1989. These

figures imply reductions in the trade deficit of about 23–25 percent, a strong source of growth.

Nonresidential fixed investment, adjusted for expected inflation, is predicted to gain 10.4 percent in 1987–8, 3.6 percent in 1988:3–1989:3, and 5.4 percent in 1988–9. These growth rates are much higher than those expected for real GNP in the corresponding periods. Thus, although the boom in business capital formation cannot be maintained, this sector will remain relatively strong.

Most forecasters see inventory investment as fluctuating around its recent levels, with some tendency to decline. A few predict that it will rise vigorously; none expect it to turn negative.

The index of industrial production will gain as much as 5.5 percent in 1987–8, and 3.0 percent in 1988:3–1989:3, and 2.9 percent in 1988–9, according to the median forecasts. These are all upward revisions from the June survey. Here, too, a slowdown from the near-boom pace is widely expected, but only three respondents foresee declines.

A Mild Decline in Housing, Slow Growth of Consumption

The outlook for housing is slightly worse than it was in the summer. New private starts are expected to decline by 6.7 percent in the year ahead to an average annual rate of 1.4 million units in 1989:3. The annual figures for 1988 and 1989 show a smaller loss (3.6 percent). Residential fixed investment in 1982 dollars is predicted to be down 2.9 percent in 1987–8, 1.6 percent in 1988:3–1989:3, and only 0.8 percent in 1988–9.

Real consumption expenditures are predicted to gain 2.4 percent in 1987–8, 1.9 percent in 1988:3–1989:3, and 2.0 percent in 1988–9. The median forecast for this year is higher than it was three months ago, but the forecast for 1989 is unchanged.

Government Spending Restrained, Policy Assumptions Vary

Federal government purchases of goods and services, in constant dollars, are expected to decline 2.1 percent in 1987–8. They should rise 2.1 percent in 1988:3–1989:3 and 2.4 percent in 1988–9, according to the group's median predictions. State and local governments will spend 2.6 percent more in 1988 than in 1987, and 2.0 percent more in 1989 than in 1988, according to the forecasts.

Nine of the survey participants expect "no significant changes" in tax policy before 1990. Other individual responses specify increases of 5–10 percent in tax rates and $40 billion in tax revenues over 1989–90. Most respondents see either no change or small decreases in defense outlays. The assumptions on monetary policy and the dollar vary greatly (for example, five respondents see M1 growing 4–5 percent in 1989, while five predict 6–10 percent growth).

Profits Expected to Rise Less in the Year Ahead

According to the forecasters, corporate profits after taxes in current dollars will rise 8.5 percent in 1987–8, more than the expected growth of nominal GNP (7.1 percent). The average gains expected for 1988:3–1989:3 and 1988–9 are 4.8 percent and 4.2 percent, respectively. These figures are not very different from the forecasts in June and they are lower than their counterparts for GNP (6.4 percent and 6.7 percent).

NBER Profiles

Alberto Giovannini

Alberto Giovannini is a faculty research fellow in the NBER's international studies program and a 1987–8 NBER Olin Fellow.

Born in Italy, Giovannini received his undergraduate degree in economics from the University of Bologna in

1978 and his Ph.D. in economics from MIT in 1984. He became an assistant professor at Columbia University's Graduate School of Business in 1983 and was promoted to associate professor there in 1987. He has taught international business, banking, and financial management and monetary theory.

Giovannini also has served as a consultant to The World Bank and as a member of the Italian Macroeconomic Policy Group. His articles have been published in a number of journals, and a book (coauthored with Francesco Giavazzi) entitled *Limiting Exchange Rate Flexibility: The European Monetary System* is forthcoming from The MIT Press.

Giovannini and his wife, Patrizia Cavazzini, live in New York City. Following the lead of his wife, who is a Ph.D. candidate in art history, Giovannini is interested in baroque architecture. They particularly enjoy studying the treasures of Italy's cities.

Christina D. Romer

Christina D. Romer is a faculty research fellow in the NBER's Program in Economic Fluctuations and was an NBER Olin Fellow in 1987–8. Romer received her B.A. with honors in economics from the College of William and Mary in 1981 and her Ph.D in economics from MIT in 1985. From 1985–8 she was an assistant professor of economics and public affairs at Princeton University's Woodrow Wilson School. In 1988 she was named acting associate professor of economics at the University of California, Berkeley.
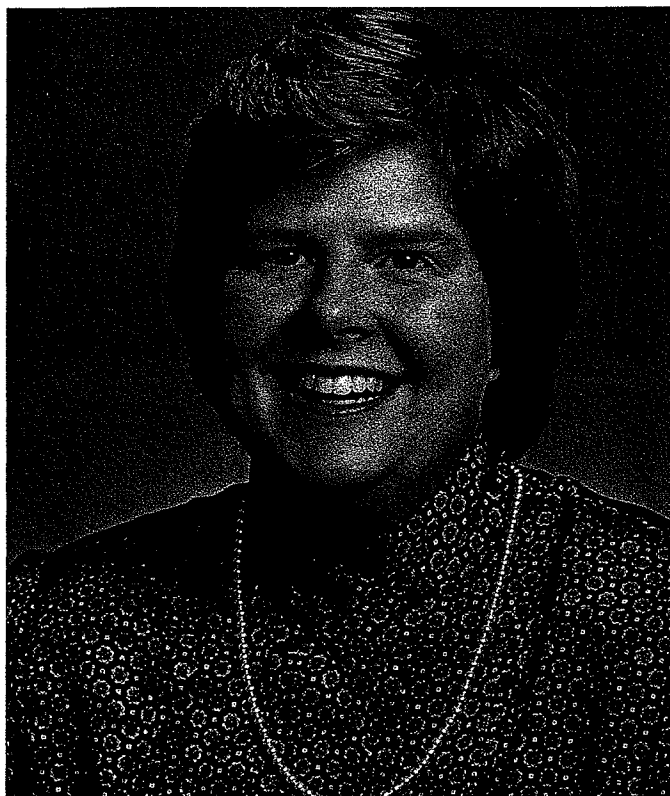
Romer is a member of the Board of Advisors to the College of William and Mary's Public Policy Program. Her research on business cycles and macroeconomic history has been published in the *Journal of Political Economy, American Economic Review, Journal of Economic History,* and *Journal of Monetary Economics.*

Romer's husband, David, is also an economist. (He was profiled in the Summer 1988 *NBER Reporter.*) They and their two-year-old daughter Katie recently moved to Berkeley.

Conferences

The Economics of Aging

The NBER's Project on the Economics of Aging held a conference in Phoenix, AZ on May 20–21. The program, organized by Project Director David A. Wise of Harvard University, was:

HOUSING AND LIVING ARRANGEMENTS

Steven F. Venti, NBER and Dartmouth College, and David A. Wise, "But They Don't Want to Reduce Housing Equity"
Discussant: Alan J. Auerbach, NBER and University of Pennsylvania

Jonathan Feinstein, Stanford University, Daniel L. McFadden, NBER and MIT, and Henry O. Pollakowski, Joint Center for Housing Studies, "The Dynamics of Housing Demand by the Elderly" (NBER Working Paper No. 2471)
Discussant: Michael D. Hurd, NBER and SUNY at Stony Brook

Axel Börsch-Supan, NBER and University of Dortmund, "Elderly Americans: A Dynamic Analysis of Household Dissolution and Living Arrangement Transitions" (NBER Working Paper No. 2338)
Discussant: Herman B. Leonard, NBER and Harvard University

David T. Ellwood, NBER and Harvard University, and Thomas Kane, Harvard University, "As We Age: An Event History of the Retirement Years"
Discussant: James Schultz, Brandeis University

HEALTH CARE

Alan M. Garber and Thomas E. MaCurdy, both of NBER and Stanford University, "New Measures of Nursing Home Utilization"
Discussant: Joseph P. Newhouse, The Rand Corporation

Laurence J. Kotlikoff, NBER and Boston University, and John Morris, Hebrew Rehabilitation Center for the Aged, "Testing Altruism with Extended Family Data"
Discussant: Axel Börsch-Supan

LABOR FORCE PARTICIPATION AND RETIREMENT

James H. Stock, NBER and Harvard University, and David A. Wise, "The Pension Inducement to Retire: An Option Value Analysis" (NBER Working Paper No. 2686)
Discussant: Edward P. Lazear, NBER, University of Chicago, and The Hoover Institution

John Rust, NBER and University of Wisconsin, "A Dynamic Programming Model of Retirement Behavior: Empirical Results"
Discussant: Angus Deaton, NBER and Princeton University

Michael D. Hurd, "The Joint Retirement Decisions of Husbands and Wives"
Discussant: Gary Burtless, The Brookings Institution

B. Douglas Bernheim, NBER and Stanford University, "How Do the Elderly Form Expectations?"
Discussant: Sherwin Rosen, NBER and University of Chicago

Edward P. Lazear, "Adjusting to an Aging Labor Force"
Discussant: Finis Welch, University of California at Los Angeles

Housing and Living Arrangements

For the elderly, housing represents one of the largest expenditures and one of the largest investments. The NBER's research on the housing and living arrangements of the elderly focuses on decisions about owning versus renting, living alone or with others, and similar issues.

Venti and Wise develop a model of the decision to move from one accommodation to another. According to their model, people will move if the gain from moving is greater than the financial and psychological transaction costs of moving. Comparing their estimates of optimal housing equity with actual housing equity, Venti and Wise find that the elderly on average would like to increase the amount of their total wealth allocated to housing by about 5 percent. The average difference between optimal and actual housing equity is about $7500 for those who stay in their homes and about $10,500 for those who move, suggesting substantial transaction costs.

Feinstein, McFadden, and Pollakowski also study housing costs and mobility of the elderly. They estimate housing price indexes, using price equations that account for differences in housing characteristics. Then they estimate the user cost of housing based on housing prices, mortgage rates, and the tax treatment of housing expenditures.

Börsch-Supan investigates changes in living arrange-

ments, such as moving from independent housing to shared housing, or from one's home to an institution. He finds that living arrangements are quite stable over time, and that individuals spend most of their lives on their own. However, from 1968 to 1984, the likelihood of sharing accommodations with relatives or friends decreased.

Venti and Wise and Börsch-Supan find that changes in housing or living arrangements occur most frequently after a change in retirement, marital, or health status. According to Venti and Wise, the overall probability of moving in a given year is about 8 percent, but after a change in retirement or family status the probability is about 15 percent. According to Börsch-Supan, changes in the type of living arrangement most frequently follow the death of a spouse.

Kane and Ellwood construct a model with profiles of people over age 65 that include descriptions of living arrangements, economic status, health and disability, and marital status. They report that men who are unmarried or have a low income at age 65 are more likely to die, become disabled, or be institutionalized in the future than married or wealthier men. These patterns are less extreme for women. Kane and Ellwood also observe that a large portion of widows who are poor at age 80 have been widows since they were age 65 or younger.

Health Care

While the elderly receive substantial public assistance with their medical expenses, they receive much less assistance with long-term care. Disabled elderly who need help with activities of daily living—such as dressing, eating, bathing, or cleaning—rely on nursing homes, home health care, and informal assistance from family and friends. The NBER's research in this area focuses on utilization of nursing homes and family support for long-term care.

Garber and MaCurdy investigate the probability of entering or leaving nursing homes. They find that the probability of moving from a nursing home to the community is higher for married persons, homeowners, and parents. From the opposite perspective, the probability of moving from the community to a nursing home is lower for most of the same groups.

Kotlikoff and Morris analyze how characteristics of adult children affect the living situation of their elderly parents. They find that almost half of elderly parents prefer to live with their children, but that less than a quarter of children prefer to live with their elderly parents. Income is an important factor in determining living arrangements among the very poor, but it is not particularly important for other families.

Labor Force Participation and Retirement

While many studies have explored the influence of the Social Security system on retirement, much less work has been conducted on the incentives in private

pension plans. Stock and Wise analyze the retirement incentives in a *Fortune* 500 firm's pension provisions. They predict retirement rates based on emloyees' total compensation, taking account of current salary, and future pension and Social Security benefits. They find strong retirement incentives in the pension plan provisions, especially in the provisions for early retirement. These provisions have a much larger effect on retirement than changes in the Social Security provisions do. Increasing the private pension's early retirement age from 55 to 60, for example, would decrease the number of employees retiring before age 60 by almost 40 percent.

Rust considers numerous factors that affect people's retirement decisions, including wealth, income, health, age, and marital status. He finds that most people work either zero hours (are retired) or 2000 hours (full time) per year. While the aggregate data show a smooth transition from work to retirement, individuals typically experience abrupt changes in employment.

Hurd examines whether couples typically coordinate the dates of their retirement. Coordination of retirement could result from financial incentives (such as eligibility for Social Security benefits), attraction between people with similar work–leisure preferences, or additional utility from mutual rather than individual retirement. Hurd looks at retirement among working couples at age 65 and finds that 6–7 percent retire on the same day, and 20–25 percent retire within a year of each other. The greater the difference in age between the husband and wife, the more disparate are their retirement dates.

Bernheim investigates how expectations of retirement benefits change with new information about one's health, marital status, job, living arrangement, wealth, or Social Security entitlement. He finds that people make "rational" changes in their expectations in response to new information. New information has a particularly strong effect as people approach retirement and their need for retirement benefits becomes more immediate.

Lazear explores some general implications of an aging labor force. Since older wokers are paid more than younger workers, an older labor force will have a higher wage cost than a younger labor force. Whether this is a problem depends on the relationship between wages and productivity. Lazear analyzes this question using a labor compensation model in which workers are underpaid when young and overpaid when old. Lazear argues further that firms will manage their debt to older workers using a pay-as-you-go system in which savings on younger workers are used for the excess payment of older workers. With an aging labor force, however, the debt to older workers will be larger than the savings on younger workers. Lazear concludes that firms must either go bankrupt, default on their implicit contract with older workers, pay new workers even less, or induce workers to retire earlier.

These papers will appear in an NBER Conference Volume to be published by the University of Chicago Press. Its availability will be announced in a future issue of the *NBER Reporter.*

Dynamic Aspects of Firm and Industry Behavior

The NBER held a conference on Dynamic Aspects of Firm and Industry Behavior in Cambridge on June 2–3. Although the papers covered diverse industries, all of them used firm- or establishment-level data to study changes in productivity and/or economic efficiency over time. Several focused on the relationship between industry entry and exit and productivity, while others analyzed the dynamic processes that generate productivity growth within firms. Research Associates Timothy Bresnahan, Stanford University; Jonathan S. Leonard, University of California at Berkeley; and Ariel Pakes, University of Wisconsin, planned the following program:

Richard Ericson, Columbia University, and Ariel Pakes, "Empirical Implications of Alternative Models of Firm Dynamics"
Discussant: Boyan Jovanovic, New York University

Lance Davis, NBER and California Institute of Technology; Robert E. Gallman, NBER and University of North Carolina; and Teresa Hutchins, University of North Carolina, "Productivity in American Whaling: The New Bedford Fleet in the Nineteenth Century" (NBER Working Paper No. 2477)
Discussant: Sidney G. Winter, Yale University

Marthy Schary, Boston University, "The Probability of Exit"
Discussant: Daniel Sullivan, NBER and Northwestern University

Peter C. Reiss, NBER and Stanford University, "Exploration as Research"
Discussant: John Londregan, Carnegie-Mellon University

David J. Ravenscraft, University of North Carolina, and F. M. Scherer, Swarthmore College, "Divisional Sell-Off: A Hazard Function Analysis"
Discussant: Richard C. Levin, NBER and Yale University

Randall Mørck, University of Alberta, and Andrei Shleifer and Robert Vishny, NBER and University of Chicago, "Alternative Mechanisms for Corporate Control" (NBER Working Paper No. 2532)
Discussant: Glenn MacDonald, University of Western Ontario

Timothy Bresnahan and Peter C. Reiss, "What Kinds of Markets Tend to Monopoly?"
Discussant: Stephen Berry, University of Wisconsin

Sarah Lane, Stanford University, "Entry and Competition in the ATM Manufacturers' Market"
Discussant: Debra Aron, NBER and Northwestern University

Marvin Lieberman, Stanford University, "The Learning Curve, Barriers to Entry, and Competitive Survival in the Chemical Processing Industries"
Discussant: Kim B. Clark, NBER and Harvard University

John R. Baldwin, Queen's University, and Paul Gorecki, Economic Council of Canada, "Measures of Market Structure: Mobility versus Concentration Statistics"
Discussant: Steve Cameron, National Opinion Research Center (University of Chicago)

Jonathan S. Leonard, "Firm and Establishment Growth and Stability"
Discussant: Steven Davis, University of Chicago

Mark Schankerman, NBER and London School of Economics, "Micro and Aggregate Shocks to Investment Decisions"
Discussant: R. Glenn Hubbard, NBER and Columbia University

Ericson and Pakes consider two models for analyzing the dynamics of firm behavior. Both models allow for idiosyncratic (or firm-specific) sources of inefficiency, uncertainty, and discrete outcomes (exit and/or entry). These characteristics are necessary for studying the behavior of capital markets when there are significant probabilities of failure, or of productivity movements in industries where firms that become more productive thrive and grow and those that do not decline and, in the extreme case, exit. In one model, firms learn about the profitability of a given market niche; in the other, firms undertake exploratory investments and their outcomes, with the investments of other firms in the market, determine the evolution of their profits. Ericson and Pakes use an eight-year panel of data on Wisconsin firms and find that one model is consistent with the data for manufacturing, while the other is consistent with the data for retail trade.

The collapse of the whaling industry in America was believed to be caused in part by declining productivity, occasioned by the disappearance of the whales (because of overhunting) and deterioration in the quality of whaling labor. Davis, Gallman, and Hutchins use productivity data by voyage to trace the relationships between the changes in the composition of the fleet and productivity. They test the proposition that declining labor quality and whale stocks, along with technical changes, affected productivity. They find that the declining quality of labor may have been partly responsible for declining productivity. However, rapid technical progress after 1865 caused productivity to rise again.

A firm may leave an industry in at least three ways: through bankruptcy, merger, or liquidation. Schary argues that to predict the probability of any type of exit without sample selection bias, the model and dataset must include all three forms of exit. Using data from the cotton textile industry, Schary finds that all exits have a common economic motivation: for example, financial distress or merger aimed at product/brand name acquisition.

Reiss studies the dynamics of exploration and development activities in the oil and gas industry from 1978–86. He formulates a model of exploration as a dynamic research activity to explain how firms should repond to changes in the prices of oil and gas. The model also explains why some firms choose to focus more on development than on research. Using panel data on 44 oil and gas firms, Reiss finds that exploration activities are subject to increasing returns; exploration is much less responsive to variations in final oil and gas prices for large firms than for small firms. In contrast, development activities are subject to diminishing returns and appear to be relatively insensitive to movements in prices. On average, the return to exploratory drilling appears to be much higher than the return on development drilling.

Ravenscraft and Scherer consider a sample of large corporations to determine the environmental and organizational variables that precipitate the "sell-off" of divisional units. They focus on 258 "lines of business" that were fully divested between 1975 and 1981, comparing them to 2451 lines that were retained and 294 that were divested only partially. Ravencraft and Scherer find that the lower the profits of a business line, the higher is the probability of a sell-off. Divestiture is also more likely as the companywide profitability, the line's market share, and the line's ratio of R and D to sales decline, and in the aftermath of a change in the chief executive officer. Units previously acquired in conglomerate mergers are more likely to be sold off than original units. On the buyer's side of the sell-off market, large companies acquiring other firms' divested units tend to improve the units' profitability, but not enough on average to realize a normal return on their investments.

Mørck, Shleifer, and Vishny examine the performance and management characteristics of Fortune 500 firms experiencing one of three types of control change: internally precipitated management turnover, hostile takeover, and friendly takeover. They find that firms experiencing management turnover perform poorly relative to other firms in their industries but are not concentrated in poorly performing industries. In contrast, targets of hostile takeovers are concentrated in troubled industries. There is also weaker evidence that targets of hostile takeovers underperform their industry peers; the board of directors may fire managers whose leadership results in poor performance relative to the industry, but an external challenge (in the form of a hostile takeover) often is required when the whole industry is in decline. Also, firms run by a member of the founding family are less likely to experience either

top management turnover or a hostile takeover. On the other hand, firms whose top management team is dominated by a single, relatively young top executive are more likely to experience a hostile takeover.

A primary determinant of long-run competition and performance is the number of firms in a market. Yet some markets have few firms, either because strategic behavior limits entry or because of scale economies. Bresnahan and Reiss assess the relative importance of these two barriers for 13 retail and professional industries using data on local geographic markets. They find that, in general, strategic behavior is important in professional occupations (doctors, dentists, and so on) while economies of scale affect retail and manufacturing industries. Sunk costs (for example, of education) may explain the apparent strategic behavior of professional occupations, but regulatory and statistical explanations are unimportant.

Lane asks how previous production experience influences the patterns of entry, exit, and market share in the evolution of a new industry. She studies the manufacture of automatic teller machines (ATMs) from the date of their first production and finds that the pattern of entry and market share dominance of diversified firms in the ATM market arises in part from the advantages of production experience. Long-lived assets, acquired in the manufacture of computers and safe or security products, are important both for the decision to enter the market and for the resulting market share. Size alone does not confer advantages for entry into this market.

Lieberman evaluates rates of new entry and competitive survival in a sample of 39 chemical product industries. Previous studies have shown that costs follow a learning curve in these industries; this paper assesses the extent to which the learning curve creates barriers to entry or gives incumbent producers a survival advantage. Lieberman finds no evidence that entry decisions are sensitive to the cumulative production lead held by incumbents. Entrants typically can license production technology from a range of sources. Entrant survival rates are unrelated to order of entry or to the source of process technology. However, survival is affected adversely when the most experienced incumbent has a large lead in cumulative output, or when new entrants build plants of suboptimal scale. Thus, a large lead in production experience by an incumbent does not deter new entry but does reduce the entrant's probability of survival.

Baldwin and Gorecki examine the importance of entry, exit, and firm mobility in the Canadian manufacturing sector during the 1970s. They also ask whether these measures yield different information about market structure than traditional measures of concentration. The entry and mobility measures depict a system undergoing substantial change, in contrast to the concentration statistics, which remained relatively constant during the decade. Firm exits via plant closure accounted for 20 percent of unemployent in 1970; employment re-

ductions in declining firms accounted for another 10 percent. In addition, there were substantial shifts in the relative rankings of firms within industries over the decade.

Leonard presents new empirical evidence on patterns of firm and establishment growth and stability among large private U.S. firms in the late 1970s and early 1980s. He shows that models of transient shocks, rather than of chronic success or failure, adequately characterize most employers. At both the firm and the establishment level, persistent growth or decline is rare, neither shocks nor adjustments appear long lived, and the past is of little use in predicting future growth. Corporate structure is less important than the level of technology in the production process and skill-intensive establishments enjoy a competitive advantage. Not only are establishments' and firms' growth rates unlike their own previous manifestations, but they are also unlike those of other firms and establishments in the same industry or region. This suggests the importance of frictional unemployment.

Schankerman investigates the degree of synchronization across firms in capital investment decisions. He shows that revisions of investment plans indicate that innovations influence the investment decision. Using annual survey data on 318 U.S. firms for 1950-73, Schankerman finds that industry and aggregate shocks do not account for much of the change in investment decisions by firms. Investment revisions and the stock market rate of return to the firm, q, at the micro level are correlated positively with the "news" in sales and current profitability and negatively with the "news" in factor prices. These associations account for between one-third and one-half of the overall covariance between investment revisions and q.

Also attending the conference were: Thomas A. Abbott III and Robert McGuckin, U.S. Bureau of the Census; Geoffrey Carliner, NBER; Dennis W. Carlton, University of Chicago; Richard E. Caves, Harvard University; Roger H. Gordon, NBER and University of Michigan; Zvi Griliches, NBER and Harvard University; Bronwyn H. Hall, University of California at Berkeley; John Hause and Hugo Hopenhayn, Stanford University; Thomas Holmes, University of Wisconsin; Saul Lach, New York University; Robert H. Porter, NBER and Northwestern University; and Garth Saloner, MIT.

The Future of the Welfare State

The NBER and the London School of Economics (LSE) cosponsored a "Transatlantic Public Economics Seminar on the Future of the Welfare State" on June

3-4 in London. NBER Research Associates David F. Bradford, Princeton University, and Mervyn A. King, LSE, organized the following program:

Anthony B. Atkinson, LSE, and François Bourguignon, Ecole des Hautes Etudes en Sciences Sociales, "The Design of Family Budgets: The Experience of Britain and France"
Discussants: Jerry A. Hausman, NBER and MIT, and Hans-Werner Sinn, University of Munich

Alan B. Krueger, NBER and Princeton University, "Workers' Compensation Insurance and Income Replacement"
Discussants: A. J. M. Hagenaars, Erasmus University, and Pierre-André Chiappori, CEPREMAP

Robert A. Moffitt, NBER and Brown University, "The Effect of AFDC on Marital Breakup"
Discussants: David T. Ellwood, NBER and Harvard University, and David F. Bradford

Lawrence F. Katz, NBER and Harvard University, and Bruce D. Meyer, NBER and Northwestern University, "The Influence of Potential Benefit Duration under Employment Insurance"
Discussants: Gary T. Burtless, The Brookings Institution, and Joanna Gumulka, LSE

Niels Westergard-Nielsen, Handelshoyskolen i Aarhus, "Effects of Unemployment on Future Labor Market Anticipation"
Discussants: James M. Poterba, NBER and MIT, and Barbara L. Wolfe, NBER and University of Wisconsin

Panel Discussion: Anthony B. Atkinson, François Bourguignon, and Mervyn A. King, "Social Security and Tax Reform in the United Kingdom and France"

Martin Feldstein, NBER and Harvard University, "Should Social Security Benefits Increase with Age?" (NBER Working Paper No. 2200)
Discussants: John S. Flemming, Bank of England, and Efraim Sadka, Tel Aviv University

Julian Le Grand and David Winter, LSE, "The Use of Bureaucratic Mechanisms to Achieve Equality"
Discussants: Rebecca M. Blank, NBER and Princeton University, and Mervyn A. King

Atkinson and Bourguignon compare the system of income support for children and the taxation of families in Britain and France. Both countries have child benefits, but France also gives fiscal advantages to families with children, thus reducing the tax burden that arises from its highly graduated rate structure (from 5 percent to 60 percent). Atkinson and Bourguignon examine the implications of France's adopting a British-style system with a linear income tax and intercepts differing by family type. Using a model of 1,990 wage-earning families that disregards changes in gross income or differences in family size, the authors estimate that a tax rate of about 31 percent will increase the share of income received by all but the highest income group (top 5 percent). Taking account of family size, the required tax rate would be about 33 percent.

Krueger uses the U.S. Current Population Survey (CPS) to estimate the determinants of participation in state workers' compensation programs in the United States. Workers' compensation insurance provides benefits to workers who incur a work-related injury or illness. Krueger shows that a 10 percent increase in benefits would lead to a 4.8 increase in the number of beneficiaries. This suggests that higher benefits may induce workers and firms to reduce the level of on-the-job safety and therefore may increase the frequency of work injuries. Alternatively, higher benefits instead may induce workers to file fraudulent claims, or to file claims for disabilities that would have occurred but would not have been reported. Krueger also finds that employees are less likely to enter the workers' compensation program if a state requires a longer waiting period before benefit payments begin. An increase in the waiting period from four days to seven days reduces the rate of applications for workers' compensation by about 30 percent.

The major cash transfer welfare program in the United States, AFDC (Aid to Families with Dependent Children), provides benefits only to women heading families with no able-bodied male present. Using the CPS, Moffitt finds that higher levels of transfers have negative effects on marriage probabilities for both men and women and for both whites and blacks. However, the data are not sufficient to separate these effects into those on marital formations and those on marital dissolutions.

Katz and Meyer examine how the number of weeks of unemployment insurance (UI) benefits affects the duration of unemployment and the timing of reemployment in the United States, They find sharp increases in the rate of escape from unemployment, both through recalls and through acceptances of new jobs for UI recipients, at about the time when benefits are likely to lapse. The absence of such "spikes" in the escape rate from unemployment for nonrecipients strongly suggests that the potential duration of UI benefits affects firm recall policies and workers' willingness to start new jobs. Katz and Meyer also find that a one-week increase in the duration of potential benefits increases the average unemployment spell of a UI recipient by 0.16 to 0.20 weeks.

Westergard-Nielsen considers the consequences of wage differentials between the public and the private sectors. During the last few decades, the public sector has grown in many countries. This increase clearly has repercussions on the amount of tax pressure. One way to combine an increasing public sector share of employment with a constant ratio of taxes to GNP—since tax burden sets an ultimate limit on the growth of the welfare state—is to implement a "wage twist" policy that reduces the ratio of public to private sector wages. Westergard-Nielsen finds that in Denmark from 1976–84, there was such a decrease in relative public sector wages. For men, mobility between sectors is motivated by a low wage in the current job compared to one's qualifications. This is most apparent in transitions from the public to the private sector.

In the panel discussion, Bourguignon considered the prospects for reform of the French tax system. Presently characterized by a high tax burden (43 percent) and a low share of direct taxes, the system's largest component is a social security tax (20 percent), followed by a value-added tax and other taxes (15 percent). Income taxes represent only 7 percent of the tax burden. The income tax structure is extremely progressive, with many middle- and low-income individuals paying very little. Since 1981, there have been many changes in the tax system, including higher rates for the social security tax. Introduced as a "transitory tax" to finance a troubled social security system, these higher rates are still in effect, although the social security system is currently in surplus.

Atkinson discussed social security reform in the United Kingdom. He began by tracing the development of the British social security system from the Elizabethan poor laws onward. The poor laws made benefits conditional on family resources, and their stigmatizing effect led to real problems. The postwar period saw a move away from income testing to both social insurance, in which entitlement to benefits is a function of contributions and individual characteristics, and to categorical benefits, such as child benefits. In recent years, however, this progress has been arrested, as social security benefits have been made less attractive and income testing has expanded.

The recent trends raise a number of issues. First, monitoring the impact of changes is important. Second, an alternative form of "civilized" income testing might integrate the tax and benefit systems. However, the differing time periods involved in income tax and benefits, and the use of an individual base for taxation and a family base for benefits, could create problems. Another alternative to income testing is to revert to benefits based on characteristics of recipients.

King discussed the tax reform in the United Kingdom that was incorporated in the March 1988 budget. The reform reduced the number of tax brackets and lowered tax rates. It also introduced independent taxation for married couples. Independent taxation may limit the feasibility of progressive taxes, particularly for capital taxation, as progressivity can be avoided through transfers of property between spouses. Preventing temporary transfers for tax purposes and developing a proper legal system for the treatment of the property of married couples may become important issues. The tax reform also treats capital gains as income.

King concluded with two points. First, the question for policymakers is how to design not a comprehensive income tax system, but a hybrid system that makes sense, with fewer distortions and difficulties than the present system has. Second, economists can contribute to the policy debate by focusing on the distortions that really matter, or by doing the arithmetic required to estimate the impacts of reforms.

In his paper, Feldstein asks if Social Security benefits should vary with the age of the recipient. He finds that when everyone is myopic and has the same utility function, all retirees should receive the same benefit at each point in time. In an economy in which real wages rise with time, benefits rise as the individual ages. Second, egoistic rational life-cyclers prefer to postpone benefits until their later retirement years if and only if the "efficiency" of Social Security (the implicit return on Social Security relative to the return on private investments) is high enough relative to the probability of surviving from initial retirement at older age. When the "efficiency" of Social Security is low, they prefer benefits to be paid immediately upon retirement. Third, if the egoistic criterion is replaced with a social welfare function that takes into account the effect of Social Security benefits on the bequests to future generations, then steady-state social welfare is maximized by paying benefits only to young retirees, since shifting benefits to a earlier period increases savings and therefore unintended bequests.

Le Grand and Winter ask whether bureaucratic mechanisms can be relied upon to achieve distributional aims. Their paper examines three case studies of bureaucratic allocation: higher education in Poland; housing in Hungary; and health care in Britain. Assuming that bureaucrats will attempt to redefine needs in order to promote an allocation that serves their interests, this paper attempts to identify conditions under which such redefinitions will not occur.

This article was prepared with the assistance of Frances Wooley, LSE.

International Seminar on Macroeconomics

The eleventh annual International Seminar on Macroeconomics (ISOM) was held in Tokyo on June 7–8. ISOM is cosponsored by the National Bureau of Economic Research and the Maison des Sciences de l'Homme. This year it was also sponsored by the Institute of Fiscal and Monetary Policy of the Japanese Ministry of Finance and by the Foundation for Advanced Information and Research (FAIR)/Japan. ISOM is organized jointly by Robert J. Gordon of the NBER and Northwestern University and Georges de Ménil of the Ecole des Hautes Etudes en Sciences Sociales.

Among the topics discussed this year were: disequilibrium macroeconomic adjustment and the source of changes in unemployment and productivity; long-run consequences of trade imbalances; household saving behavior; determinants of budget deficits; and the relationship between the stock market and investment. The papers and their discussants were:

Guy Laroque, Institut National de la Statistique et des Etudes Economiques (INSEE), "Comparative Estimates of a Macroeconomic Disequilibrium Model: France, Germany, the United Kingdom, and the United States"
Discussants: Julio J. Rotemberg, NBER and MIT, and Jean Waelbroeck, Free University of Brussels

J. Bradford DeLong, NBER and Boston University, and Lars Jonung, Nationalekonomiska Institutionen, "The Origins of Hysteresis, the Corridor, and the Political Economy of Full Employment in the OECD, 1955–1986"
Discussants: Jeffrey D. Sachs, NBER and Harvard University, and Frank D. Weiss, Keil Institute of World Economics

Paul R. Krugman, NBER and MIT, "Differences in Income Elasticities and Secular Trends in Exchange Rates"
Discussants: Kazumasa Iwata, University of Tokyo, and Klaus Schatz, Kiel Institute of World Economics

Koichi Hamada, NBER and Yale University, and Kazumasa Iwata, "Studies of International Capital Ownership in the Early Twenty-First Century"
Discussants: Paul R. Krugman, and Giorgio Basevi, Universita de Bologna

Tsuneo Ishikawa, University of Tokyo, "The Saving Behavior of Japanese Households: Evaluation of the Recent Experience and Comparison with the U.S. Experience"
Discussants: Fumio Hayashi, NBER and University of Pennsylvania, and Kazuo Ogawa, Kobe University

Fumio Ohtake and Hiroshi Yoshikawa, both of Osaka University, "An Analysis of Female Labor Supply, Housing, Investment, and the Saving Rate in Japan"
Discussants: Robert Dekle, Harvard University, and Jacques Mairesse, ENSAE

Sushil Wadhwani and Mark Mullins, both of London School of Economics, "The Stock Market and Investment: A Comparative Study"
Discussants: Stanley Fischer, NBER, World Bank, and MIT, and Koichi Hamada

Julio J. Rotemberg, and Lawrence H. Summers, NBER and Harvard University, "The Cyclical Behavior of Productivity: An International Comparison"
Discussants: Guy Laroque, and Toshiaka Tachibanaki, Kyoto University

Jeffrey D. Sachs, and Nouriel Roubini, Yale University, "Political and Economic Determinants of Budget Deficits in the Industrial Democracies" (NBER Working Paper No. 2682)
Discussants: Robert J. Gordon, and Isao Kubota, Japan Ministry of Finance

Laroque provides comparative estimates of a two-market disequilibrium model for France, Germany, the United Kingdom, and the United States, from 1965:4 to 1985:4. Changes in productivity are related to changes in regimes. The two macroeconomic markets for goods and labor are split into an infinite number of micromarkets. Laroque finds sharp differences between the European countries and the United States, at least since the first oil shock. In both cases, the recession periods were characterized by Keynesian unemployment, but in the United States, the booms were constrained by full employment and repressed inflation, while in Europe they were associated with classical unemployment, with long lags in the demand for labor, preventing the emergence of full employment. The demand for labor is rather insensitive to wages in all countries so, according to these models, wage policy does not have much impact on unemployment.

DeLong and Jonung examine the persistently high levels of unemployment in many industrial economies today. The persistence of unemployment shocks in the 1970s and 1980s, and the apparent lack of persistence of such shocks in prior decades, suggests that many OECD economies underwent a substantial structural change sometime in the 1970s. They assume that for economies close to full employment, unemployment reverts to a natural rate. For other economies, self-stabilizing forces may be weak and shocks to unemployment may persist. Indeed, DeLong and Jonung find empirical support for this theory in many OECD economies in the 1970s. Next, they examine cross-country differences in unemployment. They find that economies like the United States, with industrial relations systems characterized as "liberal" and low unionization rates, or like Sweden, with "corporatist" systems and high unionization rates, tend to have lower unemployment rates than economies like Britain and France whose industrial relations systems fall between the "liberal" and "corporatist" types and with intermediate levels of unionization.

Trade balance analysis predicts that countries will experience secular real appreciation or depreciation whenever there is a difference between the income elasticities of export and import demand or a difference between their rate of growth and that of their trading partners. Krugman points out that differences in income elasticities are correlated with differences in growth rates in a way that makes secular real changes in the exchange rate unnecessary. Thus, Japan, which grows much faster than other industrial nations, appears to face a high income elasticity of export demand and to have a low elasticity of import demand, so that it does not have to make its goods continually cheaper in order to balance its trade.

Hamada and Iwata study the trends of current accounts and accompanying capital movements and predict the credit–debt structure in the United States, Japan, and West Germany in the long run (at the turn of the twenty-first century). They contrast the traditional view, that capital moves to equate its rate of return across countries, with the "habitat" view of Feldstein and Horioka, that the supply of saving creates its own demand where it is generated. Data for the United States, Japan, and West Germany indicate that past movements

of national saving and investment generally support the habitat view. The rapid increase in the U.S. foreign debt may imply, however, that the theory of capital movements based on growth accounting will be valid in the future. Hamada and Iwata show that the ratio of external debt to capital stock in the United States will rise to 30–40 percent over the long run unless saving returns to its 1970s levels.

Despite a decline in the growth rate of real income, the Japanese household saving rate in recent years remains high compared with that of the United States. Ishikawa asks what factors are responsible, including the rise in land prices, the bonus payment system, and the high saving rate of the elderly. He shows that the saving promotion tax schemes that have been in effect until very recently have not played much of a role in raising the saving rate. The substantial improvement, both in terms of coverage and in the level of benefits, of the Japanese pension system since the mid-1970s is associated with a continued decline in the labor force participation of the aged, but it does not seem to have affected their saving behavior. Ishikawa confirms the presence of an offsetting force that increases saving when shocks decrease employment.

Yoshikawa and Ohtake examine Japanese personal savings and female labor supply in relation to housing demand. They emphasize the fact that owner-occupied and rental housing are very imperfect substitutes in Japan. Some households are discouraged from seeking to move into owner-occupied housing when, for example, the husbands' permanent income declines and/or the price of land increases. Their results confirm the importance of the switch of tenure choice in determining the household's saving rate.

Mullins and Wadhwani examine whether exogenous events whose only direct effect is to change stock prices can affect corporate investment indirectly through the stock price mechanism. They argue that the actual effect of share price changes depends on institutional considerations that affect the degree of managerial autonomy: for example, use of the takeover mechanism; the size of the quoted sector; leverage ratios; and the role of employees in corporate decisionmaking. Therefore, it would be reasonable to expect the stock market to be less influential in Japan or Germany than in the United States or United Kingdom. Indeed, allowing for other influences on investment, share prices provide no *additional* explanatory power for investment behavior in Japan or Germany. On the other hand, they do affect investment in the United Kingdom or United States, albeit only moderately.

Rotemberg and Summers show that, even with perfect competition, a small amount of price rigidity makes the extent of procyclical productivity depend mainly on the extent of labor hoarding. They assume firms must set prices slightly before the level of demand becomes known. They go on to show that whether productivity is measured via the Solow method, using labor's share in revenues, or by other methods, it tends to be more procyclical in industries and in nations where labor hoarding is more important.

Sachs and Roubini attempt to determine the economic and political forces that lead to large government budget deficits. They find that differing political institutions in the various OECD economies help to explain the markedly different patterns of budget deficits in the different countries. They stress that governments are not the monolithic entities of standard economic models with full control of the policy instruments, managing them according to a stable and well-defined objective function. When power is dispersed, either across branches of government (as in the United States), or across many political parties in a coalition government (as in Italy), or across parties through the alteration of political control over time, inefficient budgetary policy is more likely. Thus, the size and persistence of budget deficits in the industrial countries in the past decade is greatest where there have been divided governments (for example, multiparty coalitions rather than majority-party governments).

The conference also included a roundtable discussion on Japan's current account surplus and its relationship with less-developed countries. The discussion centered around a short paper written by Stanley Fischer, "Changing Patterns of International Financial Flows." The floor discussion was initiated by Haruhiko Kuroda, Director, Ministry of Finance.

Selected papers from ISOM 1988 will be published in the *European Economic Review* in mid-1989.

Conference Calendar

Each *NBER Reporter* includes a calendar of upcoming conferences and other meetings that are of interest to large numbers of economists (especially in academia) or to smaller groups of economists concentrated in certain fields (such as labor, taxation, finance). The calendar is primarily intended to assist those who plan conferences and meetings, to avoid conflicts. **All activities listed should be considered to be "by invitation only," except where indicated otherwise in footnotes.**

Organizations wishing to have meetings listed in the Conference Calendar should send information, comparable to that given below, to Conference Calendar, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. Please also

provide a short (fewer than fifty words) description of the meetings for use in determining whether listings are appropriate for inclusion. The deadline for receipt of material to be included in the Winter 1988/9 issue of the *Reporter* is December 1. If you have any questions about procedures for submitting materials for the calendar, please call Kirsten Foss Davis at (617) 868-3900.

November 15, 1988
Tax Policy and the Economy, NBER

November 16-17, 1988
Compensation Policy and Firm Performance, NBER

November 18, 1988
Program Meeting: Labor Studies, NBER

November 20-22, 1988
Annual Meeting, Southern Economic Association*

December 1-2, 1988
Program Meeting: Taxation, NBER

December 1-2, 1988
Special Brookings Papers Meeting, Brookings Institution

December 9, 1988
Program Meeting: Productivity, NBER

December 16-17, 1988
Universities Research Conference: Financial Markets and Macroeconomic Stability, NBER

December 28-30, 1988
Annual Meeting, American Economic Association*

January 6-7, 1989
Conference on Savings, NBER

January 7-8, 1989
Labor Relations and Corporate Management: Comparative Perspective, NBER, Center for Economic Policy Research, and TCER

February 10, 1989
Program Meeting: Economic Fluctuations, NBER

February 23-26, 1989
Conference on International Taxation, NBER

February 24, 1989
Program Meeting: Financial Markets and Monetary Economics, NBER

March 10-11, 1989
Annual Conference on Macroeconomics, NBER

March 16-19, 1989
Stock Market Volatility and the Crash, NBER

March 30-31, 1989
Second Annual Interamerican Seminar on Macroeconomics, NBER

August 14-17, 1989
Joint Statistical Meetings, American Statistical Association*

September 17-20, 1989
Annual Meeting, National Association of Business Economists*

Open conference, subject to rules of the sponsoring organization.

October 4-7, 1989
19th (Biannual) Conference, Center for International Research on Economic Tendency Surveys

October 8-11, 1989
82nd Annual Conference, National Tax Association-Tax Institute of America*

November 19-21, 1989
Annual Meeting, Southern Economic Association*

November 30-December 2, 1989
Conference on the Economics of Art Museums, NBER

September 23-26, 1990
Annual Meeting, National Association of Business Economists*

October 18-21, 1990
Conference on American Economic Policy, NBER

March 21-24, 1991
Conference on Economic Crisis, NBER

September 22-25, 1991
Annual Meeting, National Association of Business Economists*

September 15-18, 1992
Annual Meeting, National Association of Business Economists*

September 19-23, 1993
Annual Meeting, National Association of Business Economists*

Open conference, subject to rules of the sponsoring organization.

Bureau News

A Decade of Bureau Books

A Decade of NBER Books, 1979-1988 is the first annual catalogue of papers included in NBER books. During the past ten years, the NBER has published 17 monographs and 79 edited volumes containing over 835 papers by 807 individual authors. Some of these volumes are designed to describe the results of the Bureau's research to a wide audience outside of academe, but most of these books bring together scientific studies by eight to twelve authors on several aspects of a specific issue.

This catalogue contains the tables of contents of all Bureau books published between 1979 and 1988. An alphabetical index of authors, editors, and discussants appears at the end of the catalogue. There are also complete alphabetical listings of book and paper titles.

To order *A Decade of NBER Books,* write to: Publications Department, NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138.

Social Insurance: A Call for Papers

On April 28 and 29, 1989, the National Bureau of Economic Research will hold a conference in Cambridge on Social Insurance. The program, being organized by B. Douglas Bernheim of the NBER and Northwestern University, will consist of eight papers with two formal discussants for each paper. There will be no published proceedings, but the conference will be summarized in the *NBER Reporter*.

The conference will be broad enough to accommodate a wide variety of issues related to social insurance. Papers dealing with the following topics are appropriate for the conference: the impact of federal deposit insurance on the banking industry; evaluations of proposals for reforming FDIC and FSLIC; alternatives to federal deposit insurance; the impact of Medicare and Medicaid on the cost of medical care; the adequacy of Medicare and Medicaid coverage; methods of controlling the costs of health care; the likely impact of extending federal coverage to nursing home, long-term, and catastrophic care; evaluations of proposals for National Health Insurance; unemployment insurance and the duration of unemployment; the impact of taxing unemployment benefits; the effect of Social Security on saving and retirement; the adequacy of Social Security benefits; the distributional impact of Social Security (across and within generations); the incidence of the payroll tax; demographic trends and the future of Social Security; the financial status of OASDI; and issues related to the provision of flood insurance and disaster relief.

Papers on other topics that can be interpreted as related to social insurance also will be considered. Possible topics would include: the effects of agricultural price supports; analyses of private insurance market failures; and the regulation of private insurance industries. Priority will be given to empirically oriented research, but submission of theoretical papers on these topics is also welcome.

Papers will be selected on the basis of abstracts of about 500 words or, when possible, complete papers. Preference will be given to papers submitted by younger members of the profession. Any research that will not have been published at the time of the conference may be submitted. The deadline for submission of abstracts and papers is January 13, 1989. Authors chosen to present papers will be notified by February 3, 1989. Finished papers must be ready for distribution to conference participants by March 17, 1989. The NBER will pay expenses of those chosen to give papers at the conference.

Abstracts and papers should be sent to Professor B. Douglas Bernheim, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138.

New Olin Fellows Named

The six NBER Olin Fellows for 1988–9 are: Kenneth A. Froot, Lawrence F. Katz, Bruce W. Lehmann, Andrew W. Lo, Jeffrey A. Miron, and Stephen P. Zeldes. Olin Fellows spend one year at NBER's Cambridge office doing empirical research and are free of all teaching and university responsibilities during that year. The Fellows Program is made possible by a grant from the John M. Olin Foundation.

Froot teaches at MIT's Sloan School of Management; his research will focus on exchange rates. Katz, who teaches at Harvard University, will examine wages and productivity. Lehmann, who comes to the NBER from Columbia University, and Lo, who had been on the faculty of the University of Pennsylvania, will study various aspects of financial markets. Miron, who is on the economics faculty at the University of Michigan, will investigate business cycles and seasonality. Zeldes teaches at the Wharton School, University of Pennsylvania. He will analyze consumption behavior.

Economic Fluctuations Research Meeting

Members of the NBER's Program in Economic Fluctuations met in Cambridge on July 22 to discuss recent research. The agenda, organized by Robert J. Barro and N. Gregory Mankiw of NBER and Harvard University, was:

Kevin M. Murphy, Andrei Shleifer, and Robert W. Vishny, all of NBER and University of Chicago, "Industrialization and the Big Push"
Discussant: Robert E. Hall, NBER and Stanford University

Paul M. Romer, NBER and University of Chicago, "Endogenous Technological Change"
Discussant: Dale W. Jorgenson, Harvard University

David Wilcox, Federal Reserve Board, "What Do We Know About Consumption?"
Discussant: Alan S. Blinder, NBER and Princeton University

David Aschauer, Federal Reserve Bank of Chicago and University of Michigan, "Is Public Expenditure Productive?"
Discussant: Lawrence H. Summers, NBER and Harvard University

Valerie Ramey, University of California, San Diego, "Nonconvex Costs and the Behavior of Inventories"
Discussant: Kenneth D. West, NBER and Princeton University

1988–9 Research Associates

Mark Bils, NBER and University of Rochester, "Testing for Contracting Effects on Employment"
Discussant: John B. Taylor, NBER and Stanford University

Virtually every country that experienced rapid productivity growth over the last 200 years did so by industrializing. Despite the evident gains from industrialization, numerous other countries remain unindustrialized and continue on the path of low per capita income growth. One particularly important and frequently discussed barrier to industrialization is the small size of the domestic market. Murphy, Shleifer, and Vishny ask how economies with small domestic markets escape the trap of no industrialization. In particular, the authors focus on the contribution of industrialization of one sector to enlarging the size of the market in other sectors. They show that if such spillovers exist, coordination of investments across sectors—which government can promote—may be helpful to industrialization.

Romer presents a growth model that is driven by an endogenous process of discovery, innovation, invention, and refinement. Human capital is the key to producing these components of technological change. In equilibrium, the model has monopolistic competition; firms must charge a price higher than marginal cost to recoup their fixed investments in research. Romer con-

cludes that the stock of human capital determines the rate of growth, that the employment of more human capital in research would raise growth, that integration into world markets increases growth rates, and that having a large population is not sufficient to generate growth.

Wilcox investigates the sources and estimation methods used to construct retail sales and aggregate consumption data. He concludes that existing data may be too limited to support the estimation of stochastic Euler equations, because retail sales are measured with substantial error, and the product composition of spending is not known on a monthly basis. Wilcox shows that the sampling error is empirically important and that the failure to use information on the production composition of spending leads to a much higher coherence of spending across these categories than probably exists in actual consumption spending.

Aschauer considers the relationship between aggregate productivity and stock and flow variables for government expenditure. He finds that the nonmilitary public capital stock is dramatically more important in determining productivity than is the flow of nonmilitary or military spending. He also finds that military capital does not raise nonmilitary productivity and that the public stock of structures—especially streets, highways, airports, mass transit, sewers, and water systems —is more productive than the stock of equipment. Aschauer also suggests an important role for the net public capital stock in the "productivity slowdown" of the last 15 years.

Ramey explores one possible explanation for the apparent excess volatility of production relative to sales —nonconvexities in the technology facing firms. She shows that if firms operate in a region of declining marginal costs, then small shifts in demand can cause production to jump substantially. She finds declining marginal cost in six production-to-stock industries, as well as in the automobile industry. Her results have important implications not only for inventory investment but also for market structure and the cyclical behavior of prices.

Bils examines wage rigidities caused by long-term contracts. If contract rigidities are unimportant, there should be no effect on employment when a new bargain is signed. If rigidities are important, then employment should adjust after recontracting in order to undo recent excessive movements in employment caused by rigid wages. Bils finds that contract rigidities are important and cause considerably larger fluctuations in employment than would occur with flexible wages. His results on employment suggest that wage rates should show large responses to past employment at the time of new contracts. Somewhat paradoxically, Bils does not find this behavior in measures of average hourly earnings.

This summary was prepared with the assistance of Jeffrey A. Miron, NBER and University of Michigan.

Reprints Available

The following NBER Reprints, intended for nonprofit education and research purposes, are now available. (Previous issues of the NBER Reporter list titles 1–1024 and contain abstracts of the Working Papers cited below.)

These reprints are free of charge to corporate associates and other sponsors of the National Bureau. For all others there is a charge of $2.00 per reprint to defray the costs of production, postage, and handling. Advance payment is required on orders totaling less than $10.00. Please do not send cash. Reprints must be requested by number, in writing, from: Reprint Series, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138.

1025. "Annuity Prices and Saving Behavior in the United States," by Benjamin M. Friedman and Mark Warshawsky, 1988 (NBER Working Paper No. 1683)

1026. "Anticipated Tax Changes and the Timing of Investment," by Alan J. Auerbach and James R. Hines, Jr., 1987 (NBER Working Paper No. 1886)

1027. "Changing Patterns of International Investment in and by the United States," by Robert E. Lipsey, 1988 (NBER Working Paper No. 2240)

1028. "Dividend Innovations and Stock Price Volatility," by Kenneth D. West, 1988 (NBER Working Paper No. 1833)

1029. "Does Saving Anticipate Declining Labor Income? An Alternative Test of the Permanent-Income Hypothesis," by John Y. Campbell, 1987 (NBER Working Paper No. 1805)

1030. "The Wage–Productivity Hypothesis: Its Economic Consequences and Policy Implications," by Joseph E. Stiglitz, 1987 (NBER Working Paper No. 1976)

1031. "The Value of Patents as Indicators of Inventive Activity," by Zvi Griliches, Ariel Pakes, and Bronwyn H. Hall, 1987 (NBER Working Paper No. 2388)

1032. "The Stochastic Properties of Velocity: Evidence for Five Countries," by Michael D. Bordo and Lars Jonung, 1987 (NBER Working Paper No. 2255)

1033. "Real Balances, the Exchange Rate, and Indexation: Real Variables in Disinflation," by Stanley Fischer, 1988 (NBER Working Paper No. 1497)

1034. "Rational Inflationary Bubbles," by Behzad T. Diba and Herschel I. Grossman, 1988 (NBER Working Paper No. 2004)

1035. "Parsimonious Modeling of Yield Curves," by Charles R. Nelson and Andrew F. Siegel, 1987 (NBER Working Paper No. 1594)

1036. "Market Structure and Cyclical Fluctuations in U.S. Manufacturing," by Ian Domowitz, R. Glenn Hubbard, and Bruce C. Petersen, 1988 (NBER Working Paper No. 2115)

1037. "Life-Cycle Models of Consumption: Is the Evidence Consistent with the Theory?" by Angus Deaton, 1987 (NBER Working Paper No. 1910)

1038. "International Competition in the Products of U.S. Basic Industries," by Barry J. Eichengreen, 1988 (NBER Working Paper No. 2190)

1039. "Integrated Regressors and Tests of the Permanent-Income Hypothesis," by James H. Stock and Kenneth D. West, 1988 (NBER Working Paper No. 2359)

1040. "The Insensitivity of Consumption to News about Income," by Kenneth D. West, 1988 (NBER Working Paper No. 2252)

1041. "The Employment and Wage Effects of Import Competition in the United States," by Gene M. Grossman, 1987 (NBER Working Paper No. 1041)

1042. "Inflation, Tariffs, and Tax Enforcement Costs," by Joshua Aizenman, 1987 (NBER Working Paper No. 1712)

Technical Papers Series

The following studies in the NBER Technical Working Papers series are now available (see previous issues of the NBER Reporter for other titles). Like NBER Working Papers, these studies may be obtained by sending $2.00 per paper to: Technical Working Papers, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. Prepayment is required for all orders under $10.00. Please do not send cash.

67. "The Dividend Ratio Model and Small Sample Bias: A Monte Carlo Study," by John Y. Campbell and Robert J. Shiller, July 1988

68. "Some Further Results on the Exact Small Sample Properties of the Instrumental Variable Estimator," by Charles R. Nelson and Richard Startz, September 1988 (JEL No. 211)

69. "The Distribution of the Instrumental Variables Estimator and Its T-Ratio When the Instrument Is a Poor One," by Charles R. Nelson and Richard Startz, September 1988 (JEL No. 211)

70. "The Time-Varying Parameter Model as an Alternative to ARCH for Modeling Changing Conditional Variance: The Case of Lucas Hypothesis," by Charles R. Nelson and Chang-Jin Kim, September 1988.

Bureau Books

NBER Macroeconomics Annual 1988

The NBER Macroeconomics Annual 1988, edited by Stanley Fischer, is now available from The MIT Press. The hardcover edition is $30; the paperback costs $14.95.

This is the third volume in a series from the National Bureau of Economic Research that effectively links theoretical and empirical developments in macroeconomics with specific current issues facing the United States and foreign economies. This edition contains eight articles initially presented at a conference held in Cambridge, MA last March. In the first article, Alberto Alesina presents recent developments and tests the theory of economic policymaking. Next, David Romer estimates the economic cost of excessive government budget deficits. Matthew D. Shapiro and Mark W. Watson seek to identify the sources of fluctuations in output and employment. John Kennan asks if the labor market acts as though it is always in equilibrium. Kazuo Ueda explores the causes of the Japanese current account surplus. The final three shorter papers by Fischer Black, Kenneth French, and Robert J. Shiller evaluate the efficient-markets hypothesis in light of the October 1987 stock market crash.

Stanley Fischer is a member of the NBER's Programs of Research in Economic Fluctuations and Financial Markets and Monetary Economics. He is currently on leave from the MIT economics faculty while serving as Vice President of Development Economics and Chief Economist at The World Bank.

Order this volume, either hardcover or paperback, directly from The MIT Press, 55 Hayward Street, Cambridge, MA 02142; (617) 253-2884.

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

Trade Policy Issues and Empirical Analysis

Trade Policy Issues and Empirical Analysis, edited by Robert E. Baldwin, is available from the University

of Chicago Press for $46. This volume, based on a 1987 NBER conference, covers a wide range of topics including trade policy in developing countries, the effect of protectionism on output, and analyses of specific industries.

In his paper, James A. Levinsohn asks how tariffs on differentiated products can affect trade and domestic production. He focuses on the U.S. automobile industry. Richard Baldwin and Paul R. Krugman study Airbus, which is jointly owned and operated by four European governments. They estimate the actual subsidy that Airbus receives and its effect on economic welfare in the United States, Europe, and the rest of the world.

Can export subsidies for agricultural products increase social welfare? Marie C. Thursby considers the world wheat market and finds that countries with marketing boards will tax or subsidize exports depending upon whether the boards regulate domestic prices. With private marketing systems, the decision to tax or subsidize depends upon the degree of competition in export marketing. As export marketing becomes more competitive, the incentive to subsidize decreases.

Dani Rodrik asks how increasing returns and imperfect competition at home may reduce the benefits of partial trade liberalization. He finds that oligopolistic profits per se do not reduce the level of such benefits, but that significant scale economies could prevent resources from being removed from protected sectors.

Edward E. Leamer attempts to determine which countries have the most severe barriers to trade. He uses data on supplies of productive resources and distances to markets to predict openness, then compares his estimates with actual, observed openness to calculate the effectiveness of a country's trade barriers. He finds that the international-trade-to-GNP ratio is lower for the United States than for Japan. When you adjust for Japan's higher volume of trade, though, it appears that the United States is slightly more open than Japan is.

Robert E. Baldwin and Richard K. Green ask whether protectionism is an efficient means of achieving policy objectives. Focusing on five different industries—steel, food and kindred products, textile, apparel, and footwear—they conclude that protection is often ineffective in preserving declining industries.

Val Eugene Lambson explores the ramifications of changes in economic conditions when protective policies are in place. In particular, he asks how changes in a country's terms of trade affect domestic prices, factor use, and consumption under tariffs, quotas, and domestic content requirements.

Magnus Blomström, Robert E. Lipsey, and Ksenia Kulchycky find that overseas production by U.S. firms increases, or has no effect on, exports. Overseas production by Swedish firms increases exports in most cases. Production by minority-owned affiliates of U.S. firms in particular tends to increase U.S. exports to the host country.

Rachel McCulloch suggests that the main source of economic friction between the United States and Japan, the huge Japanese export surplus with the United States,

has been caused by a mismatch of macroeconomic policies and conditions in the two countries. These include U.S. fiscal policies that have produced large federal budget deficits, the increased attractiveness of U.S. investments to foreigners, and the liberalization of Japanese restrictions on capital outflows.

Joseph P. Kalt studies Canada's policy of subsidizing exports of softwood timber that was believed to cause material injury to U.S. lumber producers. Political pressure persuaded the Canadian government to impose a duty on softwood exports, in return for which the U.S. lumber industry agreed to drop its legal dispute. Kalt observes that the U.S. lumber industry, by organizing effectively and producing well-reasoned technical and legal documents to government officials, was able to force a political solution to a trade problem.

This volume should interest economists, policymakers, and anyone concerned with how international trade and trade policy affect domestic economies. Editor Robert E. Baldwin is director of the NBER's trade relations project and the Hillsdale Professor of Economics at the University of Wisconsin, Madison.

Current Working Papers

Individual copies of NBER Working Papers are available free of charge to corporate associates and other supporters of the National Bureau. Others can receive copies of the Working Papers by sending $2.00 per copy to Working Papers, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. Please make checks payable to the National Bureau of Economic Research, Inc. Please do not send cash.

Journal of Economic Literature (JEL) subject codes, when available, are listed after the date of the Working Paper. Abstracts of all Working Papers issued since June 1988 are presented below. For previous Working Papers, see past issues of the *NBER Reporter*. The Working Papers are intended to make results of NBER research available to other economists in preliminary form to encourage discussion and suggestions for revision before final publication. Working Papers are not reviewed by the Board of Directors of the NBER.

Testing the Rationality of State Revenue Forecasts

Daniel R. Feenberg, William Gentry, David Gilroy, and Harvey S. Rosen
Working Paper No. 2628
June 1988
JEL No. 324

In recent months, the governors of several states have suffered major political embarrassments because actual revenues fell substantially short of the predictions in their respective budgets. Such episodes focus attention on the question of whether states do a "good" job of forecasting revenues. In modern economics, forecasts are evaluated on the basis of whether or not they are "rational"; that is, do the forecasts optimally incorporate all information that is available at the time they are made? This paper develops a method for testing the rationality of state revenue forecasts and applies it to data from New Jersey, Massachusetts, and Maryland. One of our main findings is that in all three states, the forecasts of revenues are systematically biased *downward*.

Temporary Terms-of-Trade Disturbances, the Real Exchange Rate, and the Current Account

Sebastian Edwards
Working Paper No. 2629
June 1988

This paper develops a general equilibrium intertemporal model with optimizing consumers and producers to analyze how temporary disturbances in terms of trade affect the path of real exchange rates and the current account. I consider changes in the internal terms of trade (because of tariff changes) and in the external terms of trade. The model is completely real and considers a small open economy that produces and consumes three goods in each period. I show that interesting paths for the equilibrium real exchange rate can be generated without imposing rigidities or adjustment costs. In particular, "equilibrium overshooting" can be observed. I derive precise conditions under which a temporary import tariff will worsen the current account in the first period. I then analyze how temporary and permanent shocks in external terms of trade will affect the current account. The results from this model have important implications for the design of balance-of-payments policy and for the analysis of real exchange rate misalignment and overvaluation.

Smuggling, Camouflaging, and Market Structure

Richard Jensen, Marie C. Thursby, and **Jerry Thursby**
Working Paper No. 2630
June 1988

We analyze how both market structure and enforcement can affect smuggling and welfare. In our model, smuggling is camouflaged by legal sales. Some, but not necessarily all, firms smuggle. With camouflaging, the market price is below the price that would exist if all sales were legal; smuggling will improve welfare if the price effect outweighs the excess cost of smuggling. The effect on welfare is related directly to the degree of competition. Increased enforcement potentially reduces welfare. This model is consistent with evidence on cigarete smuggling in the United States for 1975–82.

Nonlinear Taxation of Risky Assets and Investment, with Application to Mining

Jeffrey K. MacKie-Mason
Working Paper No. 2631
June 1988
JEL Nos. 323, 632

This paper uses an intemporal capital asset valuation approach to analyze the effects of nonlinear taxes on asset values and optimal investment decisions. The method is quite general and is illustrated both analytically and numerically. The paper studies the effects of nonlinearities in the corporate income tax, including the percentage depletion allowance, on mine values and investment decisions. Although the tax policies are found to have the expected effects on asset values, their effects on investment decisions are sometimes perverse. For example, an increase in the income tax rate may encourage investment; an increase in the depletion allowance subsidy may discourage investment.

Do Taxes Affect Corporate Financing Decisions?

Jeffrey K. MacKie-Mason
Working Paper No. 2632
June 1988
JEL Nos. 521, 323

This paper uses a new empirical method and dataset to study the effects of tax policy on corporate financ-

ing choices. There is clear evidence that nondebt tax shields crowd out interest deductibility, thus decreasing the desirability of debt issues at the margin. Previous studies that failed to find tax effects examined debt–equity ratios rather than individual, well-specified financing choices. This paper demonstrates the importance of controlling for confounding effects and also presents results on other (asymmetric information) effects on financing decisions.

Issues in the Measurement and Interpretion of Saving and Wealth

Michael J. Boskin
Working Paper No. 2633
June 1988
JEL No. 220

This paper develops alternative measures of saving and compares them to the traditional National Income and Product Accounts (NIPA) estimates. Regardless of the data source and estimation methodology, adjustments for net saving in durables, government capital, capital gains and losses, and revaluations are all substantial. For example, adjustments in government capital and durables raise the NIPA estimate of net national saving in 1985 from 4.7 percent to 8.8 percent.

New estimates of saving, developed and measured as the change in real net worth based on data from the Federal Reserve Flow of Funds National Balance Sheets, differ substantially from the NIPA estimates. For example, the NIPA net national saving measures for 1986 and 1987 are 1.8 percent and 1.9 percent, respectively, whereas my estimates from Fed data are 11.5 percent and 3.3 percent. My new estimates of net private saving average 6.5 percent for 1981–7, versus 11.3 percent for 1951–80. Net national saving has fallen even further, from an average of 11.2 percent in 1951–80 to 3.2 percent in 1981–7. Correspondingly, real private net worth reached $13.4 trillion (in constant 1982 dollars) by 1987, but its rate of growth slowed in 1979–87 relative to the postwar average.

Hedonic Price Indexes and the Measurement of Capital and Productivity: Some Historical Reflections

Zvi Griliches
Working Paper No. 2634
June 1988
JEL Nos. 227, 226

This paper describes the background for my original paper on hedonics (1961) and discusses some of the is-sues raised by the subsequent literature on this range of topics. It goes on to consider some of the implications of this work for the measurement of capital services and connects it to my paper with Jorgenson (1967) on the "explanation of productivity change." It reviews the criticisms made against that paper, especially the use of a utilization adjustment, and finds itself, perhaps unsurprisingly, still in sympathy with its major thrust. It also cautions against interpreting the recent slowdown in the growth of total factor productivity as implying, necessarily, a parallel slowdown in the technological potential of the economy.

Savings Promotion, Investment Promotion, and International Competitiveness

Lawrence H. Goulder and **Barry J. Eichengreen**
Working Paper No. 2635
June 1988
JEL Nos. 320, 430

In an open economy, savings- and investment-promoting policies may have very different effects on the capital account and on the viability of export-oriented and import-competing industries. The nature of the effects is often ambiguous in analytical models. This paper employs a simulation model that combines a detailed treatment of industry interactions, attention to adjustment dynamics, and an integrated treatment of current and capital account transactions to investigate these effects in both the short and long run. We focus on the different effects of savings- and investment-promoting U.S. tax policies on the viability of U.S. export industries. We compare results under the assumption of no international capital mobility (and no international asset transactions) with those under the assumption of full international mobility (which assumes no barriers to or costs of such transasctions). Within the case of capital mobility, we consider the importance of the degree of international asset substitutability—the extent to which individuals respond to differences in anticipated rates of return by altering their portfolios.

Simulation results show that the impacts on export industries differ fundamentally depending on the degree of international capital mobility. In the absence of such mobility, savings- and investment-promoting policies have similar effects on U.S. export industries, with insubstantial effects in the short run and larger, beneficial long-run effects that reflect increases in the productiveness of the U.S. economy. Once international capital mobility is accounted for, however, the effects of the two policies differ from one another in both the short and long run. Subsidizing saving helps U.S. export industries initially but hurts them over the longer term. The reverse is true for a policy that sub-

sidizes investment. These differences, which are robust across a range of model specifications and parameter assumptions, stem from the very different implications of the two types of policies for the capital account of the balance of payments.

Default and Renegotiation of Latin American Foreign Bonds in the Interwar Period

Erika Jorgensen and **Jeffrey D. Sachs**
Working Paper No. 2636
June 1988

This paper examines the patterns of defaults, renegotiations, and final settlements on foreign borrowing of several Latin American governments in the interwar period. It provides a detailed historical account of the borrowing and renegotiation experience of five Latin borrowers (Argentina, Bolivia, Chile, Colombia, and Peru). It also quantitatively assesses the amount of debt relief that was implicit in the negotiated settlements of the defaults reached in the 1930s and 1940s. In general, the pattern of default and renegotiation resulted in substantial, although not complete, debt relief, in the sense of reducing the present value of debt repayment from the sovereign borrower to the bondholders.

Sovereign Debt Restructurings: Panacea or Pangloss?

Jeremy I. Bulow and **Kenneth Rogoff**
Working Paper No. 2637
June 1988
JEL Nos. 430, 440

The most widely proposed LDC debt plans are flawed by their failure to recognize the fundamental differences between corporate and sovereign debt. Consequently, many plans intended to help highly indebted countries mainly aid their foreign creditors. This paper emphasizes the crucial distinction between marginal and average sovereign debt. This distinction provides the cornerstone for an understanding of debt buybacks, debt–equity swaps, and debt-for-debt swaps involving new classes of seniority. Highly indebted countries would benefit more from direct transfers than from the same resources spent on any of these financial engineering schemes.

Do Tournaments Have Incentive Effects?

Ronald G. Ehrenberg and **Michael L. Bognanno**
Working Paper No. 2638
June 1988
JEL No. 821

Models of tournaments, or situations in which an individual's payment depends only on his output or rank relative to other competitors, have been studied extensively. Such models well may describe the compensation structures of many corporate executives and professors, of salespeople whose bonuses depend on their relative outputs, and more obviously of professional athletes. Academics also are interested since, under certain sets of assumptions, tournaments have desirable normative properties because of the incentive structures they provide.

This paper uses nonexperimental data to see whether tournaments actually elicit the desired response. We focus on golf tournaments because information on the incentive structure (prize distribution) and on measures of individual output (players' scores) are both available. Under suitable assumptions, players' scores can be related to players' effort and implications can be drawn both for players' overall tournament scores and for their scores on the last round of a tournament. In addition, data are available to control for factors other than the incentive structure that should affect output; these factors include player quality, quality of the rest of the field, difficulty of the course, and weather conditions.

The data used in our analyses come from the *1985 Golf Digest Almanac,* the *Official 1985 PGA Tour Media Guide,* and the *1984 PGA Tour Player Record.* We find strong support for the proposition that the level and structure of prizes in PGA tournaments influence players' performances.

The Great Crash and the Onset of the Great Depression

Christina D. Romer
Working Paper No. 2639
June 1988
JEL Nos. 042, 131

This paper argues that the collapse of stock prices in October 1929 generated temporary uncertainty about future income that caused consumers to forgo purchases of durable and semidurable goods in late 1929 and much of 1930. The decline in confidence expressed by contemporary forecasters is evidence that the stock market crash generated uncertainty. This uncertainty apparently affected consumer behavior because spending on consumer durables and semidurables declined immediately following the Great Crash. Moreover, there is a negative historical relationship between stock market variability and the production of consumer durables in the prewar area.

Performance Evaluation of Market Timers

Alex Kane and **Stephen Gary Marks**
Working Paper No. 2640
July 1988

Previous research has shown that the Sharpe mea-

sure of the performance of a managed portfolio may be flawed when the portfolio manager has market timing ability. We develop the exact conditions under which the Sharpe measure will order market timers completely and correctly according to their ability. We compare these conditions to empirical estimates of actual market conditions and find that the circumstances that can lead to a failure of the Sharpe measure in fact do occur. However, we show that such failures can be reduced greatly by more frequent sampling.

Liquidity and Market Structure

Sanford J. Grossman and **Merton H. Miller**
Working Paper No. 2641
July 1988
JEL Nos. 500, 611

We model market liquidity as determined by the demand and supply of immediacy. Exogenous liquidity events coupled with the risk of delayed trade create a demand for immediacy. Marketmakers supply immediacy by their continuous presence and by their willingness to bear risk during the period between the arrival of final buyers and sellers. In the long run, the number of marketmakers adjusts to equate the supply and demand for immediacy. This determines the equilibrium level of liquidity in the market. The lower the autocorrelation in rates of return, the higher the equilibrium level of liquidity.

A Test of Consumption Insurance

John H. Cochrane
Working Paper No. 2642
July 1988

Are individuals insured effectively against idiosyncratic shocks to income or wealth, either by formal or informal mechanisms? This paper shows that under perfect insurance, marginal utility should grow at the same rate for all consumers; the distribution of growth rates of measured consumption should be independent of variables that are exogenous to the individual consumer when we allow for measurement error in consumption and for variation in preferences.

Tax Aversion, Optimal Tax Rates, and Indexation

Roger N. Waud
Working Paper No. 2643
June 1988

Taking account of the costs of tax evasion and avoidance and the government's costs of tax enforcement,

I show that the optimal point on a stylized Laffer curve is located on the positively sloped region, not at the maximum point of the curve. The analysis eschews the usual supply-side rationale for the Laffer curve and shows that such a curve can arise *solely* as a consequence of the optimizing tax aversion activity of a utility-maximizing economic agent. The analysis further implies that indexation to inflation may be warranted by considerations of economic efficiency.

Conditionality, Debt Relief, and the Developing Country Debt Crisis

Jeffrey D. Sachs
Working Paper No. 2644
July 1988

This paper raises several cautionary notes regarding high-conditionality lending by the International Monetary Fund and the World Bank in the context of international debt crisis. I argue that the role for high-conditionality lending is more restricted than generally believed because enforcement of conditionality is rather weak. Moreover, the incentives for a country to abide by conditionality terms also are likely to be reduced by a large overhang of external indebtedness.

Given the limited ability to enforce conditionality agreements, modesty and realism should be a cornerstone of each program. The experience with conditionality suggests two major lessons for the design of high-conditionality lending. First, debt forgiveness rather than mere debt rescheduling may increase a debtor country's compliance with conditionality, and thereby increase the actual stream of repayments by the indebted countries. Second, given the complexity of the needed adjustments and the difficulty of enforcing conditionality agreements, programs are most likely to be successful when macroeconomic stabilization is given priority over large-scale liberalization.

The Stabilization of the U.S. Economy: Evidence from the Stock Market

Matthew D. Shapiro
Working Paper No. 2645
July 1988
JEL Nos. 131, 042, 220

Until recently, many economists believed that economic activity became less variable in the United States after the end of World War II. Challenging this belief, however, new research suggests that key historical time series are spuriously volatile. Data from the stock

market may enable us to resolve the controversy. Economic theory relates stock prices to real activity; empirical tests also show a strong link between stock prices and activity. Financial data are measured accurately over long spans of time and hence are free of most of the measurement problems in other time series. Measures of stock prices show no stabilization in the post–World War II period relative to the pre–World War I or pre-Depression periods. These stock market data thus support the hypothesis that real activity has not been stabilized.

The Impact of the Agencies on Conventional Fixed-Rate Mortgage Yields

Patric H. Hendershott and **James D. Shilling**
Working Paper No. 2646
July 1988
JEL Nos. 313, 315

Between the early 1980s and 1986, the share of new, conforming (under $153,000 in 1986) conventional fixed-rate mortgages (FRMs) in Fannie Mae and Freddie Mac mortgage pools increased from under 5 percent to over 50 percent. We investigate the impact of these agencies, moving from negligible participants to dominant players in this market, by analyzing yields on 4900 loans closed in California during May–June 1978 and 1800 closed in May–June 1986.

Our analysis indicates that the loan rate depends on: the loan-to-value ratio; the loan size; and, in 1986, whether the loan is far above, just above, or below the conforming loan limit. Rates on loans far above the conforming loan limit exceed those on otherwise comparable loans below the limit by 30 basis points and exceed rates on loans destined to exceed the limit within a year by 15 basis points. That is, the expanded agency securitization of conforming FRMs has lowered the rates on both conforming loans and loans somewhat above the conforming limit (27 percent of nonconforming loans in 1986) significantly relative to what they would have been otherwise.

With an FRM rate that is 30 basis points lower, households are more likely to choose FRMs than adjustable-rate mortgages (ARMs), to prefer to own rather than rent, and to own larger houses. Moreover, traditional mortgage portfolio lenders will have fewer ARMs to purchase and will earn lower returns on FRM investments.

The Effects of Hours Constraints on Labor Supply Estimates

Shulamit Kahn and **Kevin Lang**
Working Paper No. 2647
July 1988
JEL No. 810

Almost all labor supply models are estimated under the assumption that workers are free to choose their hours. However, theory, casual empiricism, and survey data suggest that many workers are not free to vary their hours within a job. Consequently, labor supply estimates based on actual hours of work may be biased. Using Canadian data on desired hours of work, we find that using actual hours causes labor supply estimates to be biased upward, but the bias is small.

The International Monetary System: Developments and Prospects

Jacob A. Frenkel and **Morris Goldstein**
Working Paper No. 2648
July 1988
JEL No. 430

This paper addresses several fundamental issues raised by recent developments in the world economy and considers their implications for the design and functioning of the international monetary system: Can the exchange rate regime do much to discipline fiscal policy? What are the extent and costs of reduced monetary independence under greater fixity of exchange rates? How can the equilibrium exchange rate best be determined? Does a well-functioning international monetary system require a clearly defined set of rules, an acknowledged leader, and an explicit anchor?

Job Mobility and the Careers of Young Men

Robert H. Topel and **Michael P. Ward**
Working Paper No. 2649
July 1988

We study the joint processes of job mobility and wage growth among young men, using the Longitudinal Employee-Employer Data. Following individuals at three-month intervals from their entry into the labor market, we track career patterns of job changing and the evolution of wages for up to 15 years. Following an initial period of weak attachment to both the labor force and particular employers, men's careers tend to stabilize, in the sense of strong labor force attachment and increasing durability of jobs. During the first 10 years in the labor market, a typical young worker will work for seven employers, accounting for about two-thirds of the total number of jobs he will hold in his career. The evolution of wages plays a key role in this transition to stable employment: we estimate that wage gains at job changes account for at least one-third of early-career wage growth, and that the wage is the key determinant of job changing decisions among young workers. We conclude that the process of job changing for young workers, while apparently haphazard, is a critical component of workers' moves toward the stable employment relations that characterize mature careers.

The Effects of Fiscal Policy on International Imbalances: Japan and the United States

John F. Helliwell
Working Paper No. 2650
July 1988
JEL Nos. 431, 212, 322

I use evidence from three multicountry models to assess the current account effects of U.S. and Japanese fiscal policies. Asymmetries in the effects of U.S. and Japanese policies are attributed to differences in country size, in trade patterns (which have only a small effect), and in the extent to which induced changes in real exchange rates switch demand from domestic to foreign output. Fiscal policy has substantial current account effects in the models. For example, switching $50 billion of sustained government spending from the United States to Japan would improve the U.S. current account by $24 billion, and worsen Japan's by $20 billion, in the third year. Induced changes in nominal exchange rates play a relatively small role in determining the effects of fiscal policy on the nominal current account.

Pareto Inefficiency of Market Economies: Search and Efficiency Wage Models

Joseph E. Stiglitz and Bruce C. Greenwald
Working Paper No. 2651
July 1988

This paper shows that market economies with search, in which wages are affected by efficiency wage considerations, are not constrained to be Pareto efficient. Wages are not set at Pareto-efficient levels,nor is the level of employment (unemployment) Pareto efficient. We identify the nature of the biases and the welfare-improving government interventions.

Structural/Frictional and Demand-Deficient Unemployment in Local Labor Markets

Harry J. Holzer
Working Paper No. 2652
July 1988
JEL No. 820

This paper uses data on rates of unemployment and job vacancy to measure structural/frictional versus demand-deficient components of differences in unemployment rates across local labor markets. Data on occupational and industrial distributions of unemployed workers and vacant jobs, as well as on local wages, recent sales growth, unemployment insurance, and demographics help to explain these components of unemployment across local areas.

Exchange Rate Management Viewed as Tax Policies

Jacob A. Frenkel and Assaf Razin
Working Paper No. 2653
July 1988
JEL No. 430

This paper develops an analytical framework that demonstrates that the various forms of exchange rate management are equivalent to corresponding tax policies. We consider two specific categories of exchange rate policies. The first is a dual exchange rate regime, which separates exchange rates for commercial and for financial transactions. The second is a unified exchange rate system in which the country unilaterally pegs its exchange at the same rate for all transactions.

We show that the dual exchange rate policies can be cast usefully as distortionary taxes on international borrowing; unified pegged exchange rate policies can be cast usefully as lump-sum-tax-cum-subsidy policies. The equivalence between the various characteristics of exchange rate management and tax management suggests that exchange rate analysis could be incorporated usefully into the broader framework of the analysis of fiscal policies. A two-country model of the world economy demonstrates the international transmission mechanism of these policies.

Closing the Technology Gap: Does Trade Liberalization Really Help?

Dani Rodrik
Working Paper No. 2654
July 1988
JEL Nos. 400, 422

A common theme in discussions of trade reform is the possibility of improved technical efficiency following trade liberalization. This paper presents a conceptual analysis of the likely linkages between trade regimes and technical efficiency. I review three sets of arguments—having to do with X-inefficiency, macroeconomic instability, and increasing returns to scale—

and find them misleading or incomplete. A simple model of technological catch-up by a domestic firm shows the opposite of the usual argument: the larger market share provided by protection to the firm increases its incentives to invest in technological effort. When modified to include oligopolistic considerations at home, the model suggests that the incentives could go either way, depending on the mode of strategic conduct. The presence of economies of scale provides perhaps the strongest reason for productivity improvements, but here the argument relies on frictionless entry into and exit from industries. The paper concludes that the relationship between trade policy and technical efficiency is fundamentally ambiguous.

This paper presents a more optimistic view. It argues that factor market integration can result in economic gains, even without capital and labor migration. The basic argument is simple. For some types of goods, it is cheaper to conduct trade on an intrafirm basis, rather than an interfirm basis (for instance, roughly half of U.S. imports are intrafirm, Helleiner [1981]). In such industries, any factor market barrier that raises the cost of foreign control of local firms also raises the cost of intrafirm trade. Consequently, removing such barriers can lead to gains from trade. The i.o. trade literature points out that intrafirm trade requires direct foreign control that need not involve direct foreign investment (Helpman and Krugman [1985]). Therefore, 1992 can logically lead to gains from additional intrafirm trade, with little additional capital or labor migration.

The Welfare Economics of Debt Service

Dani Rodrik
Working Paper No. 2655
July 1988
JEL Nos. 400, 422

Debtor nations must undertake dual transfers to service foreign debt: 1) an internal transfer, from the private to the public sector; and 2) an external transfer, from the domestic economy to foreign creditors. This paper shows that under likely circumstances, a real depreciation of the home currency may complicate the internal transfer. As long as nontraded goods are a net source of revenue for the government, the depreciation required by debt service will deteriorate the terms of trade of the public sector vis-à-vis the private sector and will magnify the requisite fiscal retrenchment.

Factor Market Barriers Are Trade Barriers: Gains from Trade in 1992

Richard Baldwin
Working Paper No. 2656
July 1988
JEL Nos. 423, 411

The European Community's economic integration by 1992 is predicted to have large economic benefits. According to traditional trade theory, the gains will come only with permanent resource migration and significant factor price changes (since in principle all trade barriers already have been removed). Yet, it seems unlikely that the 1992 reforms will be completed, if indeed they do result in factor movements large enough to alter factor rewards substantially.

Private Cost Information and the Multinational Enterprise

Kyle Bagwell and **Robert W. Staiger**
Working Paper No. 2657
July 1988
JEL Nos. 411, 442

This paper explores the informational role of plant location decisions for the multinational enterprise. When information about costs is incomplete, the location of a plant will be chosen not only for its impact on actual production costs but also for its impact on foreign rivals' perception of costs. We show that the latter consideration, which can arise only in the presence of asymmetric information about costs, may lead to a decision to multinationalize even though actual production costs are higher as a result. As such, the informational role of plant location decisions is a potentially important element in understanding the behavior of the multinational firm.

Rules and Discretion in Trade Policy

Robert W. Staiger and **Guido Tabellini**
Working Paper No. 2658
July 1988
JEL Nos. 411, 422

We argue that the second-best nature of trade policy intervention makes it likely that time consistency will be an important consideration in determining both the extent and the efficacy of such intervention in most

environments. We note that a tariff is both a tax on consumers and a subsidy to producers of the import-competing good. Since first–best intervention typically calls for targeting each distortion with a separate tax/subsidy, the tariff will be a more effective policy tool if its consumption tax aspect can be separated from its production subsidy dimension. Consequently, if production decisions are made prior to consumption decisions, a government with sufficient policy flexibility will be tempted to surprise producers with unannounced policies in an effort to make this separation. This leads optimal trade policy intervention to be time inconsistent in a wide range of environments.

Tax-Induced Trading: The Effect of the 1986 Tax Reform Act on Stock Market Activity

Paul J. Bolster, Andrew W. Mitrusi,
and **Lawrence B. Lindsey**
Working Paper No. 2659
July 1988
JEL No. 323

The abolition of the favorable tax treatment of long-term capital gains forced investors to reassess traditional year-end trading strategies used to manage tax liabilities. This study compares year-end trading observed at the end of 1986 with trading in previous year ends. Traditional strategies involve selling short and long-term losers and holding short and long-term winners. Our results affirm previous findings concerning tax-induced trading at year end. However, for 1986 we find that the anticipated tax code changes had a powerful effect on trading. Relative trading volume was considerably higher in December 1986 for long-term winners and lower for long-term losers than in previous years. Additional results indicate that traditional patterns of trading induced by short-term capital gains and losses also were altered substantially in 1986.

The Pension Inducement to Retire: An Option Value Analysis

James H. Stock and **David A. Wise**
Working Paper No. 2660
July 1988
JEL Nos. 211, 820

We use the option value model, developed in an earlier paper, to simulate the effect on retirement of changes

in a firm's pension plan compared to the effect of changes in Social Security provisions. The firm's pension plan has a much greater effect than Social Security regulations on the retirement decisions of the firm's employees. Increasing the firm's early retirement age from 55 to 60, for example, would reduce by almost 40 percent (from 0.48 to 0.30) the portion of employees who are retired by age 60. The effect of changes in Social Security rules, on the other hand, would be small. Raising the Social Security retirement ages by one year has very little effect on employee retirement rates. The proportion retired by age 62 declines by only about 4 percent. Changes in Social Security provisions that otherwise would encourage workers to continue working easily can be offset by countervailing changes in the provisions of the firm's pension plan. Firm responses, like delaying the Social Security offset to correspond to a later Social Security retirement age, simply may be a logical revision of current firm plan provisions.

The Effects of Japanese Social Security Retirement Benefits on Personal Savings and Elderly Labor Force Behavior

Tetsuji Yamada and **Tadashi Yamada**
Working Paper No. 2661
July 1988
JEL Nos. 810, 910

Using Japanese annual time-series data from 1946-82, this paper shows that social security wealth depresses personal savings. Japanese per capita wealth dropped about 143,000 yen in real terms from 1970-80. However, declining labor force participation of the elderly (that is, earlier retirement) stimulated personal saving by an estimated 12,000 yen over the same period. This study also identifies a negative interdependency between personal savings and retirement behavior of the elderly; that is, an individual saves more before retirement if he or she expects to stay a shorter time in the labor market, and vice-versa.

External Debt, Planning Horizon, and Distorted Credit Markets

Joshua Aizenman
Working Paper No. 2662
July 1988
JEL No. 400

This paper studies the role of policies in the presence of country risk when the policymaker "overdis-

counts." Overdiscounting may reflect political uncertainty, which makes the effective planning horizon of the centralized government shorter than that of the private sector. Overdiscounting shifts the supply curve facing the economy toward the left. In the presence of country risk, optimal borrowing policies discourage borrowing for consumption purposes, encourage investment in openness, and discourage investment in activities that reduce openness. Overdiscounting by the policymaker increases the values of the optimal policy instruments (that is, increases the magnitude of the borrowing taxes and subsidies). Increasing the relative importance of open activities reduces the harmful consequences of overdiscounting. Overdiscounting may rationalize various conditionality clauses that will induce the economy to follow the desired credit market policies.

The Demand for Cigarettes and Restrictions on Smoking in the Workplace

Frank Chaloupka and **Henry Saffer**
Working Paper No. 2663
July 1988
JEL Nos. 913, 916

This paper empirically tests the effect that restrictive clean air laws have on the level of smoking. Restrictive clean air laws are the laws that prohibit smoking in private workplaces as well as in public places. The data employed in this study consist of a time series of cross sections of the 50 U.S. states and Washington, DC, from 1975–85. Since states where sentiment is strongly against cigarettes are most likely to pass a clean air law, endogeneity between cigarette demand and the clean air law is a problem. We use a two-step estimation model to control for this endogeneity. We estimate both a single-equation and a two-equation model of cigarette demand. The results from the single-equation model indicate that a clean air law has a significant negative effect on cigarette demand. However, the two-equation model indicates that cigarette demand has a significant negative effect on the probability of passing a clean air law. When endogeneity is controlled for, the clean air law does not have a significant effect on cigarette demand. This does not imply that the enactment of a clean air law would not reduce the level of smoking if such a law were imposed in all states but rather that only states with low levels of smoking are able to pass restrictive clean air laws.

Evidence from Seven Countries on Whether Inventories Smooth Aggregate Output

Kenneth D. West
Working Paper No. 2664
July 1988
JEL No. 131

Casual examination of annual postwar data on inventories and aggregate output for seven developed countries—Canada, France, West Germany, Italy, Japan, United Kingdom, United States—suggests that the primary function of aggregate inventories is not to smooth aggregate output in the face of aggregate demand shocks. Japan is a possible exception to this generalization.

Oligopoly in Segmented Markets

Shmuel Ben-Zvi and **Elhanan Helpman**
Working Paper No. 2665
July 1988
JEL Nos. 410, 610

We propose a new solution concept for a game among oligopolists who compete simultaneously in several segmented markets. The motivation for this solution comes from international trade, but it also has applications in other areas. It is based on a three-stage extension of the two-stage Kreps–Scheinkman game. We show that two-party trade is not an equilibrium outcome and that there are bounds on possible cross-market-priced differentials that are defined by transport costs. Prices are the same when transport costs are zero. In fact, in the limiting case of zero transport costs, the equilibrium coincides with a Cournot equilibrium in a single integrated market. In the presence of transport costs there may be multiple equilibriums.

Dysfunctional Nonmarket Institutions and the Market

Richard J. Arnott and **Joseph E. Stiglitz**
Working Paper No. 2666
July 1988
JEL Nos. 026, 822

There is a widespread belief that when significant market failure occurs, there are strong incentives for

nonmarket institutions to develop and at least partly remedy the deficiency. We demonstrate that this functionalist position is not valid in general. In particular, we examine a situation in which insurance is characterized by moral hazard. We show that when there is market insurance, supplementary mutual assistance between family and friends (unobservable to market insurers)—a form of nonmarket institution—will occur and may be harmful. This example suggests that nonmarket institutions can arise spontaneously even though they are dysfunctional.

A Note on Revenue Forecasting during the Dukakis Administrations

Daniel R. Feenberg and **Harvey S. Rosen**
Working Paper No. 2667
July 1988
JEL No. 324

Critics of Governor Michael Dukakis have suggested that this year's $400 million overestimate of tax revenues in Massachusetts casts doubt on his putative managerial skills. In this paper, we carefully examine the entire Dukakis forecasting record. We find that the 1988 experience was "unusual" in the sense that, on average, revenue forecasts produced by his administration have been too low rather than too high. In addition, we find that there is no significant difference between the quality of the Dukakis forecasts and those of his predecessors in Massachusetts. Hence, those who seek to discover anything extraordinarily positive or negative about Dukakis's managerial capabilities should shift their attention to areas other than revenue forecasting.

Targets and Instruments of Monetary Policy

Benjamin M. Friedman
Working Paper No. 2668
July 1988
JEL No. 311

The notion of targets and instruments is basic to the conceptual framework that economists have used to bring economic analysis to bear on practical issues of how central banks can and/or should conduct monetary policy. This paper surveys the literature on targets and instruments of monetary policy, focusing primarily on the progression of analytical developments during the past two decades. The two issues that have been most central to this entire line of research are the "instrument problem"—what price or quantity the central bank should fix directly through its open market operations—and the "intermediate target problem"—what role (if any) the central bank should assign to variables that it cannot set directly but over which it can exert substantial influence (the most obvious example, of course, being the money stock).

Other issues that have figured prominently in this literature include: how best to control money growth, should the central bank choose to do so; the potential role of money, credit, and other financial variables as sources of information that might guide the central bank's operations; the implications of alternative policy frameworks for the information available to the economy's private sector; the positive empirical question of determining when and whether any given central bank has actually based its operations on one kind of targeting strategy or another; and the empirical basis for making normative choices among different targets and instruments. The survey concludes by drawing connections to some broader issues, including rules versus discretion and activism versus nonresponsiveness, as well as to the long-standing issue, "Why money?"

Can International Policy Coordination Really Be Counterproductive?

Carlo Carraro and **Francesco Giavazzi**
Working Paper No. 2669
July 1988

This paper shows that international policy coordination is not counterproductive in a world where the incentive to run beggar-thy-neighbor policies internationally arises from the inefficiency that characterizes the interaction between policymakers and private agents within each country. The domestic inefficiency arises from the presence of nominal contracts that give central banks the power to affect real variables. In this setting, international cooperation belongs to central banks' dominant strategy. The paper is motivated by a common and misleading interpretation of a paper by Rogoff (1985), namely that international cooperation may be counterproductive in the presence of a domestic inefficiency.

International Coordination of Economic Policies: Scope, Methods, and Effects

Jacob A. Frenkel, Paul R. Masson, and Morris Goldstein
Working Paper No. 2670
July 1988
JEL No. 430

This paper discusses the scope, methods, and effects of international coordination of economic policies. In addressing the scope for and of coordination, the analysis covers the rationale for coordination, barriers to coordination, the range and specificity of policies to be coordinated, the frequency of coordination, and the size of the coordinating group. Turning to the methods of coordination, the emphasis is on the broad issues of rules versus discretion, single-indicator versus multi-indicator approaches, and hegemonic versus more symmetric systems.

In an attempt to shed some light on the effects of alternative rule-based proposals for coordination, we present some simulations of a global macroeconomic model (MULTIMOD) developed in the International Monetary Fund. The simulations range from "smoothing" rules for monetary and fiscal policy that imply only minimal international coordination, to more activist "target zone" proposals that place greater restrictions on national authorities in the conduct of monetary and/or fiscal policies. We compare the simulation results to the actual evolution of the world economy from 1974–87. Our findings suggest that simple mechanistic rule-based proposals are unlikely to lead to improved performance.

The Excess Comovement of Commodity Prices

Robert S. Pindyck and Julio J. Rotemberg
Working Paper No. 2671
July 1988
JEL No. 227

This paper tests and confirms the existence of a puzzling phenomenon—the prices of largely unrelated raw commodities have a persistent tendency to move together. We show that this comovement of prices is well in excess of anything that can be explained by the common effects of past, current, or expected future values of macroeconomic variables such as inflation, industrial production, interest rates, and exchange rates. These results are a rejection of the standard competitive model of commodity price formation with storage.

Econometric Analyses of the Empirical Consequences of Comparable Worth: What Have We Learned?

Ronald G. Ehrenberg
Working Paper No. 2672
August 1988
JEL Nos. 820, 917

This paper presents a survey of the small, but growing, empirical literature by economists on the consequences of comparable worth. It discusses studies of the effects (or potential effects) of comparable worth on the male/female earnings gap, on female employment, on female labor supply and occupational mobility, and on women and their families as a group. The survey is critical in nature and indicates areas in which further research is needed.

Debt Neutrality, Professor Vickrey, and Henry George's "Single Tax"

Willem H. Buiter
Working Paper No. 2673
August 1988
JEL Nos. 133, 321

In the overlapping-generations model with uncertain lifetimes, efficient life insurance markets, and no operative intergenerational gift and bequest motive, a positive birth rate is sufficient and necessary for the absence of debt neutrality: equilibrium prices and quantities are independent of the mix of government borrowing and lump-sum taxation, holding constant the path of exhaustive public spending.

Implicit in this analysis has been the assumption that the lump-sum tax is a tax on the income from *human* capital. Postponing lump-sum taxes then makes it possible to shift (part of) the tax burden to future generations if the birth rate is positive. Instead, if the tax falls on the income from a nonhuman fixed factor (land) whose ownership claims are priced efficiently, and if all land is owned by generations currently alive, then changes in the intertemporal pattern of taxation do not permit current generations to shift the tax burden to future genertions. Taxes on the income from all "fully owned" nonhuman factors have this property, even those factors supplied elastically. Of course the latter will be subject to the familiar incentive or allocative effects of changes in (non-lump-sum) taxation.

The Estimation of Prewar GNP: Methodology and New Evidence

Nathan S. Balke and **Robert J. Gordon**
Working Paper No. 2674
August 1988
JEL Nos. 131, 226

This paper develops a new methodology for estimating prewar GNP, taps previously unused data sources, and estimates GNP for 1869-1908 and 1869-1928. Primary among the new data sources are direct measures of output in the transportation, communications, and construction sectors, and estimates of the consumer price index. We develop new measures of real GNP, nominal GNP, and the GNP deflator. The new estimates of real GNP are as volatile on average over the business cycle as the traditional Kuznets-Kendrick series, but they dampen the amplitude of some cycles while raising the amplitude of others. The new estimates of the GNP deflator are distinctly less volatile than the traditional series and, in fact, are no more volatile than the GNP deflator in the postwar period.

Buybacks, Exit Bonds, and the Optimality of Debt and Liquidity Relief

Kenneth A. Froot
Working Paper No. 2675
August 1988
JEL No. 420

This paper compares various types of market-based debt relief with coordinated debt forgiveness by creditors. These schemes lead to different allocations of resources and levels of debtor and creditor welfare, but all of them attempt to stimulate investment in the debtor countries through reductions in the level of debt. If there are investment incentives, then investment in liquidity-constrained debtor countries will respond enough to make a reduction in debt profitable, but not enough to make the reduction optimal. For these countries, the optimal debt relief package (from the creditors' perspective) will include an infusion of new lending.

The Diffusion of New Technologies: Evidence from the Electric Utility Industry

Nancy L. Rose and **Paul L. Joskow**
Working Paper No. 2676
August 1988
JEL Nos. 621, 613

This paper investigates the effect of firm size and ownership structure on decisions to adopt technol-ogy. Using data on the electric utility industry, we argue that traditional models of technology diffusion are subject to sample selectivity biases that may overstate the effect of firm size on adoption probabilities. By extending conventional hazard rate models to use information on both adoption and nonadoption decisions, we differentiate between firms' opportunities for adoption and their underlying adoption propensities. The results suggest that large firms and investor-owned electric utilities are likely to adopt new technologies earlier than their smaller and publicly owned counterparts. Moreover, the selection biases from conventional statistical models can lead to an overstatement of size effects by a factor of two and an understatement of the effects of ownership structure and factor cost by a multiple of two to four.

The Mutual Amplification Effect of Exchange Rate Volatility and Unresponsive Trade Prices

Richard Baldwin and **Richard Lyons**
Working Paper No. 2677
August 1988
JEL Nos. 431, 411

The volatility of flexible exchange rates greatly exceeds what most analysts anticipated at the advent of generalized floating. The Dornbusch overshooting model accounts for the fact that exchange rates fluctuate more than the underlying fundamentals. This paper presents a model that may help to explain why exchange rates have been even more volatile than the overshooting model would suggest, and why trade prices have been so unresponsive in recent years. We use an extended version of the sticky-price monetary model of exchange rates and a simple industrial organization (IO) model of import pricing. The combined macro-IO model shows that exchange rate volatility and unresponsive trade prices can be mutually amplifying.

On Time-Series Properties of Time-Varying Risk Premiums in the Yen/Dollar Exchange Market

Fabio Canova and **Takatoshi Ito**
Working Paper No. 2678
August 1988
JEL Nos. 311, 431

This paper characterizes the changes in risk premiums in the 1980s. We construct a five-variable vector

autoregressive model to calculate a risk premium series in the foreign exchange market. The risk premium series is volatile and time-varying. We reject the hypothesis of no risk premium for the entire sample and for each of the two subsamples we consider. Various tests using the constructed risk premium series suggest that a risk premium existed but that it was neither constant nor stable over subsamples and that its volatility was considerably reduced after October 1982.

Foreign Exchange Rate Expectations: Micro Survey Data

This paper analyzes the panel data of biweekly surveys, conducted by the Japan Center for Intenational Finance, on the yen/dollar exchange rate expectations of 44 institutions for two years. There are three major findings: First, market participants are heterogeneous. There are significant "individual effects" in their expectation formation. Second, many institutions violate the rational expectations hypothesis. Third, forecasts with long horizons show less yen appreciation than those with short horizons. Cross-equation constraints implied by the consistency of the forecast term structure are strongly rejected in the data.

Precautionary Saving and the Timing of Taxes

This paper analyzes the effects of government debt and income taxes on consumption and saving in a world of infinitely lived households with uncertain and heterogeneous incomes. The special structure of the model allows exact aggregation across households despite incomplete markets. The effects of government debt are substantial, roughly comparable to those resulting from finite horizons, and depend crucially on the length of time until the debt is repaid. Also, anticipated changes in taxes cause anticipated changes in consumption. Finally, we derive an index of fiscal stance.

Terms of Trade and the Transmission of Output Shocks in a Rational Expectations Model

This paper analyzes the effects of productivity shocks on the current and future terms of trade and on output in a two-country framework. I use an overlapping-generations model in which individuals allocate their savings between domestic and foreign capital assets according to their preferences for risk and return. Since production in both countries is specialized, changes in the terms of trade affect investment returns in both countries; I assume rational expectations regarding such changes and develop a new approach to analyzing the comparative statistics of rational expectations equilibriums. I conclude that a temporary, positive productivity shock to the home country will cause the domestic terms of trade to depreciate initially and then to appreciate slowly back toward their trend level. The depreciation causes foreign output to fall below trend and causes a symmetric rise in domestic output via its effects on capital stocks. The impact of a permanent productivity shock differs, however: Investors will reallocate their portfolios and increase their holdings of domestic assets, which are expected to earn higher returns. If the portfolio shifts are strong enough, they cause the terms of trade to appreciate initially. Foreign output falls and domestic output rises in this case because of the portfolio shifts toward domestic capital.

Political and Economic Determinants of Budget Deficits in the Industrial Democracies

This paper focuses on the management of fiscal deficits and the public debt in the industrial democracies. Given the large deficits in many OECD countries in recent years, and the resulting sharp rise in the public debt, it is important to determine the economic and political forces leading to such large deficits. We find only partial support for the "equilibrium approach to fiscal policy," which assumes that tax rates are set over time in order to minimize the excess burden of taxa-

tion. Tax rates do not seem to be smoothed, and budget deficits in many countries in recent years appear to be too large to be explained by appeal to transitory increases in government spending. We suggest that in several countries the slow rate at which the post-1973 fiscal deficits were reduced resulted from the difficulties of political management in coalition governments. There is a clear tendency for larger deficits in countries characterized by a short average tenure of government and by the presence of many political parties in a ruling coalition.

News and the Dollar/Yen Exchange Rate, 1931-3: The End of the Gold Standard, Imperialism, and the Great Depression

Takatoshi Ito, Juro Teranishi, and **Kunio Okina**
Working Paper No. 2683
August 1988
JEL Nos. 045, 431

According to the efficient-markets hypothesis, news in Tokyo is responsible for the exchange rate changes during the Tokyo market hours, while news in the United States is responsible for changes during the New York hours. We analyze the intradaily dynamics of the dollar/yen exchange rate from December 1931 to November 1933. Japan's decision to go off the gold standard in December 1931 caused the yen to depreciate by 30 percent in a month, mostly in the Tokyo market. During 1932, the yen depreciated another 30 percent, mainly because of Japan's aggression in China and her resulting diplomatic isolation. In 1933, the yen appreciated against the dollar, mainly in the New York market, because of the U.S. decision to go off the gold standard. However, exchange rate volatility and its sensitivity to news declined over the two-year period, because of increasing capital controls. Changes in the interest rate differential were insignificant for the changes in the exchange rate. Changes in political regime, such as the decision to go off the gold standard, influenced the exchange rate most for the period considered. There were no policy decisions by Japan in 1931-3 that caused yen depreciation in order to promote exports and limit imports.

Investor Behavior in the October 1987 Stock Market Crash: The Case of Japan

Robert J. Shiller, Yoshiro Tsutusi, and **Fumiko Konya**
Working Paper No. 2684
August 1988
JEL No. 313

In a questionnaire survey, we asked Japanese institutional investors to recall what they thought and did during the worldwide stock market crash in October 1987. The results confirm that the drop in U.S. stock prices was the primary factor on their minds, and other news stories in the United States dominated Japanese news stories. A comparison with an earlier survey of U.S. institutional investors at the time of the crash (Shiller [1987]) shows a number of remarkable attitudinal and behavioral similarities between Japanese and U.S. institutional investors. The results suggest that events in the United States were the proximate cause of the crash in Japan, but that the transmission mechanism of the crash was very similar in both countries.

The Ricardian Approach to Budget Deficits

Robert J. Barro
Working Paper No. 2685
August 1988
JEL Nos. 023, 320

Persistent budget deficits have increased economists' interest in theories and evidence about fiscal policy. This paper develops the Ricardian approach and contrasts it with standard models. The discussion considers four major theoretical objections to Ricardian equivalence: finite lifetimes; imperfect capital markets; uncertainty about future taxes and incomes; and the distorting effects of taxation. Then the paper considers empirical evidence on interest rates, consumption and saving, and current account deficits. The conclusion is that the Ricardian approach is a useful first-order approximation and that this approach probably will become the benchmark model for assessing fiscal policy.

Pensions, the Option Value of Work, and Retirement

David A. Wise and **James H. Stock**
Working Paper No. 2686
August 1988

This paper develops a model of retirement based on the option value of continuing to work. Continuing to work maintains the option of retiring on more advantageous terms later. We use the model to estimate the effects on retirement of firm pension plan provisions. Typical defined-benefit pension plans in the United States provide very substantial incentives to remain

with the firm until some age, often the early retirement age, and then a strong incentive to leave the firm thereafter. (This may be a major reason for the rapidly declining labor force participation rates of older workers in the United States.) The model fits firm retirement data very well; it captures very closely the sharp discontinuous jumps in retirement rates at specific ages. We then use the model to simulate the effect on retirement of potential changes in pension plan provisions. Increasing the age of early retirement from 55 to 60, for example, would reduce firm departure rates between the ages of 50 and 59 by almost 40 percent.

U.S. Tax Laws and Capital Flight from Latin America

Charles E. McLure, Jr.
Working Paper No. 2687
August 1988

The interplay between the tax laws of the United States and those of the countries of Latin America creates inducements for capital flight. Most Latin American countries tax only income originating within their boundaries. If other countries tax foreigners' income that originates within their boundaries as heavily, then there is no tax advantage to capital flight. Latin American countries thus depend on other countries for the prevention of tax-induced capital flight and the loss of public revenues, investment funds, and equity that it implies.

Income from a U.S. trade or business conducted by foreigners, including capital gains, is subject to U.S. tax. Capital gains on real estate and dividends generally are taxed, but it may be possible to reduce those taxes substantially. The United States does not tax most other capital gains realized by foreigners. Most interest income paid to foreigners is also exempt from U.S. tax. Thus U.S. tax laws help to attract capital from Latin America.

A solution to this problem does not seem likely. The United States seems unlikely to reverse its policies. Little is to be gained from adoption of a residence-based approach by Latin American countries. A more radical approach that might be more effective would be a switch to consumption-based direct taxation in which interest income is neither taxed nor allowed as a deduction. This would reduce the attraction of favorable U.S. tax treatment by making equally attractive treatment available at home but would raise troublesome issues of equity, the treatment of foreign investment, and transition.

The Seasonal Cycle and the Business Cycle

Robert B. Barsky and **Jeffrey A. Miron**
Working Paper No. 2688
August 1988
JEL No. 130

Almost all recent research on macroeconomic fluctuations has worked with seasonally adjusted or annual data. This paper takes a different approach by treating seasonal fluctuations as worthy of study in their own right. We document the quantitative importance of seasonal fluctuations, and we present estimates of the seasonal patterns in a set of standard macroeconomic variables. Our results show that seasonal fluctuations are an important source of variation in all macroeconomic quantity variables but are small or entirely absent in both real and nominal price variables. The timing of the seasonal fluctuations consists of increases in the second and fourth quarters, a large decrease in the first quarter, and a mild decrease in the third quarter.

The paper demonstrates that, with respect to each of several major stylized facts about business cycles, the seasonal cycle displays the same characteristics as the business cycle, in some cases even more dramatically than the business cycle. That is, we find that at seasonal frequencies as well as at business cycle frequencies, output movements across broadly defined sectors move together, the timing of production and sales coincide closely, labor productivity is procyclical, nominal money and real output are highly correlated, and prices vary less than quantities. There is a "seasonal business cycle" in the U.S. economy, and its characteristics closely mirror those of the conventional business cycle.

Business Cycles and the Exchange Rate System: Some International Evidence

Marianne Baxter and **Alan C. Stockman**
Working Paper No. 2689
August 1988
JEL No. 431

This paper empirically investigates the differences in time-series behavior of key economic aggregates under alternative exchange rate systems. We use a postwar sample of 49 countries to compare the behavior of output, consumption, trade flows, government consumption spending, and real exchange rates under alternative exchange rate systems (pegged, floating, and systems such as the EMS). We then examine evi-

dence from two particular episodes of changes in the exchange rate system involving Canada and Ireland. Aside from greater variability of real exchange rates under flexible than under pegged nomimal exchange rate systems, we find little evidence of systematic differences in the behavior of other macroeconomic aggregates or international trade flows under alternative exchange rate systems. These results are of interest because a large class of theoretical models implies that the nominal exchange rate system has important effects on a number of macroeconomic quantities.

The evidence indicates that real interest rates for the agricultural economy have been extremely high in the 1980s and that their behavior seems to be linked to the behavior of real rates in the aggregate economy. Why have real rates been high? It seems to be a result of a concerted effort by the monetary authorities to disinflate the economy. However, the brunt of the Fed's disinflationary policy has fallen more heavily on the farm sector, which has had to face far higher real rates than the rest of the economy. Although breaking the back of inflation was certainly a worthy goal for the Fed, farmers have had to pay a heavy price. They have had to suffer for the sins of an economy that was excessively inflationary, which then had to be brought back into line with disinflationary policy.

Job Training, Wage Growth, and Labor Turnover

Jacob A. Mincer
Working Paper No. 2690
August 1988
JEL No. 800

Using explicit information on the timing and the duration of job training in panels of PSID men, I find that training has negative effects on turnover and positive effects on wage growth in the firm and over longer periods (1968–83). Wages of trainees grow 4–6 percent faster per year over periods of training than wages of other workers or in other periods. Wage trajectories *in* the firm and *across* firms over longer periods also are steeper for workers who engage in more training.

These results can be explained by the positive correlation between general and firm-specific components of training, as can the apparent paradox that frequent movers' wages grow less in the long run than those of less frequent movers (stayers), despite wage gains in moving.

Wage gains from mobility are reduced by worker investment in training in the new firm. These mobility (search and matching) gains appear to contribute to job attachment in the presence of such investments.

Understanding Real Interest Rates

Frederic S. Mishkin
Working Paper No. 2691
August 1988
JEL Nos. 310, 130

This paper outlines an approach to measuring real interest rates and to testing hypotheses about their behavior. It then describes what we know about real interest rates in the aggregate economy and provides estimates of real interest rates for the agricultural sector.

Voluntary Debt Reduction: Incentives and Welfare

Elhanan Helpman
Working Paper No. 2692
August 1988
JEL No. 433

In an economy with a debt overhang, investment depends on expected tax rates. On the other hand, expected tax rates depend on the debt's face value. Therefore, investment depends on the face value of debt. I show that this may lead to a postive or negative association between debt and investment, depending on the degree of international capital mobility and attitudes toward risk. Multiple equilibriums, with high and low investment levels, also may exist. This paper explores the desirability of debt reduction in this environment. First, it characterizes circumstances in which debt reduction is desirable from the creditors' collective point of view. Second, it formulates the forgiveness decision as a noncooperative game among creditors and explores the scope for debt reduction as an outcome of this game.

Modeling Structural and Temporal Variation in the Market's Valuation of Banking Firms

Edward J. Kane and **Haluk Unal**
Working Paper No. 2693
August 1988
JEL No. 314

This paper decomposes both the market sensitivity and the interest rate sensitivity of bank stock into on-

balance-sheet and off-balance-sheet components. It derives these constituent and often offsetting sensitivities from a nonstationary, three-equation model that employs accounting and capital market information to explain cross-sectional and temporal variation in the value of stockholder equity.

To control statistically for heteroskedasticity and intrasample differences in unbooked capital positions, we estimate the model separately for three size classes of large U.S. banks. Parameter estimates confirm the importance of "hidden" or unbooked capital at these banks. For the nation's very largest banks, shifts in the value of these parameters are consistent with the view that the capitalized value of federal deposit insurance guarantees burgeoned in the 1980s with interest volatility, demonstrations of regulatory forbearance, and relaxation of deposit rate ceilings.

Time-Varying Risk Perceptions and the Pricing of Risky Assets

Benjamin M. Friedman and **Kenneth N. Kuttner**
Working Paper No. 2694
August 1988
JEL No. 313

Empirical results based on two different statistical approaches lead to several conclusions about the role of time-varying asset risk assessments in accounting for what, on the basis of many earlier studies, appear to be time-varying differentials in ex ante asset returns. First, both methods indicate sizable changes over time in variance–covariance structures conditional on past information. These changing conditional variance-covariance structures in turn imply sizable changes over time in asset demand behavior, and hence in the market-clearing equilibrium structure of ex ante asset returns.

Second, at least for some values of the parameter indicating how rapidly investors discount the information contained in past observations, the implied ex ante excess returns bear non-negligible correlation to observed ex post excess returns on either debt or equity. The percentage of the variation of ex post excess returns explained by the implied time-varying ex ante excess returns is comparable to values that previous researchers have interpreted as warranting rejection of the hypothesis that risk premiums are constant over time.

Third, although for long-term debt the two statistical methods used here give sharply different answers to the question of how much relevance market participants associate with past observations in assessing

future risks, for equities both methods agree in indicating extremely rapid discounting of more distant observations—so much so that in neither case do outcomes more than a year in the past matter much at all. While the paper's other conclusions are plausible enough, the finding of such an extremely short "memory" on the part of equity investors suggests that the standard representation of equity risk by a single normally distributed disturbance is overly restrictive.

Searching for a Break in GNP

Lawrence J. Christiano
Working Paper No. 2695
August 1988
JEL Nos. 131, 210

It has been suggested that existing estimates of the long-run impact of a surprise move in income may have a substantial upward bias because of a trend break in postwar U.S. GNP data. This paper shows that the statistical evidence does not warrant abandoning the no-trend null hypothesis. A key part of the argument is that conventionally computed significance levels overstate the likelihood of the trend break alternative hypothesis. They do not take into account that, in practice, the break date is chosen based on pre-test examination of the data.

Proprietary Public Finance, Political Competition, and Reputation

Herschel I. Grossman and **Suk Jae Noh**
Working Paper No. 2696
August 1988
JEL No. 320

Although in most historical cases tax policy has been barely distinguishable from legalized theft, tax and spending policies in a few unusually fortunate communities, such as some of the modern democracies, apparently have been, if not welfare maximizing, at least relatively benevolent. We address this issue within a general positive analysis of tax and spending policy that focuses on the effects of political competition and its interaction with other constraints on policy choices, especially the constraint that equilibrium policies must be time consistent. The framework for this analysis is a theory of a proprietary fiscal authority whose objective is to extract rents for the political establishment, the proprietor of sovereign power. The analysis shows that,

if the political system is sufficiently stable, then a positive amount of political competition can induce the proprietary fiscal authority to behave more like a hypothetically benevolent fiscal authority. But, political competition can lower the equilibrium tax rate only unil the time-consistency constraint becomes binding. Moreover, in a reputational equilibrium, the minimum time-consistent tax rate is lower the more concern the policymaker has for future political rents. Accordingly, because this concern about the future increases with more political stability, the beneficial effect of political competition also increases with the stability of the political system.

Schooling and the Great Migration

Robert A. Margo
Working Paper No. 2697
September 1988
JEL Nos. 042, 823

In 1900, 90 percent of America's black population lived in the South and only 4.3 percent of those born in the region were living elsewhere. By 1950, the proportion of blacks living in the South had declined to 68 percent and 19.6 percent of those born in the region had left it. Using samples drawn from the public use tapes of the 1900, 1940, and 1950 Censuses I show that better-educated blacks were far more likely to leave the South than less-educated ones. Also, there was a feedback effect: black school enrollment increased in states that had previously experienced high rates of black out-migration. Econometric analysis of the determinants of black out-migration suggests that the better-educated were more likely to migrate because schooling lowered the costs of migrating, possibly by increasing awareness of distant labor market opportunities and the ability to assimilate into a different social and economic environment.

Unemployment: Getting the Questions Right—and Some of the Answers

Olivier Jean Blanchard
Working Paper No. 2698
September 1988
JEL Nos. 130, 820

This paper analyzes the issue of persistent high unemployment, focusing on two channels of persistence. The first is capital accumulation. The paper analyzes investment decisions under imperfect competition, focusing in particular on the effects of demand and cost shocks on investment, capital composition, and bankruptcies, and their effect on employment and unemployment. The second channel is labor supply. The paper analyzes the various channels through which the unemployed may become disenfranchised, leading to higher equilibrium unemployment. In both cases, it briefly reviews and assesses the available empirical evidence.

A Strategic Altruism Model in Which Ricardian Equivalence Does Not Hold

Laurence J. Kotlikoff, Assaf Razin,
and **Robert W. Rosenthal**
Working Paper No. 2699
September 1988

This paper demonstrates that Ricardian equivalence does not necessarily hold in models with altruistic transfers once one takes into account the strategic behavior of recipients as well as donors. To influence the final allocation of consumption in altruistic settings, potential recipients can threaten to refuse as well as to accept transfers.

We apply the extended Nash bargaining solution to the problem of an altruistic parent and a possibly altruistic child. The parent and child first choose a threat point noncooperatively; this threat point then influences the final allocation of consumption through the standard Nash bargaining solution. While the potential recipient can refuse transfers from the potential donor, he or she cannot refuse transfers from the government. When the government redistributes between the parent and child, it changes their endowments and the equilibrium threats, and thus the final allocation of consumption.

The feature of the cooperative model presented here that leads to the failure of Ricardian equivalence may be characteristic of a wider class of cooperative and noncooperative altruism models. This feature is that noninterior strategic postures underlie interior transfer behavior and that these noninterior strategic postures are altered by government redistribution.

Is Theory Really Ahead of Measurement? Current Real Business Cycle Theories and Aggregate Labor Market Fluctuations

Lawrence J. Christiano and **Martin S. Eichenbaum**
Working Paper No. 2700
September 1988
JEL Nos. 131, 321

In the 1930s, Dunlop and Tarshis observed that the correlation between hours and wages is close to zero.

This classic observation has become a litmus test by which macroeconomic models are judged. Existing real business cycle models fail this test dramatically. Based on this result, we argue that technology shocks cannot be the sole impulse driving postwar U.S. business cycles. We modify prototypical real business cycle models by allowing government spending shocks to influence labor market dynamics in a way suggested by Aschauer (1985), Barro (1981, 1987), and Kormendi (1983). This modification in principle can bring the models into closer conformity with the data. While the empirical performance of the models is improved significantly, they still fail to account for the Dunlop–Tarshis observation. Accounting for that observation will require further advances in model development. Consequently, we conclude that theory is behind, not ahead of, business cycle measurement.

The Founding of the Fed and the Destabilization of the Post-1914 Economy

Jeffrey A. Miron
Working Paper No. 2701
September 1988
JEL Nos. 131, 133

A standard assumption in the literature on optimal monetary policy is that the proper goal of policy is the reduction of the variation in output around its natural rate level. However, the stabilization of output has not always been accepted as the primary goal of policy. This paper argues that neither the founders of the Federal Reserve System nor the central bankers in charge during the first 25 years of the Fed's existence viewed the elimination of short-term movements in output as an important objective for policy. Instead, they apparently thought that "stabilization" of asset markets was the crucial task for the monetary authority. This paper compares the performance of the U.S. economy during the 25-year periods before and after 1914 and shows that after the founding of the Fed the variance of both the rate of growth of output and of the inflation rate increased significantly, while the average rate of growth of output fell, and real stock prices became substantially more volatile. The remainder of the paper then suggests that the deterioration in the performance of the economy after 1914 can be attributed directly to the actions of the Fed.

Collapsing Exchange Rate Regimes: Shocks and Biases

Linda S. Goldberg
Working Paper No. 2702
September 1988
JEL Nos. 430, 431

Patterns in domestic credit creation stemming from inconsistent fiscal policies have received widespread attention for aggravating speculative attacks on central bank foreign exchange reserves and for contributing to the collapse of exchange rate regimes. This paper acknowledges the importance of monetary and fiscal discipline but also emphasizes the importance of other random shocks to the domestic money market, most notably shocks from external credit supplies and relative prices.

Policies of the domestic fiscal authorities are only partial catalysts for speculative attacks on a currency. Expansion of domestic credit stemming from the monetization of fiscal imbalances may be dominated by involuntary domestic credit expansions necessitated by surprise shortages in supplies of external capital. Further, the unexpected availability of external capital translates into a lower net critical reserve floor, making the depletion of central bank reserves by a speculative attack more difficult to accomplish. Also, relative price shocks that directly influence the probability of collapse by randomizing the demand for money balances are of considerable importance.

Empirical studies of exchange rate crises that neglect these considerations will produce biased estimates of both probabilities of expected collapse and anticipated post-collapse exchange rates.

Intraday Yen/Dollar Exchange Rate Movements: News or Noise?

Takatoshi Ito and **V. Vance Roley**
Working Paper No. 2703
September 1988
JEL Nos. 310, 430

We examine intraday movements in the yen/dollar rate over 1980–6 using opening and closing quotes in the New York and Tokyo markets. The results violate random walk behavior about half of the time in various subsamples. However, the economic significance of departures from the random walk model diminishes over time. We also examine large jumps in the exchange rate and present some evidence on subsequent mean reversion. Finally, the response of Japanese and U.S. stock prices suggests that intraday yen/dollar rate movements do contain at least some relevant information.

Bank Size, Reputation, and Debt Renegotiation

Raquel Fernandez and **David Kaaret**
Working Paper No. 2704
September 1988

This paper examines the effect of the coexistence of small and large banks, with different interests in the international market, on the debt renegotiation process. Making use of a reputational model, we argue that the presence of small banks implies that debtor countries have a harder time obtaining new money than they would have without the small banks.

Tariffs in an Economy with Incomplete Markets and Unemployment

Raquel Fernandez
Working Paper No. 2705
September 1988

This paper examines the optimal labor contract in a small open economy with incomplete markets under international price uncertainty. It studies the effect on employment, wages, and profits of different realizations of the state of nature and determines agents' preferences concerning the implementation of a tariff. The implicit contract equilibrium is constrained to be Pareto optimal; unanticipated tariff policy cannot be Pareto-improving over free trade.

Partisan Cycles in Congressional Elections and the Macroeconomy

Alberto Alesina and **Howard Rosenthal**
Working Paper No. 2706
September 1988

The postwar United States exhibits two rather strong politicoeconomic regularities. The political regularity is that the party of the president has always lost votes in mid-term congressional elections, relative to its congressional vote in the previous elections; the economic regularity is that Republican administrations exhibit below-average economic growth in the first half of each term and Democratic administrations are associated with above-average growth in their first half. In the second halves, economic growth is similar under the two administrations. We provide a rational expectations model that can explain these two regularities. In presidential elections, voters have to choose between two polarized candidates; mid-term elections are used to counterbalance the president's policies by strengthening the opposition in Congress. Since presidents of different parties are associated with different economic policies, our model predicts a (spurious) correlation between the state of the economy and elections. The predictions of our model are in sharp contrast with those of traditional retrospective voting models in which voters simply reward the incumbent if the economy is doing well immediately before the election. Our empirical results suggest that our model performs at least as well as and often better than alternative models. In addition, we question previous claims that voters are short-sighted and naively backward-looking.

Inventive Activity in Early Industrial America: Evidence from Patent Records, 1790–1846

Kenneth L. Sokoloff
Working Paper No. 2707
September 1988

I use a sample of patent records from the United States between 1790 and 1846 to study the patterns in inventive activity. Patenting was procyclical and yet began to grow rapidly with the interruptions in foreign trade that preceded the War of 1812. There is also a strong association between patenting and proximity to navigable waterways. Although the importance of specific mechanisms remains unclear, both the temporal and the cross-sectional evidence imply that inventive activity was positively related to the growth of markets during early industrialization.

Industrialization and the Big Push

Kevin M. Murphy, Andrei Shleifer, and **Robert Vishny**
Working Paper No. 2708
September 1988
JEL Nos. 111, 112

This paper explores Rosenstein-Rodman's (1943) idea that simultaneous industrialization of many sectors of the economy can be profitable for all of them, even when no sector can break even by industrializing alone. We analyze this idea in the context of an imperfectly competitive economy with aggregate demand spillovers, and interpret the big push into industrialization as a move from a bad to a good equilibrium. We show that for two equilibriums to exist, an industrializing firm must raise the demand for products of other sectors through channels other than the contribution

of its own profits to demand. For example, a firm paying high factory wages raises demand in other manufacturing sectors even if it loses money. In a similar vein, a firm investing today in order to produce at low cost tomorrow shifts income, and hence demand for other goods, into the future and so makes it more attractive for other firms also to invest today. Finally, an investing firm can benefit firms in other sectors if it uses a railroad or other shared infrastructure, and hence helps to defray the fixed cost of building the railroad. All these transmission mechanisms that help to generate the big push seem to be of some relevance for less developed countries.

society's accounting system and in the mechanisms for ascertaining who is creditworthy. Because of asymmetric information, giving rise to credit rationing, interest rates do not play the simple allocative role ascribed by the conventional paradigm; as a result, the equilibrating forces provided by market mechanisms may be weak or virtually absent. This paper critiques the transactions-based approach to monetary theory and sketches a general equilibrium formulation of the theory, tracing some of its policy implications. We show that certain financial innovations, such as allowing for the more rapid recording of transactions, actually may reduce welfare.

Income Distribution, Market Size, and Industrialization

Kevin M. Murphy, Andrei Shleifer, and **Robert Vishny**
Working Paper No. 2709
September 1988
JEL Nos. 111, 112

When world trade is not free and costless, a less developed country can industrialize profitably only if its domestic markets are large enough. In such a country, for increasing returns to technologies to break even, sales must be high enough to cover the set-up costs. This paper studies some determinants of the size of the domestic market and focuses on two conditions conducive to industrialization. First, agriculture or exports must provide the source of autonomous demand for manufactures. Such expansion of autonomous demand usually results from increases in farm productivity or from opening of new export markets. Second, income generated in agriculture or exports must be distributed broadly enough that it materializes as demand for mass-produced domestic goods and not just for luxuries. We resort to these two determinants of the size of domestic markets to interpret several historical episodes of development.

Carbon Monoxide in the Ambient Air and Blood Pressure: Evidence from NHANES II and the SAROAD System

Douglas Coate and **Michael Grossman**
Working Paper No. 2711
September 1988
JEL No. 913

This paper uses data from the National Health and Nutrition Examination Survey (NHANES), 1976–80, and from the U.S. Environmental Protection Agency's SAROAD system to empirically analyze the effects on blood pressure of carbon monoxide in the ambient air. There is evidence in these data of a positive effect of carbon monoxide exposure on diastolic and systolic blood pressure. This effect is stable and statistically important across a large number of alternative specifications, including those with additional criteria air pollutants. There is little evidence of relationships between the other criteria pollutants and blood pressure, which is consistent with epidemiological literature that identifies carbon monoxide as the primary threat to cardiovascular health among ambient air pollutants. The carbon monoxide effect on blood pressure implied by the regression results is small but likely is biased toward zero by measurement error.

Banks as Social Accountants and Screening Devices for the Allocation of Credit

Joseph E. Stiglitz and **Andrew Weiss**
Working Paper No. 2710
October 1988

This paper presents an alternative perspective on the role of banks. We emphasize the way in which banks act as social accountants and screening devices. In this view, monetary disturbances induce disturbances in

Promises, Promises: The States' Experience with Income Tax Indexing

Daniel R. Feenberg and **Harvey S. Rosen**
Working Paper No. 2712
September 1988
JEL No. 324

Prior to 1985, ten states adopted some kind of indexing provisions for their personal income tax systems. Seven of these states subsequently suspended their

indexing laws for one or more years. In this paper we examine the states' experience with income tax indexing and see what lessons can be drawn from it. We describe the indexing statutes and estimate simple econometric models of the decisions to adopt indexing and to renege on a promise to index.

The Early History of Price Index Research

W. Erwin Diewert
Working Paper No. 2713
September 1988

This paper discusses five early approaches to the problem of price (and quantity) index numbers: 1) the fixed basket approach; 2) the statistical approach; 3) the test or axiomatic approach; 4) the Divisia approach; and 5) the economic approach.

The economic approach assumes optimizing behavior under constraint. It is discussed under four subtopics: 1) basic theoretical definitions; 2) the theory of bounds; 3) exact index numbers; and 4) econometric estimation of preferences.

I also discuss several topics raised by Triplett in a recent paper, including the merits of the test approach to index number theory, the chain principle and alternatives to it, the substitution bias, and the new good bias.

Although for the most part this paper is an extensive historical survey, it does include a few new results on multilateral alternatives to the chain principle in section 8. Also, in section 6.3, I show that the Paasche, Laspeyres, and all superlative indexes, will satisfy the circularity test to the first order.

Interactions between Domestic and Foreign Investment

Guy V. G. Stevens and **Robert E. Lipsey**
Working Paper No. 2714
September 1988
JEL Nos. 441, 522

This paper examines the expenditures for domestic and foreign fixed investment of a sample of U.S. multinational firms to explain empirically each type of investment and to determine whether there are significant interactions between them.

We theoretically and empirically explore models that exhibit two types of interactions: one financial and the other production-based. Financial interaction results from a model that assumes a risk of bankruptcy and its associated costs. Under these circumstances, the firm faces an increasing cost of capital as a function of its debt–equity ratio. Domestic and foreign investment are interdependent since, in competing for finance, each affects the cost of capital in the other location. Production interactions can arise when, because of start-up costs or other factors that produce nonlinear cost functions, it may become profitable to shift production from the home to the foreign location.

We test the hypotheses on data covering the domestic and foreign operations of seven multinational firms for 16–20 years. The firm-level investment functions fit reasonably well for both domestic and foreign expenditures; an interdependence between domestic and foreign investment was confirmed frequently through the finance side, but only once via production.

The Survival of Noise Traders in Financial Markets

**J. Bradford De Long, Andrei Shleifer,
Lawrence H. Summers,** and **Robert J. Waldmann**
Working Paper No. 2715
September 1988
JEL No. 313

We present a model of portfolio allocation by noise traders who form incorrect expectations about the variance of the return distribution of a particular asset. We show that for many types of misperceptions, as long as such noise traders do not affect prices, they earn higher expected returns than rational investors with similar degrees of risk aversion do. Moreover, many such noise traders survive and dominate the market in terms of wealth in the long run, in the sense that the probability is arbitrarily close to one that noise traders eventually will have a high share of the economy's wealth. Noise traders come to dominate the market despite the fact that they take excessive risks that skew the distribution of their long-run wealth and despite their excessive consumption. We conclude that the theoretical case against the long-run viability of noise traders is by no means as clear-cut as is commonly supposed.

On the Existence and Interpretation of a "Unit Root" in U.S. GNP

J. Bradford De Long and **Lawrence H. Summers**
Working Paper No. 2716
September 1988
JEL No. 131

We use the revised estimates of U.S. GNP constructed by Christina Romer (forthcoming 1989) to assess

the time-series properties of U.S. output per capita over the past century. At conventional significance levels we reject the null, that output is a random walk, in favor of the alternative: that output is a stationary autoregressive process about a linear, deterministic trend. There is a striking difference between the lack of persistence of output shocks either before World War II or over the entire century, on the one hand, and the strong signs of persistence of output shocks found by Campbell and Mankiw (1987) and by Nelson and Plosser (1982) for more recent periods. This suggests to us a Keynesian interpretation of the large unit root in post-World War II U.S. output: perhaps post–World War II output shocks appear persistent because automatic stabilizers and other demand management policies have damped substantially the transitory fluctuations that made up the pre–World War II Burns–Mitchell business cycle.

Econometrics and the Design of Economic Reform

Michael Bruno
Working Paper No. 2718
September 1988

The concept of "Economic Reform" in this paper is a planned shift from one Pareto-inefficient but quasi-stable equilibrium (or "trap") to a new Pareto-superior equilibrium that is also, or is designed to become, stable. I apply the concept to recent "shock" stabilization programs. I refer especially to Israel, where by means of a "heterodox" plan the economy was shifted credibly from a three-digit inflationary process with considerable inertia to relative price stability with higher real growth at only small adjustment costs. This two-pronged stabilization program consisted of a substantial correction of budget and external account "fundamentals" with a synchronized, wage–price–exchange rate freeze. The idea is rationalized theoretically within a simple dual equilibrium inflation model, for which some econometric estimates also are given.

An Empirical Assessment of Alternative Models of Risky Decisionmaking

Pamela K. Lattimore, Joanna R. Baker, and **Ann D. Witte**
Working Paper No. 2717
September 1988
JEL No. 026

This paper assesses the degree to which four of the most commonly used models of risky decisionmaking can explain the choices individuals make when faced with risky prospects. We use experimental evidence for two random samples of young adults. Using a robust, nonlinear least-squares procedure, we estimate a model that is general enough to approximate Kahneman and Tversky's prospect theory; for certain parametric values, it will yield the expected utility model, a subjective expected utility model, and a probability-transform model.

We find that the four models explain the decisionmaking behavior of the majority of our subjects. Surprisingly, the choice behavior of the largest number of subjects is consistent with a probability-transform model. Such models have been developed only recently and have not been used in applied settings. We find the least support for the expected utility model—the most widely used model of risky decisionmaking.

How Do the Elderly Form Expectations? An Analysis of Responses to New Information

B. Douglas Bernheim
Working Paper No. 2719
September 1988
JEL No. 918

This paper outlines and tests a simple theory describing the evolution of expectations about Social Security benefits during the period before retirement. After correcting for measurement error, I obtain results that are consistent with this theory: expectations appear to evolve as a random walk, and innovations in this process are unrelated to previously available information. I also estimate responses of expectations to the arrival of new information. Although previous research indicates that individuals do not form expectations on the basis of all available information (and in particular ignore much of the information contained in concurrent statutory entitlements to Social Security benefits), responses to new information during the period immediately preceding retirement appear to be highly rational. The bulk of information affects the evolution of expectations only through its impact on actual benefit calculations. Furthermore, the data support the view that individuals form accurate assessments of the ultimate impact of new information on actual benefits.

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