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NBER Reporter

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC. FALL 1984

Program Report

International Studies

William H. Branson

During the two years since the last program report (*NBER Reporter,* Winter 1982/3), the Bureau's Program in International Studies has worked on such diverse topics as: the development of theory and evidence on the determinants of foreign exchange risk premiums; the role of exchange rates in the international transmission of economic disturbances; the application of theories of strategic behavior in imperfect markets to the analyses of trade problems; the determinants of long-run trends in U.S. trade and competitiveness; the interaction of scale economies, trade, and technology; and the quantification and analysis of existing instruments of U.S. trade policy. The emphasis throughout has been on improving our understanding of the interaction between the U.S. economy and its international environment. Currently, the program's projects in international studies can be grouped into three general areas: international trade and structural adjustment; exchange rates and international macroeconomics; and debt and international financial stability. The first two have been active for the past two years with financial support from the Mellon Foundation. Activity in the third area is just beginning.

Trade and Adjustment

Analyses of U.S. trade in general and of U.S. adjustment to changes in the pattern of world trade have been a central part of the research in the international studies program since its beginning in 1978. This area has been particularly active in the past two years. In August 1982, a group of NBER research associates, organized by J. David Richardson and Program Director William H. Branson, were awarded a multiyear grant by the Division of Policy Research and Analysis of the National Science Foundation (NSF) to study "U.S. Trade Policy, Competitiveness, and Capital Mobility in the World Economy." The project set out to analyze the trends in U.S. trade and investment that form the environment for trade policy, and to do positive analyses of the consequences of alternative policy choices. The objective of this work is to improve the analytical and empirical base for policy choice, not to make policy recommendations.

One major development during the past two years in the NSF-sponsored project has been the formation of a working group on strategic behavior and trade. Following an initial conference on "Strategic Behavior and Trade" in March 1983, a working group of analysts from both the academic and the policy communities was set up to exploit the comparative advantage in the

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This issue of the *Reporter* highlights the Bureau's Program in International Studies. Next, Olivia Mitchell describes her work on the economic determinants of retirement. Then, Vance Roley discusses the effect of economic announcements on security yields. 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.

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academics' knowledge of models and the policymakers' information and data on real-world trade problems. Organized by Branson and Research Associate Alvin Klevorick, this group has been studying the application of game-theoretic approaches to the analyses of trade problems in an imperfectly competitive or oligopolistic environment. The group has had three meetings in which it analyzed case materials and heard papers based on cases presented earlier. Much of the work of this group will be aired at a conference in Washington on October 25-26 being organized by Research Associate Paul R. Krugman. Krugman, Richardson, Research Associate Gene M. Grossman, and Faculty Research Fellows James A. Brander and Barbara J. Spencer have been active members of this research team.

Brander, Research Associate Jonathan Eaton, Grossman, Krugman, and Spencer have focused primarily on the interactions between technology and trade in imperfectly competitive markets, and on the effects of government intervention in such settings. High fixed costs and few international competitors are central to their analyses that seek to elucidate aspects of industrial strategy in dynamic high tech industries.[1]

As part of the NSF-sponsored project, Branson has continued his work on analyzing changes in the structure of world trade, and their implications for adjustment in the U.S. economy.[2] Grossman also completed an empirical study of the effects of import competition on employment and wages in specific U.S. industries.[3] Research Associates Robert E. Lipsey and Irving B. Kravis are studying how international differences in productivity growth are translated into changes in export shares. They also have continued their work on determinants of international price levels.[4] As part of the study of trends in world trade, Branson and Research Economist Colin I. Bradford organized a conference on the "Global Implications of Trade in East and Southeast Asia," held in January 1984.[5]

[1] *See, for example, J. Eaton and G. M. Grossman, "Optimal Trade and Industrial Policy under Oligopoly," NBER Working Paper No. 1236, November 1983; B. J. Spencer and J. A. Brander, "International R and D Rivalry and Industrial Strategy," NBER Working Paper No. 1192, August 1983, and* Review of Economic Studies *L4, 163, October 1983, pp. 707-722; and J. A. Brander and P. R. Krugman, "A 'Reciprocal Dumping' Model of International Trade," NBER Working Paper No. 1194, August 1983, and* Journal of International Economics *15, 3-4, November 1983, pp. 313-322.*

[2] *G. M. Grossman, "The Employment and Wage Effects of Import Competition in the United States," NBER Working Paper No. 1041, December 1982.*

[3] *W. H. Branson, "Trade and Structural Interdependence between the United States and the NICs," NBER Working Paper No. 1282, March 1984.*

[4] *See, for example, I. B. Kravis and R. E. Lipsey, "Toward an Explanation of National Price Levels," NBER Working Paper No. 1034, November 1982, and* Princeton Study in International Finance *52, November 1983.*

[5] *The conference was partially financed by a grant from the IBM Corporation; a conference volume is forthcoming from the University of Chicago Press.*

A third major area of research is the role of financial markets, and especially exchange rates, as international transmitters of real disturbances. This work covers the links among fiscal policy, interest rates, and exchange rates and between trade and investment; it also encompasses the sectoral effects of movements in real exchange rates. Richardson, Lipsey, and Kravis, and Research Associates Jeffrey D. Sachs, Jacob A. Frenkel, and Assaf Razin have studied these problems.[6] This will be an expanding area of research in the next few years; a series of program meetings and a conference, organized by Richardson, are scheduled for 1985-86.

Research Associate Robert E. Baldwin leads a related project on American trade relations. This project is supported by the Ford Foundation. Its objective is mainly to produce empirical studies of the effects of U.S. trade policy actions. The project held a conference in December 1982 on "The Structure and Evolution of Recent U.S. Trade Policy," from which a volume (described in the "Bureau Books" section of this issue of the *NBER Reporter*), edited by Baldwin and Research Affiliate Anne O. Krueger, has been published by the University of Chicago Press this year.

After a working meeting in Washington in April 1983, the project met in August 1983 for a one-day conference on "Recent Issues and Initiatives in U.S. Trade Policy." An NBER Conference Report summarizing the papers, edited by Baldwin, was published early this year. Both Baldwin and Richardson have been active in research in this area in the past year.[7]

Each year the NBER project on trade has held several program meetings. In addition to those already described, a meeting on "Direct Investment and Trade," organized by Kravis and Lipsey, was held at the Bureau's New York office in April 1984. A larger research conference has also been held each year. The "American Trade Relations Project" met in Cambridge in August 1983, and a review conference on "Research on Recent and Prospective U.S. Trade Policy" was held in Washington in March 1984.

Exchange Rates and International Macroeconomics

Since the beginning of the program in 1978, a second major area of research has been the workings of the international monetary system. As a product of this research, the Conference on Exchange Rate Theory and Practice, held in January 1982, reflected the consolidation of the "asset market" theory of exchange rate determination.[8] Since the last program report, NBER researchers have extended their work on numerous aspects of exchange rates and international macroeconomics. Much of this research falls into four categories: determinants of exchange rate fluctuations; efficiency of the foreign exchange market; the structure of labor markets and macroeconomic adjustment; and adjustment to external shocks. In addition, there has been increasing interest in the analysis of coordination of international macroeconomic policy, within a new research group organized by Research Associate Richard C. Marston.

NBER work on exchange rate determination has continued to emphasize the important role of expectations and new information that make exchange rate movements difficult, if not impossible, to predict. Many of the program's researchers have focused on this area, including all of the contributors to the volume mentioned above. The early work of Research Associate Rudiger Dornbusch, Faculty Research Fellow Sebastian Edwards, Frenkel, and Research Associate Michael L. Mussa focused particularly on the importance of new information. More recent research by Branson has incorporated the reactions of monetary policy into the asset market model in an attempt to detect effects running from exchange rate fluctuations to monetary policy. Faculty Research Fellow David H. Papell has continued his empirical work on exchange rate overshooting.[9] At the same time several researchers, including Research Associates Robert P. Flood, Jr., and Maurice Obstfeld, have established results on the timing of exchange rate crises in systems with fixed exchange rates that are adjusted from time to time.[10]

One continuing puzzle that has been the object of much empirical work is the rejection of the joint hypothesis of rational expectations and efficiency in the foreign exchange markets. Early work in this area was pioneered by Frenkel. Research Associates John F. O. Bilson and Jeffrey A. Frankel, and Faculty Research

[6] *See J. D. Richardson, "The New Nexus among Trade, Industrial, and Exchange Rate Policies," NBER Working Paper No. 1099, March 1983; R. E. Lipsey, I. B. Kravis, and L. O'Connor, "Characteristics of U.S. Manufacturing Companies Investing Abroad and Their Choice of Production Locations," NBER Working Paper No. 1104, April 1983; J. D. Sachs and C. Wyplosz, "Real Exchange Rate Effects of Fiscal Policy," NBER Working Paper No. 1255, January 1984; and J. A. Frenkel and A. Razin, "Budget Deficits and Rates of Interest in the World Economy," NBER Working Paper No. 1354, May 1984.*

[7] *See, for example, R. E. Baldwin, "Trade Policy, Income, and Employment," NBER Working Paper No. 1321, April 1984; and R. E. Baldwin and J. D. Richardson, "Recent U.S. Trade Policy and Its Global Implications," NBER Working Paper No. 1330, April 1984.*

[8] *J. F. O. Bilson and R. C. Marston, eds.,* Exchange Rate Theory and Practice, *Chicago: University of Chicago Press, 1984. A description of this volume appears in the "Bureau Books" section of this issue of the* NBER Reporter.

[9] *S. Edwards, "Floating Exchange Rates, Expectations, and New Information," NBER Reprint No. 458, March 1984, and* Journal of Monetary Economics *11, 3, May 1983, pp. 321-336; W. H. Branson, "A Model of Exchange Rate Determination with Policy Reaction: Evidence from Monthly Data," NBER Working Paper No. 1178, August 1983, and in P. Malgrange and P. A.. Muet, eds.,* Contemporary Macroeconomic Modelling, *London: Blackwell, 1984, pp. 128-150; and D. H. Papell, "Activist Monetary Policy and Exchange Rate Overshooting: The Deutschemark/Dollar Rate," NBER Working Paper No. 1195, August 1983.*

[10] *See, for example, M. Obstfeld, "Balance-of-Payments Crises and Devaluation," NBER Reprint No. 499, July 1984, and* Journal of Money, Credit, and Banking *16, 2, May 1984, pp. 208-217.*

Fellow David A. Hsieh are among the researchers refuting the joint hypothesis. In several papers, Research Associate Robert J. Hodrick has investigated the possibility that the appearance of inefficiency reflects a time-varying risk premium.[11]

Another important research topic since the beginning of the program has been the interaction between wage indexation and exchange rate flexibility as a determinant of the effects of external disturbances on fluctuations in employment. Important early results were established in this field by Marston, Flood, and Research Associate Nancy P. Marion. In a series of separate and joint papers, Frenkel and Faculty Research Fellow Joshua Aizenman, and Marston and Research Associate Stephen J. Turnovsky, have continued the research.[12] A basic result from the Marston-Turnovsky paper is that indexation to the GNP deflator with unanticipated fluctuations in prices of imported inputs minimizes output fluctuations. To the extent that wages are indexed to prices, the real wage will be "sticky." Continuing a line of empirical research begun in the late 1970s by Branson and Faculty Research Fellow Julio J. Rotemberg, and by Sachs, Research Affiliate Jacques R. Artus has recently presented extensive empirical evidence of real wage stickiness in Europe.[13]

Research has also continued in the general area of domestic adjustment to external shocks, with a natural emphasis on energy prices. Research Associate Pentti J. K. Kouri and Faculty Research Fellow Jorge Braga de Macedo have analyzed the effects of the oil price increase on productivity growth in France, in an empirical study that includes estimation of a vintage production function. Research Associates Michael Bruno and Branson attribute much of the differential growth performance of the OECD and the middle-income developing countries in the 1970s to the pattern of borrowing of the OPEC surplus. In a series of papers, Marion and Lars E. O. Svensson studied the effects over time of the oil price increase. Finally, Turnovsky continued a line of research followed by several members of the program in studying how stabilizing exchange-market intervention may take different forms, depending on the source or nature of external shocks.[14]

There is increasing interest in the international studies group in potential gains from international coordination of macroeconomic policies as a research topic. In recent years, wide fluctuations in real exchange rates, one result of divergent national policies, have magnified the structural problems of individual countries and countries trying to cope with increasing trade competition. Thus the failure to coordinate macroeconomic policies may threaten trade agreements. Quantitative research on the gains from coordination is different because: (1) it requires estimation of models covering several countries; and (2) it requires analysis of the strategic aspects of interdependence among governments. Nevertheless, several NBER researchers have begun work on quantitative studies of coordination.[15]

Marston has taken the lead in organizing two conferences that survey and consolidate existing research on coordination. The first was held during the 1983 Summer Institute in Cambridge. (It is summarized in the *NBER Reporter*, Fall 1983, pp. 17-18.) The second conference was jointly sponsored by NBER and the Centre for Economic Policy Research (CEPR) in London, and held in June 1984. Willem H. Buiter, a research associate of both NBER and CEPR, organized this conference with Marston. The participants were an international group of researchers and policymakers. They discussed eight papers and held a panel discussion on prospects for international coordination. The discussion focused on both substance (that is, recent and prospective actual attempts at coordination) and on research problems. (A more detailed description of this conference appears in the "Conferences" section of this issue of the *NBER Reporter*.) The resultant conference volume will be published by Cambridge University Press in early 1985.

In addition to the conference on coordination, Marston organized a program meeting on balance-of-payments and exchange rate research in Cambridge in March 1983. Obstfeld also organized a one-day meet-

[11] *See J. A. Frankel and C. Engel, "Do Asset-Demand Functions Optimize over the Mean and Variance of Real Returns? A Six-Currency Test," NBER Working Paper No. 1051, December 1982; J. F. O. Bilson and D. A. Hsieh, "The Profitability of Currency Speculation," NBER Working Paper No. 1197, September 1983; and R. J. Hodrick and S. Srivastava, "An Investigation of Risk and Return on Forward Foreign Exchange," NBER Working Paper No. 1180, August 1983.*

[12] *Examples are R. C. Marston and S. J. Turnovsky, "Imported Materials Prices, Wage Policy, and Macroeconomic Stabilization," NBER Working Paper No. 1254, December 1983; and J. Aizenman and J. A. Frenkel, "Optimal Wage Indexation, Foreign Exchange Intervention, and Monetary Policy," NBER Working Paper No. 1329, April 1984.*

[13] *J. R. Artus, "An Empirical Evaluation of the Disequilibrium Real Wage Rate Hypothesis," NBER Working Paper No. 1404, July 1984.*

[14] *See, for example, P. J. K. Kouri, J. B. de Macedo, and A. J. Viscio, "Profitability, Employment, and Structural Adjustment in France," NBER Reprint No. 436, January 1984, and* Annales de l'Insée *47-48, July-December 1982, pp. 85-112; M. Bruno, "Petrodollars and the Differential Growth Performance of Industrial and Middle-Income Countries in the 1970s," NBER Working Paper No. 1056, January 1983; N. P. Marion and L. E. O. Svensson, "World Equilibrium with Oil Price Increases: An Intertemporal Analysis," NBER Working Paper No. 1074, February 1983; and S. J. Turnovsky, "Exchange Market Intervention under Alternative Forms of Exogenous Disturbances," NBER Working Paper No. 1289, March 1984.*

[15] *Examples are J. A. Frankel, "The Desirability of a Dollar Appreciation, Given a Contractionary U.S. Monetary Policy," NBER Working Paper No. 1110, April 1983; J. D. Sachs, "International Policy Coordination in a Dynamic Macroeconomic Model," NBER Working Paper No. 1166, July 1983; J. D. Sachs and G. Oudiz, "Macroeconomic Policy Coordination among the Industrial Countries,"* Brookings Papers on Economic Activity *1, 1984, pp. 1-64.*

ing on aspects of international capital mobility during the 1983 Summer Institute (Fall 1983 *NBER Reporter*, pp. 16–17). Also during that Summer Institute, Frenkel organized a one-day meeting on exchange rate policy. Frenkel coordinated a subsequent program meeting on exchange rates at the University of Chicago in May 1984.

Debt and International Financial Stability

In the past three years the growing problem of international debt and its perceived threat to the stability of the world economy has moved toward the top of the agenda for international economic policy. If debtor countries all squeeze demand in an attempt to generate trade surpluses to service their debt, the result could be world recession and failure of the attempted policy. If they do not service their debt, the stability of the financial system may be threatened. Either way, the U.S. economy will be affected, through falling exports or financial disturbance. In addition, the United States itself may become an international debtor in the next few years, requiring a U.S. trade surplus to service that debt position.

The debt problem has naturally attracted the interest of several NBER researchers. Buiter has studied issues of measurement of the debt. Dornbusch has shown the different paths of debt accumulation in Latin America. Eaton has considered the effects of potential repudiation on international borrowing. Edwards did an empirical study of the risk-return trade-off in lending to developing countries. Frenkel and Razin constructed a model of the effects of actual and potential changes in debt positions on real interest rates. In a series of papers, Sachs explored ways of modeling international borrowing.[16] Krugman, Frankel, and Faculty Research Fellow Barry J. Eichengreen have also studied various aspects of the debt problem.

Despite these individual efforts, though, research has lagged behind the policy problems posed by the debt issue. So, the international studies program is organizing a project in the area, to be coordinated by Sachs. He will be joined by many of the NBER researchers mentioned above, and others, and will attempt to provide the analysis and empirical research that could be the basis for improved international policy decisions in the area.

Other Projects

In addition to the three main lines of research discussed above, work along related lines is being conducted in the international studies program. In a series of empirical papers, Research Associate Laurence J. Kotlikoff has tested alternative explanations of the patterns of world trade and growth. Research Associate Michael R. Darby has continued his studies of productivity growth in the United States, and of monetary policy in an empirical model of the United States as a large open economy. Faculty Research Fellow Alan C. Stockman has worked on relative price determination in open economies. Research Associate (and Director of CEPR) Richard Portes has continued his empirical work on estimation of markets in disequilibrium.[17] And, in 1982–83 and 1983–84, respectively, Krugman and Frankel were on leave as senior staff economists at the Council of Economic Advisers, where they conducted research on international economic problems.

Jointly with the World Bank, the international studies program is sponsoring a conference on "Structural Adjustment and the Real Exchange Rate in Developing Countries." This is being organized by Edwards and will be held in November 1984 at the World Bank in Washington. A preconference meeting held during the 1984 Summer Institute in Cambridge went over drafts and outlines of prospective papers.

With a grant from the U.S.–Japan Fulbright Commission, a joint NBER–University of Tokyo research group is doing theoretical and empirical work on U.S.–Japan trade relations. This group is organized by Marston for NBER and Professor Koichi Hamada of Tokyo. It will probably hold a one-day meeting during the 1985 NBER Summer Institute.

Each year since 1979, the international studies program has held an intensive series of workshops and seminars in Cambridge as part of the NBER's Summer Institute. This provides an especially important opportunity for the international studies group, because its members are quite dispersed geographically, many in Europe and Israel. In 1983 and 1984, the macroeconomic portion of the program's Summer Institute was organized by Marston, and the trade portion by Grossman and Richardson.

In addition to the U.S.–Japan meeting, the 1985 Summer Institute will include a review of the results of the working group on strategic behavior and trade, and of

[16] *Examples are W. H. Buiter, "Measuring Aspects of Fiscal and Financial Policy," NBER Working Paper No. 1332, April 1984; R. Dornbusch, "External Debt, Budget Deficits, and Disequilibrium Exchange Rates," NBER Working Paper No. 1336, April 1984; J. Eaton and M. Gersovitz, "Debt with Potential Repudiation,"* Review of Economic Studies *48, April 1981, pp. 289–309; S. Edwards, "LDCs' Foreign Borrowing and Default Risk: An Empirical Investigation, 1976–80," NBER Working Paper No. 1172, July 1983, and* American Economic Review, *September 1984; J. A. Frenkel and A. Razin, "Fiscal Policies, Debt, and International Economic Interdependence," NBER Working Paper No. 1266, January 1984; and J. D. Sachs, "Theoretical Issues in International Borrowing,"* Princeton Study in International Finance *54, July 1984.*

[17] *Examples are L. J. Kotlikoff and E. E. Leamer, "Empirical Tests of Alternative Models of International Growth," NBER Working Paper No. 1414, August 1984; M. R. Darby, "Monetary Policy in the Large Open Economy," NBER Working Paper No. 1127, May 1983; A. C. Stockman and H. Dellas, "The Roles of the Terms of Trade and Nontraded-Good Prices in Exchange Rate Variations," NBER Working Paper No. 1342, May 1984; and R. Portes, R. Quandt, D. Winter, and S. Yeo, "Macroeconomic Planning and Disequilibrium: Estimates for Poland, 1955–80," NBER Working Paper No. 1182, August 1983.*

the NSF-sponsored project on trade more generally. It also will probably focus on initial results from the debt project, and on further developments in macroeconomic coordination.

Finally, the International Seminar on Macroeconomics (ISOM), a joint venture of the Bureau and the École des Hautes Études en Sciences Sociales (EHESS) in Paris that is held each June in Europe, is organized by NBER Research Associate Robert H. Gordon and Professor Georges de Menil of EHESS. ISOM brings together roughly equal numbers of American and European researchers to study common macroeconomic problems. (A description of the June 1984 ISOM appears in the "Conferences" section of this issue of the *NBER Reporter*.) The resultant papers are published in the *European Economic Review*, in the May issue of the following year.

Research Summaries

The Economic Determinants of Retirement

Olivia S. Mitchell

Over the past four years, much of my research has been devoted to analyzing the economic determinants of retirement. The key factors that I considered were labor market earnings, Social Security benefits, and payments from employer-provided pensions. The analysis also incorporated such other influences as health status, mortality rates, and inflation. The central questions addressed were: (1) What are the economic opportunities facing workers at older ages? and (2) How do these income opportunities affect retirement behavior?

To answer these questions, I built a model of the income opportunities available to older workers and estimated the effects of these economic factors on retirement patterns. I then examined two different data sets using four different econometric models and found remarkably consistent answers throughout. The robustness of the findings makes the research a useful guide for those who implement labor market policy.

The Role of Health

Previous retirement research can be grouped into three camps—some studies emphasizing the preeminent role of poor health in causing withdrawal from the labor force, some claiming that mandatory retirement is a central causal factor, and others stressing the role of income opportunities.[1] Research with Gary S. Fields[2] and Gloria Bazzoli[3] reveals that poor health plays a relatively small role in the retirement decisions of males. In fact, in an analysis-of-variance framework, economic variables account for roughly three-quarters of the explained variation in retirement age, while health accounts for only one-quarter. This confirms the importance of economic factors in retirement behavior.

The Role of Mandatory Retirement

Contrary to popular opinion, only a minority of U.S. workers are employed in jobs with mandatory retirement provisions. Furthermore, most workers who are thus covered voluntarily retire well before they are forced to. For instance, in the early 1970s only 2 percent of the manufacturing employees examined in our analysis remained on their jobs until the age of mandatory withdrawal. In the latter part of the 1970s, an amendment to the Age Discrimination in Employment Act (ADEA) raised the allowable mandatory age to 70 for most occupations, and very few workers remain at their job that long. Some states have gone beyond ADEA and outlawed mandatory retirement altogether. We therefore conclude that the explanation for retirement patterns lies elsewhere.

An Intertemporal Model

The analytical model employed in my work with Fields[4] recognizes that the retirement decision is intertemporal: a worker evaluates *how long* to remain on the job rather than focusing only on the amount of labor he or she will supply this week (or year). The goal is to select the retirement date that balances the utility from additional income with the utility from retiring and enjoying full-time leisure. At the same time, retirement choices are constrained by economic opportunities, including earnings available from continued work, and retirement payments from pensions and Social Security. Our theoretical structure incorporating each of these

[1] *For a review of recent theoretical and empirical work in the retirement area, see O. S. Mitchell and G. S. Fields, "The Effect of Pensions and Earnings of Retirement: A Review Essay," NBER Working Paper No. 772, September 1981, and in R. G. Ehrenberg, ed.,* Research in Labor Economics, *JAI Press, 1982.*

[2] *G. S. Fields and O. S. Mitchell,* Retirement, Pensions, and Social Security, *MIT Press, forthcoming, 1985, Chapters 1 and 5.*

[3] *G. Bazzoli, "The Early Retirement Decision: The Influence of Health, Pensions, and Social Security," Ph.D. Dissertation, Cornell University, 1983.*

[4] *The theoretical model is developed in G. S. Fields and O. S. Mitchell, "Economic Determinants of the Optimal Retirement Age: An Empirical Investigation," NBER Working Paper No. 876, April 1982, and* Journal of Human Resources, *Winter 1984; and O. S. Mitchell and G. S. Fields, "The Economics of Retirement Behavior," NBER Working Paper No. 1128, May 1983, and* Journal of Labor Economics, *January 1984.*

features generates predictions that can be tested empirically: for instance, a higher initial pension induces earlier retirement, other things being equal. The model also shows that higher earnings and pension accrual rates have simultaneously positive and negative influences, so that their combined effects can be derived only empirically.

The Older Workers' Budget Sets

Empirical testing of the theoretical retirement model requires that the analyst develop a thorough understanding of the intertemporal economic incentives confronting older workers—the older workers' budget sets. This task is made more difficult by the fact that most data sets contain extremely incomplete information about workers' earnings and retirement incomes.[5] Furthermore, Social Security and employer-provided pensions are exceptionally complex institutions whose rules must be examined in detail to evaluate benefits at alternative retirement ages.[6]

In much of the research described here we use two different surveys: the Longitudinal Retirement History Survey (LRHS) and the U.S. Department of Labor's Benefit Amounts Survey (BAS). The LRHS is quite representative of the older population but contains only sketchy information on the rules governing private pension benefits for workers in the sample. By contrast our BAS sample provides extensive detail on pension rules as well as earnings histories but does so for workers attached to only 14 pension plans. Comparisons across data sets are useful in evaluating the robustness of empirical results.

Our empirical perspective is that of an older worker who contemplates the income and leisure associated with retiring at some "base" age, say age 60, versus those produced by retiring at other, later ages. Working until some particular age and then retiring entitles the worker to a (net) earnings stream until that age, and thereafter a (net) Social Security and pension benefit stream until death. The sum of these discounted streams is a present value of total net income associated with that retirement age. If the worker were to defer retirement, earnings would continue to accrue but retirement payments would usually be postponed. Some firms reward deferral with higher discounted pension streams; others penalize later retirement using actuarially nonneutral pensions.[7] In our data set, for instance, many union pension plans discourage work beyond age 60: we found that a worker delaying retirement from age 60 to age 65 receives about 18 percent lower lifetime benefits.[8] On the other hand, pensions that are tied to final salaries tend to increase with time on the job.

The Social Security system also has an uneven pattern of benefit accruals and in general is not actuarially neutral.[9] Putting these patterns together, the data show that values of PDVY(R) vary a great deal across retirement ages: the income increment from a marginal year of work is twice as large at some ages as at others. In our sample the average older worker will always add to net income by deferring retirement since the gain from deferring is always positive. However, this gain varies considerably across workers and firms.

Estimating Behavioral Models

The project's ultimate goal is to generate empirical estimates of the behavioral parameters governing older workers' retirement responses to economic factors. We examine several different empirical specifications including regression models, two discrete-choice formulations, and a nonparametric approach.[10] The regression findings confirm the hypothesis that economic variables are powerful determinants of retirement. They also indicate that workers with more base-year income retire earlier; those who anticipate gaining more by deferring retirement are those who postpone retirement. We also find that mandatory retirement rules are uncorrelated with retirement ages, implying that workers react primarily to the incentives embedded in retirement income streams rather than mandatory retirement rules per se.

[5] *Data problems in the retirement area are discussed in O. S. Mitchell and G. S. Fields, "The Effect of Pensions and Earnings on Retirement." Methods of inferring the value and impact of employment benefits including pensions are discussed in O. S. Mitchell and E. Andrews, "Scale Economies in Private Multiemployer Pension Systems,"* Industrial and Labor Relations Review, *July 1981; O. S. Mitchell, "Fringe Benefits and Labor Mobility,"* Journal of Human Resources, *Spring 1982; and "Fringe Benefits and the Costs of Changing Jobs,"* Industrial and Labor Relations Review, *October 1983.*

[6] *The institutional features of Social Security and private pensions are detailed in G. S. Fields and O. S. Mitchell,* Retirement, Pensions, and Social Security. *Federal regulations over private pensions are discussed in O. S. Mitchell, "The Labor Market Impact of Federal Regulation: OSHA, ERISA, EEO, and Minimum Wage," in L. Dyer, T. Kochan, and D. Mitchell, eds.,* Industrial Relations Research in the 1970s, *IRRA, 1982.*

[7] *A complete discussion of the incentives embedded in our sample of private pension plans appears in O. S. Mitchell and G. S. Fields, "Rewards to Continued Work: The Economic Incentives for Postponing Retirement," in M. David and T. Smeeding, eds.,* Horizontal Equity, Uncertainty, and Measures of Well-Being, *University of Chicago Press, forthcoming.*

[8] *A complete discussion of the data sources appears in G. S. Fields and O. S. Mitchell,* Retirement, Pensions, and Social Security.

[9] *For a description of the structure of Social Security benefits in the 1970s and 1980s, see G. S. Fields and O. S. Mitchell, "Restructuring Social Security: How Will Retirement Ages Respond?" in* National Commission on Employment Policy Conference Volume, *forthcoming. A more technical treatment appears in G. S. Fields and O. S. Mitchell, "The Effects of Social Security Reforms on Retirement Ages and Retirement Incomes," NBER Working Paper No. 1348, May 1984, and* Journal of Public Economics, *forthcoming, 1984.*

[10] *The regression approach is discussed in G. S. Fields and O. S. Mitchell, "Economic Determinants of the Optimal Retirement Age." The two discrete-choice setups are developed in O. S. Mitchell and G. S. Fields, "The Economics of Retirement Behavior." Our nonparametric approach is described in Chapter 7 of G. S. Fields and O. S. Mitchell,* Retirement, Pensions, and Social Security.

We implement the discrete-choice approaches using two variants of a multinomial logit model, one of which allows us to test the assumption of independence from irrelevant alternatives. Our results indicate that tastes for leisure and for income are not uniform in the older population. We reconfirm this heterogeneity using nonparametric analysis.

Looking across the four empirical models and two data sets examined, we find substantial agreement about how economic variables affect retirement patterns. In other words, the findings do not appear especially sensitive to the way in which unobserved tastes are modeled, so that it seems unlikely that our results depend heavily on underlying econometric assumptions.

Policy Analysis: Pensions and Social Security

A final component of the research project uses the models and estimates described above to evaluate several reforms recently proposed and/or legislated. For instance, one suggestion that recently arose in policy circles is to require actuarial neutrality in private pension plans. This view is justified by the claim that neutrality would encourage workers to remain on their jobs longer. However, our analysis suggests that this might not be the case, since we find evidence that workers preferring more leisure time "sort" themselves into firms whose pension plans encourage early retirement.[11] In addition, mandating neutrality could lead to lower benefits rather than higher ones. Both the welfare and the efficiency costs of mandating pension neutrality must therefore be analyzed more carefully.

Another important and topical application of our findings on retirement is the estimation of the likely effect of Social Security reforms on retirement ages and retirement incomes. We focus on four specific policy experiments, including some quite similar to those legislated by Congress in 1983.[12] Under each of the experiments, older people end up with less income. This occurs because all of the reforms lower benefits, yet older workers do not defer their retirement long enough to regain their previous income levels. For example, raising the age at which "normal" Social Security benefits may be received causes workers to delay retirement by only about two months, leaving them with benefits 22 percent lower and total income 9 percent lower (including earnings and private pension payments).

Further Work

As the U.S. population ages, greater pressure will be exerted on the Social Security and private pension systems to provide income for more and more retired workers. Policy debate is growing more heated, in part because of conflicting perceptions of social goals but also because of poor information about how economic factors influence retirement behavior. The studies outlined above contribute to the discussion by providing analytical insights and empirical estimates of the behavior of interest. Work currently underway is investigating some of the reasons why firms might encourage or discourage early retirement, and the likely responses of firm-provided pensions to changes in the Social Security system.

[11] *A discussion of this point appears in G. S. Fields and O. S. Mitchell,* Retirement, Pensions, and Social Security.

[12] *A detailed analysis is available in G. S. Fields and O. S. Mitchell, "The Effects of Social Security Reforms on Retirement Ages and Retirement Incomes."*

Economic Announcements and Security Yields

V. Vance Roley

The effect of economic announcements on security yields has received a great deal of attention in recent years. It is now commonplace for media commentators to describe the day's movement in interest rates and stock prices in terms of the major economic news reported during the day. Scheduled announcements of key economic data, such as those concerning inflation, real economic activity, and the money stock, receive particular attention. As a result, one frequently hears that interest rates fell or stock prices rose, for example, because of encouraging news on the inflation front. Moreover, Thursday's weekly money announcements figure prominently in descriptions of interest rate movements late Thursday and of opening prices in the stock market on Friday.

In many respects, the attention devoted to economic announcements by both commentators and economic researchers appears to be justified. Both interest rates and stock prices, for example, respond significantly to the Federal Reserve's weekly money announcements.[1] Despite the fact that money announcements occur only once each week, and other announcements about inflation and economic activity occur even less frequently, they account for a significant fraction of the total volatility of security yields. For 3-month Treasury bills, for example, over 14 percent of the total daily volatility of the interest rate can be attributed to money and several other key economic announcements.[2]

Another reason for the increased interest in economic announcements is the implicit exogeneity of the

[1] *V. V. Roley, "Weekly Money Supply Announcements and the Volatility of Short-Term Interest Rates," Federal Reserve Bank of Kansas City,* Economic Review *67, April 1982; "The Response of Short-Term Interest Rates to Weekly Money Announcements," NBER Reprint No. 437, January 1984, and* Journal of Money, Credit, and Banking *15, August 1983; and D. K. Pearce and V. V. Roley, "The Reaction of Stock Prices to Unanticipated Changes in Money: A Note," NBER Reprint No. 460, March 1984, and* Journal of Finance *38, September 1983.*

[2] *V. V. Roley and R. Troll, "The Impact of New Economic Information on the Volatility of Short-Term Interest Rates," Federal Reserve Bank of Kansas City,* Economic Review *68, February 1983.*

underlying data (in the announcements). Empirical studies in financial economics are frequently plagued by the possibility of simultaneity bias in, and econometric identification of, estimated relationships. In studies concerning the demand for money, for example, simultaneity among money, interest rates, commodity prices, and income is appropriately questioned. Announcement data, however, are clearly exogenous with respect to current financial market and nonfinancial economic activity. In particular, weekly announcements of the money stock relate to its level in the statement week ended about two weeks previously, and other announcements typically pertain to data generated in the previous month. Given the important role of expectations of, and innovations in, economic variables in recent studies of economic relationships, this exogeneity makes announcement data useful in addressing more fundamental economic issues.

The recent prominence placed on economic announcements by financial market participants has led to another fortunate situation for researchers. In particular, to better prepare for the implications of upcoming announcements on interest rates and stock prices, private firms are compiling surveys designed to measure the market's expectation of the future announcement. These survey measures also appear to exhibit desirable characteristics.[3] In an examination of survey measures relating to future announcements of the money stock, the consumer price index, the producer price index, industrial production, and the unemployment rate, the unbiasedness of the survey data could be rejected in only one instance over the 1977-82 period. In all cases the efficiency of the survey data—involving the statistical significance of lagged values of the data in addition to the survey measure—could not be rejected, and the survey data registered better predictive performance than simple autoregressive forecasting equations. The accuracy of these surveys makes announcement data particularly amenable to studies of rational expectations and efficient markets. In such studies, only surprises or innovations are hypothesized to cause changes in security yields. Using these survey data, improved measures of surprises as well as expectations can be obtained to both test theories of efficient markets and determine their empirical implications.

The proliferation of research on the effects of economic announcements to a considerable extent can be traced to the significantly larger swings in interest rates observed in periods immediately following money announcements since October 1979. Coincident with the beginning of these larger fluctuations, the Federal Reserve changed its monetary control procedures. Prior to October 1979, the Federal Reserve used the federal funds rate as its monetary control instrument. From October 1979 to perhaps as late as October 1982, the Federal Reserve used a reserves aggregate-monetary control procedure, thereby placing less emphasis on interest rate movements. The estimated response of short-term interest rates to money announcements increased dramatically during the same period.[4] For the period starting in September 1977 and ending in October 1979, the 3-month Treasury bill yield is estimated to have increased by about 6½ basis points in response to a 1 percent announced money surprise. In the October 1979-October 1982 period, a 1 percent announced money surprise implied an increase of 35 basis points, a response over five times larger than that estimated for the previous period.

"In the October 1979-October 1982 period, a 1 percent announced money surprise implied an increase of 35 basis points..."

Most studies concluded that the increased response of short-term yields to announced money surprises was the result of the Federal Reserve's greater commitment to controlling money in the post-1979 period. Relying on the so-called policy anticipations effect, it was hypothesized that in the post-October 1979 period the Federal Reserve increased its response to deviations in money from its target range. The significantly larger response of short-term interest rates when the money stock was observed to be outside its long-run range seemed to support this notion.[5]

Somewhat less agreement was evident on the response of long-term interest rates to money announcements. The yield on 20-year Treasury bonds, for example, increased by over 14 basis points in response to a 1 percent money announcement surprise in the post-October 1979 period while no statistically significant response was apparent in the pre-October 1979 period.[6] This result led to a number of hypotheses about the effects of money announcements. Among these was the claim that the market was irrational in the sense that long-term yields overreacted. Others suggested that the Federal Reserve was, in fact, less concerned about monetary control in the post-October 1979 period. In the latter case, it was further argued that changes in expected inflation are proportional to money announcement surprises, leading to movements in the inflation premium in long-term interest rates.

In examining alternative hypotheses of the relatively large response of long-term yields, it was found that both the policy anticipations hypothesis described earlier and the expected inflation effect were consis-

[3] *D. K. Pearce and V. V. Roley, "Stock Prices and Economic News," NBER Working Paper No. 1296, March 1984, and* Journal of Business, *forthcoming.*

[4] *V. V. Roley, "The Response of Short-Term Interest Rates to Weekly Money Announcements."*

[5] *V. V. Roley, "The Response of Short-Term Interest Rates to Weekly Money Announcements."*

[6] *V. V. Roley and C. E. Walsh, "Monetary Policy Regimes, Expected Inflation, and the Response of Interest Rates to Money Announcements," NBER Working Paper No. 1181, August 1983, and* Quarterly Journal of Economics, *forthcoming.*

tent with the estimated response.[7] The policy anticipations effect merely depended on the presence of highly correlated residuals in the demand for money, the Federal Reserve's desire to offset money shocks, and a reduced interest elasticity of money demand in the post-October 1979 period. In contrast to this description of monetary policy behavior, the expected inflation hypothesis depends not only on the accommodation of shocks by the Federal Reserve, but also on permanent changes in the long-run growth rate of the money stock. In a more detailed examination of the time-series behavior of the money stock, the results suggested that the effect of money shocks on the level of the money stock diminished to zero within one year. Given this result, it is difficult to argue that money announcement surprises reflect permanent changes in the long-run growth of money. Therefore, the policy anticipations effect is more consistent with the time-series evidence.

Evidence from the stock market indicated that money announcement surprises also significantly affect stock prices.[8] In the pre-October 1979 period, stock prices were estimated to fall by about 0.3 percent in response to a 1 percent money announcement surprise. In the post-October 1979 period, the negative response increased to about 0.4 percent. In contrast to the response of interest rates, however, the estimated responses across periods were not found to be statistically different. Several hypotheses again appear to be plausible explanations of the response of stock prices. If debt instruments and equities are substitutes, for example, increased yields in debt markets would cause investors to attempt to sell stocks, driving down their prices. Alternatively, if changes in expected inflation are positively correlated with money announcement surprises, the response of stock prices could be caused by the adverse effects of higher expected inflation on expected real aftertax profits. Empirical tests have not yet been able to distinguish between these competing views.

In addition to weekly money announcements, another announcement related directly to Federal Reserve policy has been shown to affect both interest rates and stock prices. In particular, in the post-October 1979 period, significant responses were anticipated for changes in the Federal Reserve's discount rate.[9] In contrast to recent claims that discount rate increases would lower long-term yields and raise stock prices, the opposite effects were in fact estimated. Moreover, the results were obtained in the context of an analytical framework capable of identifying the supposed "announcement effects" long associated with discount rate changes. In particular, discount rate changes were linked to either changes in the Federal Reserve's long-run money growth objectives or to short-run money growth paths. The former channel could result in declines in long-term yields if discount rate increases coincided with lower long-run money growth and hence inflation. Empirical tests involving both observed market yields and implied forward rates, however, rejected this hypothesis. Instead, a hypothesis based on implied movements in short-run monetary targets—consistent with the previous policy anticipations hypothesis—was found to conform more closely with historical experience.

Given the prominent role of expected inflation in some theories describing the effects of money announcements and discount rate changes, not to mention its basic role in theories of interest rate and stock price determination, it is not surprising that inflation announcements have been examined using the same methodology.[10] In this case, however, unanticipated announced changes in the consumer and producer price indexes were not found to significantly affect interest rates. Similarly, while some evidence suggested that stock prices responded negatively to producer price index surprises in the September 1977–October 1979 period, the responses to surprises in both this index and the consumer price index were not statistically significant in the post-October 1979 period.

"...only announcements related directly to Federal Reserve policy systematically affect interest rates and aggregate stock price indexes."

In further tests involving announcements related to economic activity, the responses of interest rates and stock prices again were not statistically significant. In these tests, unanticipated announced changes in the unemployment rate and industrial production were considered. These results led to the conclusion that only announcements related directly to Federal Reserve policy systematically affect interest rates and aggregate stock price indexes. In particular, only money announcements and discount rate changes were estimated to have significant effects.

The relationship between money announcement surprises and measures typically constructed to represent unanticipated money over longer periods—such as weekly, monthly, or quarterly—has also been considered.[11] In contrast to the liquidity preference theory, most quarterly studies of the relationship between money surprises and interest rates find no evidence of negative correlation. This result, however, is probably caused by the same factors that underlie the response to money announcements. In particular,

[7] *V. V. Roley and C. E. Walsh, "Monetary Policy Regimes, Expected Inflation, and the Response of Interest Rates to Money Announcements."*

[8] *D. K. Pearce and V. V. Roley, "The Reaction of Stock Prices to Unanticipated Changes in Money: A Note."*

[9] *V. V. Roley and R. Troll, "The Impact of Discount Rate Changes on Market Interest Rates," Federal Reserve Bank of Kansas City,* Economic Review *69, January 1984; and D. K. Pearce and V. V. Roley, "Stock Prices and Economic News."*

[10] *V. V. Roley and R. Troll, "The Impact of New Economic Information on the Volatility of Short-Term Interest Rates"; and D. K. Pearce and V. V. Roley, "Stock Prices and Economic News."*

[11] *V. V. Roley and C. E. Walsh, "Unanticipated Money and Interest Rates," NBER Working Paper No. 1278, February 1984, and* American Economic Review *74, May 1984.*

money innovations are most likely unanticipated by the Federal Reserve as well as by the public, implying that interest rates could rise in response to positive money innovations if the Federal Reserve desires to offset them. Under this hypothesis, the liquidity preference theory is consistent with the nonnegative correlation between quarterly innovations in money and interest rate movements.

To summarize, the availability of accurate survey data has enabled a range of issues concerning economic announcements to be examined. These include basic issues relating to the efficiency of financial markets and the response of security yields to new information. Other questions involving the effects of monetary policy rules in the equilibrium pricing of securities also have been investigated. One potentially fruitful area of future research involves the relationship between new information provided by announcements and measures of innovations over the longer horizons typically adopted by researchers.

Economic Outlook Survey

Third Quarter 1984

Victor Zarnowitz

According to the August survey taken by NBER and the American Statistical Association, 27 professional forecasters predict that after six quarters of an exuberant recovery, the economy is entering a phase of slowing growth, but the risk is low that the expansion will gradually expire in the near future. However, the rate of increase in real GNP is expected to decline strongly in the year ahead, for a time perhaps to less than the long-term average growth rate of about 3 percent. The slowdown will be moderated by the relative strength of business investment and government spending and will reflect primarily the reduction in the growth of consumption expenditures and absolute declines in housing and net exports. Inflation will rise into and above the 4-5 percent range—still moderate when compared with the past decade but much higher than in the expansions of the 1950s and 1960s. Interest rates will remain high in nominal and real terms.

The Dimensions of the Anticipated Slowdown

The dramatic shift in expectations of lower growth rates is well illustrated by the following tabulation based on the probabilistic forecasts of year-to-year changes in real GNP. Each of the survey participants reports the probabilities he or she attaches to the alternative outcomes, and the figures below show the percentage distributions of the corresponding means. (Entries add up to 100 except for rounding.)

Percentage Change in Real GNP	*Percentage of Responses 1983-84*	*1984-85*
6 and higher	81	7
4-5.9	16	34
2-3.9	2	44
0-1.9	1	14
negative (none less than -2)	0	2

According to the medians of the point forecasts, total output will rise 7.3 percent in 1983-84, 3.5 percent in 1984-85, and 3.1 percent in 1984:3-1985:3. Comparisons with the previous (June) survey suggest that many respondents have revised their predictions upward (along with the revisions of the data). But the view that the recent steep upswing is over, to be followed by a definite retardation, continues to be widely shared.

Probabilities of Recession and Outlook for Unemployment

The prevailing forecast is that business activity will decelerate but not turn down. The probabilities that real GNP will decline, as assessed by the respondents, average 13, 15, 20, and 30 in the four successive quarters 1984:4-1985:3.

The record of the surveys indicates that these figures tend to rise before each recession but come to exceed 50 percent only after a downturn has occurred. Further increases in the 30-50 percent range would add up to an early warning of a relatively serious nature.

Most forecasters believe that the rate of unemployment will decline, but slowly and not for long. The median predictions put it at 7.0 percent in 1984:4 and leveling off at 6.8 percent in 1985:2. (The annual figures are 7.4 percent for 1984 and 6.8 percent for 1985.)

Inflation to Rise Gradually in the Years Ahead

The median forecasts of annual rates of inflation in the consumer price index, in percentages at annual rates, are 3.7, 4.4, 4.8, 5.2, and 5.2 for the five successive quarters 1984:3-1985:3. The corresponding predictions of inflation in the GNP implicit price deflator are very similar, rising from 3.8 to 5.3 percent. Between 1984:3 and 1985:3, IPD will be up 4.7 percent; its annual rises in 1984 and 1985 will be 3.8 percent and 4.5 percent.

The percentage distributions of the means of the reported probabilities for changes in IPD show a definite shift to higher inflation intervals:

Percentage Change in IPD	*Percentage of Responses 1983-84*	*1984-85*
10 and higher	0	1
8-9.9	1	3
6-7.9	3	18
4-5.9	38	58
Less than 4	58	20

Projections of GNP and Other Economic Indicators, 1984-85

	Annual				
				Percent Change	
	1983 Actual	1984 Forecast	1985 Forecast	1983 to 1984	1984 to 1985
1. Gross National Product ($ billions)	3304.8	3680.0	3981.0	11.4	8.2
2. GNP Implicit Price Deflator (1972 = 100)	215.3	223.5	233.6	3.8	4.5
3. GNP in Constant Dollars (billions of 1972 dollars)	1534.7	1647.0	1704.0	7.3	3.5
4. Unemployment Rate (percent)	9.6	7.4	6.8	-2.2[1]	-0.6[1]
5. Corporate Profits After Taxes ($ billions)	127.4	155.0	165.0	21.7	6.5
6. Nonresidential Fixed Investment (billions of 1972 dollars)	171.0	206.0	224.0	20.5	8.7
7. New Private Housing Units Started (annual rate, millions)	1.7	1.8	1.6	7.1	-10.4
8. Change in Business Inventories (billions of 1972 dollars)	-3.6	22.0	15.4	25.6[2]	-6.6[2]
9. Treasury Bill Rate (3-month, percent)	8.6	9.9	10.9	1.3[1]	1.0[1]
10. Consumer Price Index (annual rate)	3.2	4.3	4.7	1.1[1]	0.4[1]

	Quarterly							
		1984		1985			Percent Change	
	1984 Q2 Actual	Q3	Q4	Q1	Q2	Q3	Q2 84 to Q2 85	Q3 84 to Q3 85
		Forecast						
1. Gross National Product ($ billions)	3646.4	3723.0	3796.0	3872.0	3945.0	4021.0	8.2	8.0
2. GNP Implicit Price Deflator (1972 = 100)	222.3	224.4	226.6	229.3	232.0	235.0	4.4	4.7
3. GNP in Constant Dollars (billions of 1972 dollars)	1640.2	1660.0	1675.0	1687.0	1701.0	1712.0	3.7	3.1
4. Unemployment Rate (percent)	7.5	7.3	7.0	6.9	6.8	6.8	-0.7[1]	-0.5[1]
5. Corporate Profits After Taxes ($ billions)	152.9	157.0	160.0	162.0	164.1	166.5	7.3	6.1
6. Nonresidential Fixed Investment (billions of 1972 dollars)	202.6	210.0	216.0	220.0	223.0	226.0	10.1	7.6
7. New Private Housing Units Started (annual rate, millions)	1.9	1.8	1.7	1.6	1.6	1.6	-15.8	-8.6
8. Change in Business Inventories (billions of 1972 dollars)	21.5	18.0	18.0	17.0	17.0	15.7	-4.5[2]	-2.3[2]
9. Treasury Bill Rate (3-month, percent)	9.8	10.3	10.4	10.5	10.8	10.8	1.0[1]	0.5[1]
10. Consumer Price Index (annual rate)	4.3	3.7	4.4	4.8	5.2	5.2	0.9[1]	1.5[1]

SOURCE: National Bureau of Economic Research and American Statistical Association, Business Outlook Survey, September 1984. The figures on each line are medians of twenty-seven individual forecasts.

[1]Change in rate, in percentage points.
[2]Change in billions of dollars.

Divided Assessments of the Prospects for Interest Rates

The forecasts of interest rates have generally been revised upward from the levels predicted in the previous survey. The three-month Treasury bill rate is expected to increase from 10.3 percent in 1984:3 to 10.4 percent in the next two quarters and 10.8 percent 1985:2 and 1985:3. The yield on new high-grade corporate bonds will change very little, rising from 13.8 percent to 14.0 percent over the same period. But again, as in several recent surveys, there is much disparity among the individual forecasts covered in these medians. This is shown by the summary below that tabulates the frequencies of rise, decline, and no change in the predicted interest rates. (The entries are percentages adding up to 100 percent.)

	1985:3 Compared with 1984:3		
	Higher	*Lower*	*Unchanged*
Treasury bill rate	73	23	4
Corporate bond yield	56	35	9

Lesser Gains in Production, Inventory Investment, and Profits

The index of industrial production (covering manufacturing, mining, and public utilities) is expected to rise to 7.8 percent in 1984:3 and 2.4 percent in 1985:3; in the intervening quarters its gains will vary from 2.9 percent to 4.9 percent. The median annual forecasts are 11.1 percent for 1983-84 and 4.9 percent for 1984-85.

In general, forecasters greatly underestimated the strong rise of inventory investment in this recovery. Now they predict that change in business inventories, valued at constant prices will remain positive and rela-

tively high. Predictions of declines, however, prevail over those of rises.

Corporate profits after taxes in current dollars will increase 11.2 percent in the current quarter, 7.9 percent in 1984:4, and between 5 percent and 6 percent in each quarter next year. In 1984 as a whole, the gain in profits is set at 21.7 percent in the median forecast; in 1985, at 6.5 percent. Comparison with the corresponding rates of change in nominal GNP (11.4 percent and 8.2 percent) implies a swing in the profit share from steeply rising to falling.

Investment in Plant and Equipment Still a Source of Strength

Business capital outlays have grown at a very high average rate in this recovery. Their growth is projected to decline from 15.4 percent and 11.9 percent in this quarter and the next to 7.6 percent in 1985:1 and to about 5.5 percent in both 1985:2 and 1985:3. The annual gains will be 20.5 percent in 1984 and 8.7 percent in 1985, according to the group averages. Even the lowest of these figures represents a good advance. Business fixed investment in 1972 dollars, then, is seen as growing faster than total output and a continuing source of strength.

The Decline in Residential Construction to Level Off in Mid-1985

Housing starts have peaked in the first half of this year and are expected to fall strongly in 1984:3 and more moderately in the next three quarters, from 1.9 to 1.6 million units at annual rate. In 1985:2 and 1985:3 the median forecasts indicate that starts will stabilize around the latter level. Residential fixed investment in 1972 dollars will level off correspondingly at $58 billion (down from $62 billion recorded in 1984:2).

Lower Growth Rates for Consumption, Higher for Government Purchases

Consumer expenditures in 1972 dollars are expected to increase at annual rates declining from 4.9 percent in 1984:3 to 2.4 percent in 1985:3. The annual gains are 5.6 percent for 1984 and 3.8 percent for 1985.

Federal government purchases of goods and services in 1972 dollars are projected to rise 5 percent this year, 7.4 percent the next. The corresponding median-growth forecasts for state and local government purchases are 1.9 percent and 2.8 percent.

Net Exports Negative but Steadier

Net exports will continue to be negative, but the group forecasts no longer show them as dropping: they are fairly stable in the narrow range of $10–12 billion 1972 dollars annual rate. This conceals much dispersion among the individual forecasts, which reflects in large part a division of views about the evolution of exchange rates. Some assume that the dollar will stay strong, others that it will weaken.

Policy Assumptions

Most of those reporting their assumptions place the buildup of defense outlays in the 6–8 percent range, foresee additional taxes in 1985, and expect both M1 and M2 to grow in excess of 7 percent but less than 11 percent. Most also think that energy demand and prices will be stable or lower. (Only a few assume the opposite.)

This report summarizes a quarterly survey of predictions by about thirty business, academic, and government economists who are professionally engaged in forecasting and are members of the Business and Economics Statistics Section of the American Statistical Association. Victor Zarnowitz of the Graduate School of Business of the University of Chicago and NBER, assisted by Robert E. Allison, Dayle Ballentine, and Patrick Higgins of NBER, was responsible for tabulating and evaluating this survey.

NBER Profiles

Moses Abramovitz

Moses Abramovitz, managing editor of the *Journal of Economic Literature,* has served on NBER's Board of Directors since 1968 and is currently a member of the Executive Committee. He is also a research associate emeritus of NBER.

Abramovitz received his A.B. in economics from Harvard University and his Ph.D. from Columbia University. He taught at Harvard from 1936–38, then at Colum-

bia from 1940-42 and again after WWII. In 1948 he was named professor of economics at Stanford University. From 1963-65 and again from 1971-74, Abramovitz served as chairman of Stanford's economics department. In 1972 he was named Coe Professor of American Economic History (at Stanford) and, in 1977, Coe Professor Emeritus.

Abramovitz has also had a long and distinguished career with NBER. From 1938-69 he was on the Bureau's research staff. He also served as vice president of the Board of Directors of NBER from 1970-72.

Abramovitz is a Fellow of the American Academy of Arts and Sciences and the Center for Advanced Study in the Behavioral Sciences. He is a Distinguished Fellow of the American Statistical Association and the American Economic Association, of which he was president-elect and then president in 1979-80.

Abramovitz's particular research and teaching interests are in economic history and growth, and business cycles. In addition to having written many articles and working papers, he has authored four books; the most recent (with Vera Eliasberg) is titled *The Growth of Public Employment in Great Britain.*

Olivia S. Mitchell

Olivia S. Mitchell, associate professor of labor economics at Cornell University, has been a faculty research fellow in NBER's Program in Labor Studies since 1981. Mitchell received a B.A. in economics from Harvard University in 1974 and a Ph.D. from the University of Wisconsin in 1978. She has taught at Cornell since 1978 and was a visiting scholar in Harvard's economics department during the 1981-82 academic year.

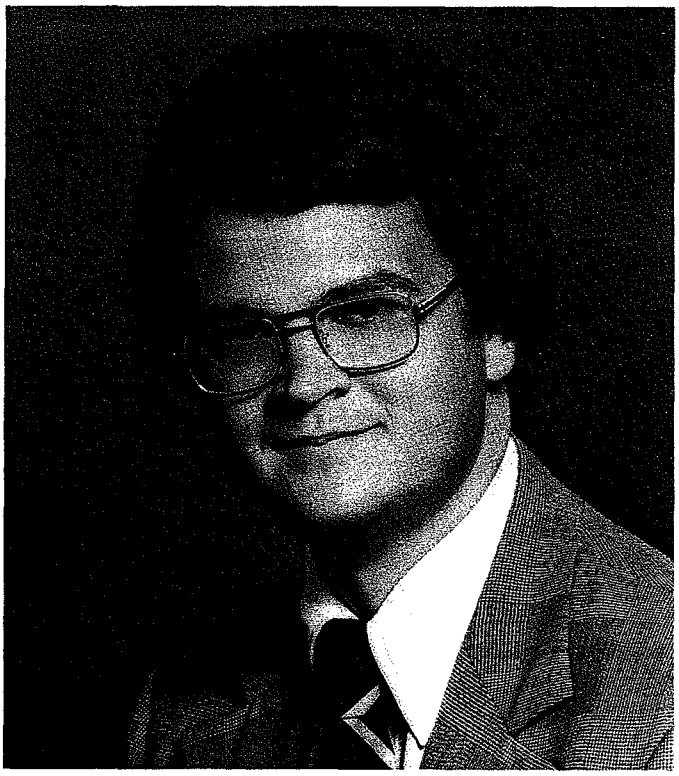
Mitchell's research interests include: the economics of retirement, pensions, and Social Security; the economics of fringe benefits in the labor contract; government regulation of the labor market; and labor markets in developing countries. In addition to her teaching and research, Mitchell has served as a consultant to the World Bank, the U.S. Agency for International Development, and the U.S. Department of Labor.

Mitchell's work has been published in a number of professional journals. She is also the author, with Gary S. Fields, of a forthcoming book for MIT Press titled *Retirements, Pensions, and Social Security.*

Mitchell, who is married, lives in Ithaca, New York. Her hobbies are scuba diving and underwater photography, and collecting and refinishing antique furniture.

V. Vance Roley

Vance Roley, a research associate in NBER's Program in Financial Markets and Monetary Economics, has been associated with the Bureau since 1980. Roley received his A.B. with honors in economics and statistics from the University of California at Berkeley in 1973, and his Ph.D. from Harvard University in 1977.



He joined the staff of the Federal Reserve Bank of Kansas City in 1977. During 1979-80, Roley was a senior staff economist at the President's Council of Economic Advisers. In 1981, he was promoted to assistant vice president and economist at the Kansas City Fed, where he is now a part-time visiting scholar. In 1983, Roley became associate professor of finance at the University of Washington.

Roley has written a number of articles in finance and monetary economics. His research interests include: the determinants of yields on Treasury securities; and the relationship between financial news, or money announcements, and short-term interest rates, or stock prices. In addition, his book, titled *A Structural Model of the U.S. Government Securities Market,* was published in 1979.

Roley, his wife Sharon, and their daughter Susan live in Mill Creek, Washington.

Conferences

State and Local Public Finance

On June 15 and 16, NBER sponsored a meeting in New York City to report the results of a project on "State and Local Public Finance." The project, directed by Harvey S. Rosen of NBER and Princeton University, included the following studies:

Chair: Harvey S. Rosen
- James M. Poterba, NBER and MIT, "Evaluating Proposals to Reform Borrowing Practices: New Tests of the Fama-Miller Model"
- Discussant: Douglas Holtz-Eakin, Princeton University
- Roger Hall Gordon, NBER and University of Michigan, and Joel Slemrod, NBER and University of Minnesota, "An Empirical Examination of Municipal Financial Policy"
- Discussant: Peter Mieszkowski, NBER and Rice University
- Steven Craig, University of Houston, and Robert Inman, NBER and University of Pennsylvania, Redistribution Policy in a Federalist Economy: The U.S. Experience, 1965-1980"
- Discussant: Helen Ladd, Harvard University

Chair: David G. Hartman, NBER
- Kenneth A. Small, University of California, Irvine, and Clifford Winston, MIT, "Welfare Effects of Marginal Cost Taxation of Motor Freight Transportation: A Study of Infrastructure Pricing"
- Discussant: Paul Courant, University of Michigan
- Michelle White, University of Michigan, "Property Taxes and Firm Location: Evidence from Proposition 13"
- Discussant: Sharon Bernstein Megdal, University of Arizona

Chair: David F. Bradford, NBER and Princeton University
- Daniel Feenberg, NBER, and Harvey S. Rosen, "State Personal Income and Sales Taxes: 1977-1983"
- Discussant: George Zodrow, Rice University

Poterba's paper attempts to identify the causes of the recent escalation in tax-exempt interest rates relative to interest rates on taxable securities. He measures the effect of changing expectations about future tax policy on the yield differential between long-term taxable and tax-exempt bonds. Using interest rate data for 1955-83, Poterba suggests that major changes in expected future tax rates do affect the taxable-tax-exempt yield spread. He notes that one-half of the movement in the yield spread between 1980 and 1982 may be attributed to changing expectations of income taxes. Poterba concludes by discussing the implications of his findings on proposals to alter municipal borrowing practices, particularly those that vary the maturity of state and local debt.

In their paper, Gordon and Slemrod empirically examine the financial policy of municipalities in four states to determine to what extent the residents take advantage of the differences in aftertax rates of return available to them as individuals and to their municipalities. Under current U.S. tax law, municipalities can borrow at a tax-exempt rate, yet they can earn the full market rate of return on their assets. In contrast, residents borrowing or lending as individuals pay or earn the market rate of return, but net of personal income taxes. Therefore, communities/residents can borrow at low rates and invest at high rates. Gordon and Slemrod's data suggest that communities do actively engage in such arbitrage.

In order to understand the impact of Reagan's "New Federalism" on the current system of federal grants-in-aid and federal rules governing state fiscal behavior, Craig and Inman develop a political-budgetary model of federal aid and rules on the total level of assistance to low-income households. Federal assistance consists of specific grants programs, each with its own regulation for household eligibility, benefit payments, and financial responsibility. Craig and Inman examine the effect of changes in these programs on state benefit payments and recipients per capita during 1968-79, using the 48 mainland states. Based on this analysis, they predict how the "New Federalism" reforms will affect the provision of state assistance to low-income households.

In their paper, Small and Winston suggest that a "marginal cost" tax that closely reflects the road wear caused by individual vehicles would provide a solution to the current problem of infrastructure rehabilitation. They find a substantial welfare improvement (worth at least $2 billion annually) from such a tax and a reduction of up to 25 percent in highway maintenance expenditures.

In her study, White examines the effect of property taxes on firm location; she uses data from before and after Proposition 13 was passed in California. Proposition 13 is a uniform, statewide system under which all

property is assessed at market value when sold and the property tax rate is approximately 1 percent everywhere in the state. Therefore, the local property tax rate was changed without affecting other aspects of California's business climate. White presents several theories of firm location, exploring issues such as communities' use of zoning to keep out firms, changes in public services to firms (as a result of Proposition 13), and capitalization of the tax cut in the price of land. She finds that property taxes have had a negative but not significant effect on firm location.

There are substantial differences across states in the methods used to raise revenue. In their paper, Feenberg and Rosen develop and implement a coherent methodology for characterizing the structures of state income and sales taxes. The measures they generate are used to show how the various state systems differ and how they evolved over the seven-year period between 1977 and 1983.

Also participating in the two-day meeting were: Timothy J. Bartik, Vanderbilt University; James N. Brown, NBER and Princeton University; Ronald C. Fisher, Michigan State University; Daniel J. Frisch, NBER and U.S. Department of the Treasury; Steven Gold, National Conference of State Legislatures; Charles Hulten, the Urban Institute; Therese McGuire, Minnesota Tax Study Commission; Albert E. Rees, Alfred P. Sloan Foundation; Jennifer Roback, Yale University; Daniel Rubinfeld, University of California, Berkeley; Suzanne Scotchmer, Harvard University; and John D. Wilson, Columbia University.

The papers presented, and their discussions, are expected to be published in an NBER conference volume. Notice of its availability will appear in a future issue of the *NBER Reporter*.

International Seminar on Macroeconomics

The Seventh International Seminar on Macroeconomics (ISOM) was held in Perugia, Italy, on June 24–26, 1984. ISOM is cosponsored by the National Bureau of Economic Research and by La Maison des Sciences de l'Homme in collaboration with the Center for Quantitative and Comparative Economics of l'École des Hautes Études en Sciences Sociales. The seminar is organized jointly by Georges de Menil of the École des Hautes Études en Sciences Sociales and Robert J. Gordon of NBER and Northwestern University.

This year's program consisted of seven papers and a roundtable panel discussion. The papers and their discussants were:

John B. Taylor, NBER and Princeton University, "Policy Coordination, Exchange Rate Regimes, and Capital Mobility"

Discussants: William D. Nordhaus, NBER and Yale University, and Giampaolo Galli, Bank of Italy

Paul Masson and Adrian Blundell-Wignall, OECD, "Fiscal Policy and the Exchange Rate in the Big Seven: Transmission of U.S. Government Spending Shocks"

Discussants: Jacob A. Frenkel, NBER and University of Chicago, and Ignazio Visco, Bank of Italy

Kenneth Rogoff, Board of Governors of the Federal Reserve System, "Can Exchange Rate Predictability Be Achieved without Monetary Convergence? Evidence from the EMS"

Discussants: Xavier Debonneuil with Michel Galy, Bank of France, and John Flemming, Bank of England

Alessandro Penati, International Monetary Fund, "Monetary Targets, Real Exchange Rates, and Macroeconomic Stability"

Discussants: Jeffrey A. Frankel, Council of Economic Advisers, and José Perez, Bank of Spain

Gebhard Kirchgassner, Swiss Federal Institute of Technology, "Rationality, Causality, and the Relation between Economic Conditions and the Popularity of Parties"

Discussants: Alan S. Blinder, NBER and Princeton University, and Peter Sturm, OECD

Jacques Mairesse, NBER and INSEE, and Brigitte Dormont, University of Paris IX-Dauphine, "Labor and Investment Demand at the Firm Level: A Comparison of French, U.S., and German Manufacturing, 1970–79"

Discussants: Jorge Braga de Macedo, Princeton University, and Angelo M. Cardani, University Bocconi, Milan

John F. Helliwell, Peter Sturm, and Gerard Salou, OECD, "International Comparison of the Sources of Productivity Slowdown, 1973–1982" (NBER Working Paper No. 1465)

Discussants: William H. Branson, NBER and Princeton University, and Riccardo Faini, University of Venice

The panel discussion topic was "Will Exchange Rate Movements Impede the Economic Recovery?" The participants were: John Flemming, chairman; Jeffrey A. Frankel; Koichi Hamada, Tokyo University; Norbert Kloten, Bundesbank; and Heinrich Matthes, European Economic Commission.

The purpose of Taylor's paper is to examine some of the international economic issues that arise in the design of macro policy rules. The analysis proceeds in two stages. First, the effects of fiscal, monetary, and supply shocks are examined in a two-country model with staggered wage setting, rational expectations, and perfect capital mobility. Stochastic simulation of this model under supply shocks suggests that there is a policy externality in that each country is better off if the other country follows a more accommodative policy. The second part of the analysis examines this externality empirically for several large economies. Cooper-

ative and noncooperative optimal policies are derived for this group of countries, and the former policies are shown to be more accommodative than noncooperative policies.

The paper by Masson and Blundell-Wignall attempts to isolate the aggregate demand effects of U.S. government spending from its asset supply effects working through increased deficits. The former is examined with the aid of a two-country rational expectations model of the United States versus the rest of the world. The simulation results suggest that even in the absence of asset supply effects, the consequences of a sustained $50 billion cut in U.S. spending are a depreciation of the effective dollar rate of 4 percent and a fall in long-term bond rates of 180 basis points at home and abroad.

The Rogoff study compares the first five years of the European Monetary System (founded in March 1979) with the five preceding years. The evidence suggests that the EMS has coincided with significantly reduced month-to-month *conditional* volatility in the lira/Deutschemark and French franc/DM real and nominal exchange rates. Comparing the same periods, the DM has become more volatile against the pound, dollar, and yen. The trade-weighted exchange rates of the major EMS currencies have similarly become relatively less volatile. At 12-month forecast horizons, the results are similar for nominal rates but much less clear for real rates. The EMS experience may not be relevant for countries with open capital markets, since Italian and especially French capital controls appear to have played an essential role. Indeed, the conditional volatility of intra-EMS real interest differentials is not lower in the post-EMS period.

In his paper, Penati develops and simulates an aggregated stochastic model to assess the optimal mix of monetary and exchange rate policies in Spain, a country that has adopted strict monetary targets since 1978. He shows that the model supports the policy choice of Spain. Penati also shows that the monetary authorities should attribute more importance to real exchange rate movements if Spain were to become more open to international trade or if its labor market were to become flexible.

Kirchgassner uses German data from 1971 to 1982 to examine the possible relationship between economic variables and the popularity of political parties. He presents strong evidence that such a relation exists, even if usual Granger causality tests cannot detect it. He also asks whether this relation is compatible with rational expectations of the electorate. This is only partly the case, as the anticipated part of the unemployment rate has a significant impact on the popularities of the two major German parties.

The purpose of the Mairesse-Dormont study is to investigate how labor demand and investment demand of individual business firms differ in French, German, and U.S. manufacturing and how it has changed before and after the 1974-75 crisis. Three consistent and comparable panel data samples of large French, German, and U.S. firms are constructed for the study period 1970-79. The authors find that accelerator and profits effects are quite comparable in the three countries, the former being of a more permanent nature and the latter being more transitory. The estimates do not change that much between 1970-73 and 1976-79; the accelerator profits model performs reasonably well in accounting for the large changes in labor and investment demands between these two periods.

The Helliwell-Sturm-Salou paper uses an integrated model of aggregate supply to analyze the post-1973 slowdown in productivity growth in the seven major OECD economies. Factor substitution, unexpected demand changes, profitability, and inventory disequilibrium all contribute to the explanation, which is based on a three-factor, nested aggregate production function that includes energy and postulates Harrod-neutral disembodied technical progress. The model is first applied separately to the seven countries, assuming constant country-specific rates of technical progress. The model provides empirical evidence that this rate of progress has in fact slowed down for several of the faster-growing countries, even after adjusting for factor substitution and cyclical factors. The model is therefore reestimated, and the sources of productivity decline recalculated, on the hypothesis that rates of efficiency growth in other countries are converging with those in the United States.

Summary of Roundtable Discussion

There was a widespread perception that a number of exchange rates, most notably of the U.S. dollar, were "misaligned." There was also a recognition that the present recovery in world economic activity remained fragile, being weak outside the United States and, perhaps unsustainably rapid there. One question was whether correction of this misalignment would weaken the recovery. The balance of monetary and fiscal policy in the United States was criticized by Matthes, who argued that the United States had abused the position of being the largest economy—a position that entails simultaneously being the largest international trader, having the most important international currency and the most important capital market but also being more closed and thus less constrained than other OECD countries. He called for a greater role for the exchange rate in Fed decisionmaking.

Frankel also suggested, although in more measured terms, that a reduced fiscal deficit in the United States would have important benefits, not least for the debtor countries. It was argued in the discussion that the papers had paid inadequate attention to the debt problem that represents the major risk to continued recovery.

Hamada saw Japanese developments as quite encouraging and fairly secure. He was challenged in discussion on the sustainability of the external surplus and the failure to meet the domestic adjustments, including those to industrial structure, which would be required for its correction.

Kloten's paper reviewed Bundesbank attitudes toward a number of related issues, including the EMS as a model for the reform of the International Monetary System. The question of British participation in the

system's Exchange Rate Mechanism was raised. The point was made that relatively little could be achieved within the system that could not, in principle, be achieved outside it—although there might be political difficulties in pursuing a parallel policy outside an EEC arrangement. It was also argued that British participation would present it, and other members, with more difficult decisions to balance monetary targets with EMS obligations than existing members had faced.

International Coordination of Economic Policy

NBER and the London-based Centre for Economic Policy Research (CEPR) cosponsored a conference in London on June 28 and 29 on the international coordination of economic policy. The conference, funded by a grant from the Ford Foundation, was organized by Willem H. Buiter of NBER, CEPR, and the London School of Economics, and Richard C. Marston of NBER and the Wharton School of Finance, University of Pennsylvania. The two-day program was:

W. M. Corden, Australian National University, "Transmission and Coordination under Flexible Exchange Rates"
Discussants: Georges de Menil, École des Hautes Études en Sciences Sociales, and Dale Henderson, NBER and Federal Reserve System

Jacob A. Frenkel, NBER and University of Chicago, and Assaf Razin, Tel Aviv University, "Fiscal Policies, Interest Rates, and International Economic Interdependence"
Discussants: David Vines, CEPR and Cambridge University, and Matthew Canzoneri, Federal Reserve System

Patrick Minford, CEPR and Liverpool University, "The Effects of American Policies on Europe: A New Classical Interpretation"
Discussants: Richard C. Marston and Michael Emerson, Commission of the European Communities

Barry J. Eichengreen, NBER and Harvard University, "International Policy Coordination in Historical Perspective: A View from the Interwar Years" (NBER Working Paper No. 1440)
Discussants: Willem H. Buiter and Jo Anna Gray, Washington State University

Marcus M. Miller, CEPR and Warwick University, and Mark Salmon, Warwick University, "Cooperative Rules between Nations: Problems of Credibility and Consistency"
Discussants: Stephen J. Turnovsky, NBER and University of Illinois, and Ralph Bryant, Brookings Institution

David Currie, CEPR and Queen Mary College, London University, and Paul Levine, Polytechnic of the South Bank, "Macroeconomic Policy Design in an Interdependent World"
Discussants: David Begg, CEPR and Worcester College, Oxford University, and Koichi Hamada, University of Tokyo

Jeffrey Sachs, NBER and Harvard University, and Gilles Oudiz, INSEE, "An Empirical, Multicountry Study of International Coordination"
Discussants: Jorge de Macedo, NBER and Princeton University, and Kenneth Rogoff, Federal Reserve System

Tomasso Padoa-Schioppa, Bank of Italy, "Rules versus Discretion: The EMS Experience"
Discussants: Michael Artis, CEPR and Manchester University, and Jeffrey Shafer, NBER and Organization for Economic Cooperation and Development

Panel on Prospects for International Coordination:
William H. Branson, Director, International Studies Program, NBER, and Princeton University (chair); Richard Cooper, Harvard University; Stephen Marris, Institute for International Economics; Louka T. Katseli, NBER and Centre of Economic Planning and Economic Research, Athens; and Michael Emerson

In the past two years, there has been a resurgence of research interest in the coordination of economic policy among countries. The London conference brought together many who are currently working on this topic. The papers touched on several strategic aspects of coordination, utilizing concepts normally used to describe the behavior of firms.

In the first paper, Corden considers whether there is any basis for the popular argument that coordinated expansion would be easier to achieve than expansion by any one country on its own. He introduces a model of the real sectors of two economies that are linked together principally through the terms of trade. An economic expansion by one country improves the terms of trade of the other country, thus shifting the latter's Phillips curve in a favorable direction. This in turn induces the latter country to pursue a more expansionary policy. The model clearly illustrates circumstances in which international cooperation that leads to coordinated expansion dominates noncooperative behavior of either the Nash or Stackleberg variety. Later in the paper, Corden qualifies his analysis by taking into account the future effects of current policy, including the possibility that future inflation might induce contraction by one country that hurts the other country.

The combination of fiscal and monetary policies pursued recently by the United States is often thought to have had especially powerful effects on the rest of the world. Frenkel and Razin's paper, which deals with the international transmission of the effects of budget deficits and of government expenditure on world rates of interest and spending, gives a theoretical perspective to this issue. Their analysis uses a two-country model within which capital markets are integrated, individuals behave rationally, and the behavior of individuals and governments is subject to temporal and

intertemporal budget constraints. The authors show that, as the result of differences between private and social discount rates, a budget deficit raises world rates of interest and domestic wealth while it lowers foreign wealth. Unlike Corden's model, their model has negative transmission of policy, with transmission occurring through world capital markets. They also show the effects of changes in budget balance in government spending. These depend on a multitude of "transfer problem criteria" involving comparisons between marginal spending and saving propensities of governments and private sectors in the two economies.

"...a budget deficit raises world rates of interest and domestic wealth while it lowers foreign wealth."

Whether international coordination is desirable depends crucially on the nature of the linkages between national economies. Minford's paper investigates these linkages in detail within the context of a nine-country model. The model exhibits many "new classical" features including an aggregate supply curve, based on a labor contract model, and rational expectations. Minford reports several policy simulations using this model; the most interesting is a simulation of U.S. fiscal policy. According to this simulation, U.S. deficits crowd out other U.S. spending with the only stimulative effects being on the rest of the world (with a lag). The crowding out occurs because of strong wealth effects in the financial sector of his model. Monetary policy, in contrast, has very strong effects on output. Interpreting the results of his simulations, Minford suggests that the U.S. monetary contraction in 1980–81 and expansion in late 1982 have been the major causes of the latest world business cycle.

Eichengreen's paper reconsiders the financial history of the interwar period to see what light this earlier experience sheds on current concern over international policy coordination. He develops an explicit two-country model of the interwar gold standard that clearly shows the advantages of coordinated action but also explains why cooperative solutions proved so difficult to achieve. The model features short-run output variability, a money multiplier sensitive to the bank rate, and perfect capital mobility. Eichengreen shows that cooperative behavior necessarily dominates Nash noncooperative behavior, in the sense of more nearly achieving gold and price targets. Both countries, moreover, benefit if one country moves to a Stackleberg leadership position from the Nash equilibrium, but the country acting as the follower benefits more than the leader does. Each country has an incentive to engage in a game of "chicken," attempting to force the other party to accept the role of leader. Eichengreen interprets this model in the light of interwar attempts at cooperation beginning with the Genoa Conference of 1922 and leading to the Tripartite Agreement concluded by Britain, France, and the United States in 1936.

Miller and Salmon compare different types of cooperative and noncooperative policies in a dynamic setting in which the private sector has forward-looking expectations. They address the time-consistency problem: this arises when there is an incentive for a government to renege on previously announced policies by specifying policies that involve what they call "subgame perfect" decision rules with no such incentives. Within this set of time-consistent rules, Miller and Salmon derive the optimal solutions for Nash open-loop games, where each nation takes the other's policy paths into account, and Nash closed-loop games, where policy rules are taken into account. They then compare these solutions with cooperative solutions.

Currie and Levine also compare the effects of policies in a dynamic model. In their case, the model features lags in both demand and supply behavior. They consider a variety of simple policy rules that involve the money supply, nominal income, exchange rate, or price level. The price rule is found to perform significantly better than any other rule in a single economy, but when applied to all economies together it performs very poorly. This is because the price rule works through beggar-thy-neighbor variations in exchange rates that aren't feasible if all countries follow the rule.

Sachs and Oudiz show that the payoffs to beggar-thy-neighbor policies look very different in one-period and multiperiod contexts, since changes in the exchange rate in the current period are typically reversed in later periods. So, international coordination that avoids beggar-thy-neighbor actions is less desirable in a multiperiod model. The authors then ask whether international coordination necessarily improves welfare if governments are more myopic than the private sector, as is sometimes claimed. Governments have a short-run expansionary bias if policy can raise output today while increasing inflation only in the future. As long as policy is not coordinated, however, the fear of currency depreciation following a unilateral expansion keeps this bias in check, whereas coordination permits governments to expand together and avoid any depreciation. Sachs and Oudiz also make several interesting points about time consistency. They show, for example, that international coordination can make policies time consistent in cases where unilateral policies are time inconsistent if the time inconsistency stems from the ability to manipulate the exchange rate.

In the final paper, Padoa-Schioppa analyzes whether the European Monetary System (EMS)—the exchange rate system that ties the mark, franc, lira, and other European currencies together—can serve as a model for other efforts to coordinate economic policy. He contrasts "institutional cooperation" through arrangements such as the EMS with "ad hoc cooperation" and argues that if institutions are strong enough, there is more scope for discretion in the management of international economic problems. He also considers the experience of multicountry monetary cooperation within the EMS and presents statistical evidence on the system's ability to achieve its objectives.

The conference concluded with a panel session on

the prospects for international policy coordination. The papers presented at the conference as well as the prepared remarks by panelists will be available in a volume to be published in 1985. Details of its availability will appear in a future issue of the *NBER Reporter*.

Cambridge Is Site of Macro Conference

On July 12 and 13, NBER's Program on Economic Fluctuations sponsored its second annual Macroeconomics Conference. The agenda for the two days was:

Fumio Hayashi, NBER and Northwestern University, "The Permanent Income Hypothesis and Consumption Durability: Analysis Based on Japanese Panel Data"
Discussants: N. Gregory Mankiw, MIT, and Marjorie Flavin, NBER and University of Virginia

Thomas M. Stoker, MIT, "Simple Tests of Distribution Effects on Macroeconomic Equations"
Discussants: Lars Hansen, University of Chicago, and Ray C. Fair, NBER and Yale University

Bruce Smith, Federal Reserve Bank of Minneapolis, "Reconciling Individual and Aggregate Differences in Labor Markets: An Adverse Selection Approach"
Discussants: Russel Cooper, Yale University, and Sanjay Srivastava, Carnegie-Mellon University

Neil Ericsson, Board of Governors, Federal Reserve System, and David Hendry, Nuffield College, Oxford University, "Assertion without Empirical Basis: An Econometric Appraisal of Friedman and Schwartz, *Monetary Trends in the United States and the United Kingdom*"
Discussants: John Huizinga, NBER and University of Chicago, and Michael D. Bordo, NBER and University of South Carolina

Sumru Altug, University of Minnesota, "Gestation Lags and the Business Cycle: An Empirical Analysis"
Discussants: Ben S. Bernanke, NBER and Stanford University, and Matthew D. Shapiro, Yale University

Peter M. Garber, University of Rochester, and Robert G. King, NBER and University of Rochester, "Deep Structural Excavation? A Critique of Euler Equation Methods"
Discussants: Robert E. Hall, NBER and Stanford University, and Kenneth J. Singleton, NBER and Carnegie-Mellon University

Hayashi's paper addresses two issues in the permanent income theory of consumption: the distinction between consumption and expenditures, and the distinction between the permanent income and the habit persistence hypotheses (which assume that households look forward and backward, respectively). The data come from a four-quarter panel of 2000 Japanese households for ten commodity groups and include information on expectations about expenditures and income. The theoretical model is otherwise standard, except that it distinguishes clearly between consumption and expenditures by postulating that consumption is a distributed lag function of current and past expenditures. Hayashi shows that consumption follows a "martingale," so that the change in expenditures on any commodity group is a univariate autoregression. If a commodity is perishable both physically and psychologically (so that expenditures on it affect utility only in the current period), there should be no lagged expenditures in the autoregression; if the commodity is highly durable, lagged expenditure coefficients should approximate unity in absolute value.

Estimation of Hayashi's model yields three major results. First, lagged expenditure changes are significant for all commodity groups, even food and services, suggesting that all commodities have important durable aspects. Second, consumption does follow a martingale, as required by the permanent income theory, but expenditure does not. Third, the current change in expenditures is sensitive to the part of the change in current income that cannot be forecast, in contrast to the prediction of the habit persistence hypothesis.

Discussants Mankiw and Flavin both noted that transitory consumption is a serious problem in interpreting Hayashi's results. In particular, much of Hayashi's evidence for durability of various commodities depends on the negative first-order serial correlation in the expenditure data. Such correlation could just as well reflect planned or unplanned transitory consumption (champagne at weddings, or appendectomies) as durability. Flavin remarked that transitory consumption could provide a consistent explanation for all of Hayashi's results without resort to durability.

Stoker's paper addresses the issue of aggregation bias in macroeconomic equations. If true micro relationships are nonlinear, then the estimated average coefficients obtained from aggregate data applied to a linear function depend on the interaction of the nonlinearity in the true micro relationship with the relevant micro distributions. For example, in estimating a linear Engel curve, the time-series coefficient of average commodity expenditure regressed on average income depends on the interaction of any nonlinearity in the true micro Engel curve with the history of the income distribution. The theoretical section of the paper shows how inclusion of distribution data allows estimation of the micro nonlinearities and reduces or eliminates the bias in estimating the desired average parameter. Next, the paper proposes a simple measure of how serious is the aggregation bias resulting from micro nonlinearity. Finally, the paper illustrates the issues and methods of the theoretical section by estimation of the Linear Expenditures System (LES) with aggregate U.S. commodity expenditure data. Direct OLS estimation of the LES produces implausible coefficient estimates and displays severe serial correlation in the errors. Reestimation of the LES, with income distribution variables included, yields sensible coefficients, no serial corre-

lation, and rejection of micro linearity. The elimination of serial correlation is especially striking, suggesting that the linear misspecification caused by omission of distribution variables accounts for all the serial correlation in the OLS estimate.

Discussants Hansen and Fair felt that Stoker had illustrated the gap between micro theory and macro equations, which is perhaps the least satisfactory aspect of macro. However, they also felt that Stoker's methodology was unlikely to prove practical in most situations. The assumptions necessary to the method's tractability are questionable, and the relevant distribution data necessary for implementing the method often will be unavailable. The endogeneity of prices, time aggregation in the data, and identifying restrictions in the model all have uncertain implications for the method.

Smith's paper seeks a single model to explain a number of observations: some labor is unemployed; aggregate hours and real wages are strongly positively correlated; cross-sectional hours and real wages are not positively correlated; relative wages across occupations are an important determinant of labor market behavior; wage dispersions decline at cyclical peaks; and, over time there has been an upward trend in real wages but not hours. The proposed model is one of adverse selection. There are two types of workers, some highly productive and the others not. The former are more productive than the latter in all possible states of nature. A worker's type may change over time. Highly productive workers are assumed to have greater leisure preference than other workers. Employers cannot observe a worker's type ex ante and so seek to offer labor contracts that lead to full revelation of type. The equilibrium that emerges is capable of satisfying the observations listed above, as shown in some examples.

Discussant Cooper noted that Smith's model may allow analysis of much observed heterogeneity. However, a number of difficulties need attention; in particular, many studies do not find the strong positive correlation between hours and wages that Smith seeks to explain. Moreover, the examples presented have nothing to do with intertemporal choice, whereas the observations to be explained largely deal with intertemporal phenomena. Analysis of dynamics and the role of asymmetric information are also lacking, and the assumption that highly productive workers may also have relatively high leisure preference is not motivated.

Discussant Srivastava noted that the model produces two disturbing results: all unemployment is borne by the highly productive workers, and wages fluctuate a great deal. Both results seem to emerge from the static nature of the analysis. Inclusion of long-term contracts in the model might change the unemployment distribution by changing the self-selection constraints. Contracts also might reduce wage variability for the usual reasons.

Ericsson and Hendry examine the econometric methodology of Milton Friedman and Anna J. Schwartz's recent book, *Monetary Trends in the United States and the United Kingdom*. They focus on six aspects of the book's analysis: exogeneity of money; the constancy of velocity and the correct specification of the money demand equation; the interpretation of a liquidity preference shift dummy; the interdependence of money, income, prices, and interest rates; and the use of phase-average data. Ericsson and Hendry argue that Friedman and Schwartz leave untested many conditions necessary to sustain their inferences. However, these conditions either are testable or have testable implications; Friedman and Schwartz's inferences fail virtually all of these tests. For example, their model of velocity as a constraint compares poorly to velocity as a random walk; and their inferences of parameter constancy, price homogeneity, and normality of disturbances in the money demand equation all fail the relevant tests. The tests are described as a minimal set of criteria that a model must meet to be judged as credible. These criteria are well-behaved innovation errors, satisfaction of weak exogeneity, parameter constancy over sample periods, consistency of results with the motivating theory, data admissibility, and the ability of the proposed model to "encompass" its rivals. (These criteria and the tests for them are described in the paper and pertinent references are given.) Finally, Ericsson and Hendry propose a money demand model that has substantially less residual variance than does that of Friedman and Schwartz.

Discussant Huizinga felt that Ericsson and Hendry needed to provide a better justification of their criteria for a model's adequacy. For example, in judging the error structure of a model, neither goodness of fit nor a scalar covariance matrix—both emphasized by Ericsson and Hendry—is necessarily a useful criterion. Random walk models of asset prices predict a poor fit for explanatory equations; other models predict serially correlated errors. Parameter constancy also is not necessarily useful; rational expectations models predict certain kinds of parameter changes. Ericsson and Hendry's discussion of Friedman and Schwartz's phase-averaging transformation of the data makes many valid points, but their criticism that Friedman and Schwartz's procedure fails to remove all serial correlation misses the point of the procedure. Friedman and Schwartz were attempting to remove cyclicality; other sources of serial correlation, such as trend, were of no concern. Finally, Ericsson and Hendry's proposed money demand model seems to be a reduced form, in which case it is not surprising that it displays lower residual variance than Friedman and Schwartz's structural equation.

Discussant Bordo emphasized that Friedman and Schwartz's phase-averaging method is a simple way to reduce noise in the underlying data. As for velocity, Friedman and Schwartz themselves reject its constancy but argue that the hypothesis of constant velocity comes much closer to explaining the data than does a simple Keynesian model.

Altug estimates a version of Kydland and Prescott's "time-to-build" model of the business cycle, which is a one-sector, optimal-growth model that includes gestation lags in investment and nontime-separable preferences for leisure. An econometric model is derived

from the laws of motion for the theoretical model, maximum-likelihood estimates of the structural parameters are obtained, and spectral methods are used to characterize these estimates. Two models are estimated: one includes a single type of capital subject to the gestation lag; the other divides capital between equipment and structures with only the latter subject to gestation lags. For both models, nontime separability is found to be an insignificant phenomenon, whereas gestation lags are important in the model with two kinds of capital. Also, different lag structures characterize investment in structures and fixed capital.

Discussant Bernanke pointed out that the estimation is subject to at least two identification problems. First, the error in the dependent variable (investment) is almost certainly correlated with one of the explanatory variables (income). Second, serial correlation should be permitted in the error. The particular estimates obtained are not plausible. For example, the parameter estimates imply that in the steady state the ratio of equipment to total capital is 0.07, whereas the actual historical average is 0.3. Also, the parameters imply that 83 percent of total available time will be spent in work. Given a 50 percent participation rate, this in turn implies that the average worker spends 166 percent of his total time working. The correlation properties of the model predictions do not correspond well with sample values. The model does not track the business cycle well. Bernanke's conclusion is that Altug's estimation, which is well executed, implies that the Kydland-Prescott model is not yet sufficiently developed to confront the data.

Discussant Shapiro offered some reasons why the Kydland-Prescott model might be deficient in explaining the business cycle: absence of costs of adjustment (which produce AR errors, in contrast to the MA errors yielded by gestation lags), absence of demand shocks, and failure to consider tax changes (which account for 80 percent of the variation in the aftertax rental rate).

Garber and King examine the restrictions needed to identify "deep structural parameters" obtained by estimating Euler equations derived from fundamental optimization problems. Through a simple example of the interaction of a utility-maximizing household and a profit-maximizing firm. Garber and King show that if there are shifts in agents' objectives not observed by the econometrician, then Euler equation methods face serious identification problems. To overcome these problems, the econometrician must be able to impose certain restrictions as in conventional estimation applications. These restrictions are at least as "incredible" (in Sims's terms) as the identification restrictions of conventional estimation.

Discussant Hall remarked that identification is all too often ignored and that Garber and King's reminder of the problem is healthful. He also noted that if objective function shocks are random walks, then Euler equation methods are possible because first differences of the shocks are white noise. He himself feels that objective function shocks are important in magnitude.

Discussant Singleton argued that there are always trade-offs in identifying and that there is no obvious "right way." He felt Garber and King's conclusion that the required identifying restrictions are "incredible" is too strong; the credibility of the restrictions depends on the structure of the objective function, the intent of the particular investigation, and so on.

About 100 economists from the United States, Canada, Great Britain, and France participated in the conference. Papers may be ordered from Louise Sherman, Herbert Hoover Memorial Building, Stanford University, Stanford, CA 94305.

Conference Calendar

Each *Reporter* will include 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 1984/5 issue of the *Reporter* is November 15. If you have any questions about procedures for submitting materials for the calendar, please call Kirsten Foss at (617) 868-3900.

November 1-2, 1984
Program Meeting: Financial Markets and Monetary Economics, NBER

November 5-7, 1984
Annual Meeting, International Association of Energy Economists*

November 9, 1984
Program Meeting: Labor Studies, NBER

November 14-16, 1984
Annual Meeting, Southern Economic Association*

November 15-16, 1984
Public Sector Payrolls, NBER

November 15-16, 1984
Role of Gender in the Work Place, Hoover Institution

**Open conference, subject to rules of the sponsoring organization.*

November 16-17, 1984
Public Policy Conference, Carnegie-Mellon/University of Rochester

November 25-28, 1984
Annual Conference, National Tax Association*

November 29-December 2, 1984
Exchange Rate Policies and Systems in Developing Countries, NBER/World Bank

December 28-30, 1984
Annual Conference, American Economic Association*

January 11, 1985
Program Meeting: Economic Fluctuations, NBER

February 8, 1985
Monetary Policy in a Changing Environment, American Enterprise Institute

February 21-22, 1985
Program Meeting: Financial Markets and Monetary Economics, NBER

February 22-23, 1985
Second Berkeley Conference on Industrial Relations, University of California, Berkeley

March 7-8, 1985
Program Meeting: Taxation, NBER

March 9-16, 1985
19th International Conference, Atlantic Economic Society*

March 9-16, 1985
International Economics of Health Care Conference, International Health Economics and Management Institute*

March 21-25, 1985
Conference on Pensions, NBER

March 26-28, 1985
Income and Wealth: Productivity Growth in the United States and Japan, NBER

March 28-29, 1985
U.S. Trade Policies in a Changing World Economy, University of Michigan

March 28-30, 1985
Annual Meeting, Midwest Economics Association

March 29, 1985
Program Meeting: Economic Fluctuations, NBER

April 4-5, 1985
Panel on Economic Activity, Brookings Institution

April 19-20, 1985
Public Policy Conference, Carnegie-Mellon/University of Rochester

April 26-27, 1985
Money and Financial Markets Conference, NBER

May 20-21, 1985
Spring Symposium, National Tax Association*

May 22-24, 1985
Konstanz Seminar on Analysis and Ideology, University of Rochester

**Open conference, subject to rules of the sponsoring organization.*

May 27-31, 1985
Interlaken Seminar on Analysis and Ideology, University of Rochester

June 3-5, 1985
International Meeting, International Association of Energy Economists*

June 30-July 4, 1985
Annual Conference, Western Economic Association*

August 5-8, 1985
Annual Meeting, American Statistical Association*

August 20, 1985
Annual Congress, International Institute of Public Finance

September 11-14, 1985
17th CIRET Conference, Center for International Research on Economic Tendency Surveys

September 12-13, 1985
Panel on Economic Activity, Brookings Institution

October 1985
Conference, Atlantic Economic Society*

October 13-16, 1985
Annual Conference, National Tax Association*

November 6-8, 1985
North American Meeting, International Association of Energy Economists*

November 7-9, 1985
Causes and Consequences of Non-Replacement Fertility, Hoover Institution

November 24-26, 1985
Annual Meeting, Southern Economic Association*

December 28-30, 1985
Annual Conference, American Economic Association*

April 3-5, 1986
Annual Meeting, Midwest Economics Association

July 27-31, 1986
Annual Meeting, American Agricultural Economics Association*

August 18-21, 1986
Annual Meeting, American Statistical Association*

September 13-17, 1986
Annual Meeting, National Association of Business Economists*

December 28-30, 1986
Annual Conference, American Economic Association*

August 2-5, 1987
Annual Meeting, American Agricultural Economics Association*

August 17-20, 1987
Annual Meeting, American Statistical Association*

September 27-October 1, 1987
Annual Meeting, National Association of Business Economists*

August 8-11, 1988
Annual Meeting, American Statistical Association*

**Open conference, subject to rules of the sponsoring organization.*

Bureau News

Feldstein Returns as President

Martin Feldstein, chairman of the President's Council of Economic Advisers for the past two years, returned to Cambridge and the post of NBER president in July. He also returned to his position as professor of economics at Harvard University. Former NBER president Eli Shapiro, who succeeded Feldstein in 1982, will continue as a member of the Bureau's Board of Directors. Shapiro is the Alfred P. Sloan Professor of Management at MIT.

Seventh Annual Summer Institute Held

Over 200 economists from universities and agencies worldwide, about half of whom have an NBER affiliation, traveled to Cambridge this summer to attend NBER's seventh annual Summer Institute. Members and guests of the **Program in Financial Markets and Monetary Economics,** led by Program Director Benjamin M. Friedman of Harvard University, kicked off the program on July 9 with a series of seminars culminating in a two-day conference, July 19 and 20. Topics discussed in the small workshops included: the dynamics of term structure and bond risk, the subject of a paper by Alex Kane, NBER and Boston University; and taxes and the corporate form, a paper by Robert A. Taggart, Jr., also of NBER and Boston University. The conference agenda was:

- Carl E. Walsh, NBER and Princeton University, "A Model of Liquidity Constraints, Credit, and the Real Effects of Monetary and Fiscal Policy"
- Richard H. Clarida, NBER and Yale University, "The Monetary Approach to the Balance of Payments: A Theoretical Formulation"
- Olivier J. Blanchard, NBER and MIT, and Lawrence H. Summers, NBER and Harvard University, "Why Are World Real Interest Rates So High?"
- Jess B. Yawitz, NBER and Washington University, "Discount Rate Changes, Asset Returns, and Federal Reserve Credibility"
- Bennett T. McCallum, NBER and Carnegie-Mellon University, "Some Issues Concerning Interest Rate Pegging, Price Level Determinacy, and the Real Bills Doctrine"

The **Program in Economic Fluctuations,** directed by Robert E. Hall of Stanford University, highlighted its opening activities on July 12–13 with a Conference on Macroeconomics, described in the "Conferences" section of this issue. The balance of their meetings, from July 9 to August 3, were workshop-style sessions on: consumption and liquidity constraints, led by Marjorie Flavin, University of Virginia; domestic monetary channels, organized by Stephen R. King, Stanford University, and Robert Chirinko, Cornell University; microeconomic analysis of the labor market with a macroeconomic perspective, directed by David Card, Princeton University; uncertain lifetimes, annuity markets, and fiscal policy, headed by Andrew B. Abel, Harvard University, and Martin Eichenbaum, University of Rochester.

The two areas of focus for NBER's **Program in Productivity and Technical Change** were selected topics relating to R and D, organized by Program Director Zvi Griliches of Harvard University and Ernst R. Berndt, MIT; and technical change and R and D spillover, led by M. Ishaq Nadiri of New York University. The Griliches-Berndt sessions focused on the methodology used in undertaking research on productivity and included discussion of databases being developed at NBER. Melvin Fuss of the University of Toronto also discussed automobile production in Canada, the United States, and Japan; and Yasushi Toda, University of Florida, considered the productivity slowdown in the Soviet Union.

Among the work discussed in the Nadiri sessions was a paper by Nestor J. Terleckyj, National Planning Association (Washington, DC), on the effects of industrial R and D on productivity in the U.S. business economy. Erwin Diewert, University of British Columbia, considered the effects of trade and tax policy on productivity, and Roger H. Gordon, NBER and University of Michigan, dealt with capital innovations and U.S. productivity growth. The seminars and meetings were held between July 15 and August 15.

From August 6 to 15, members and guests of NBER's **Program in Taxation** met in small groups and seminars. Their activities were coordinated by Program Director David F. Bradford, Princeton University. Much of the work discussed involved the methodology needed for efficient research on taxes. Some of the papers were more applied: for example, Laurence J. Kotlikoff, NBER and Boston University, considered issues in the transition to consumption-type taxes while Henry Aaron and Harvey Galper, Brookings Institution, discussed the transition to a lifetime endowment tax. John H. Makin, NBER and the American Enterprise Institute, described his work on the effect of deficits on capital formation, and Michelle White, University of Michigan, discussed tax incentives to abandon housing.

The discussions of the **Program in International Studies,** directed by William H. Branson of Princeton University, fell into two areas. From August 6 to 9 Richard C. Marston, NBER and University of Pennsylvania, coordinated sessions on international macroeconomics and finance. Such topics as the covariation between risk premiums and expected exchange rates, macro-

economic stabilization through taxation and indexation, budget deficits and interest rates in the world economy, and the Israeli experience with high inflation, were covered.

International trade and structural change was the other area of focus; J. David Richardson, University of Wisconsin, organized the August 13–17 seminars on that subject. The economists considered such issues as the use of tariffs versus quotas, the experience with voluntary export restraint from 1980–84, and taxation of foreign multinationals.

A wide range of topics in labor studies filled out the 1984 Summer Institute Program. From August 13–17 NBER's **Program in Labor Studies,** guided by Director Richard B. Freeman of Harvard University, presented the results of recent research and laid plans for future NBER projects, for example on public sector unions.

Summer Institute provides a valuable opportunity, particularly for young scholars doing empirical research, to come together, exchange ideas, and collaborate over a longer period than is possible at a typical conference. Much of the work discussed at the NBER Summer Institute is in a preliminary stage; authors are thus able to incorporate aspects of the discussions into their final papers. In general, those papers will become part of the Bureau's Working Papers series; their availability will be announced in future issues of the *NBER Reporter.*

Chinese Economists Visit NBER

Eight Economists from the Chinese Academy of Social Sciences (CASS) spent September 10 and 11 at NBER's Cambridge office as the first stop of their month-long visit to the United States. They will also visit the Bureau's New York and Palo Alto offices before returning to China on October 4.

On the first day, Liu Guogang, Director of CASS's Institute of Economics, described some of the economic reforms and adjustments that have taken place since 1978. There have been moves toward more economic flexibility within the Chinese economy, with the state turning over some of its authority to the divisions, departments, and collectives. In the rural areas, township governments have been reestablished and new coops, particularly in agriculture, set up. Also in the agricultural sector, links between work effort and benefits have been forged, resulting in increased output.

In the cities, new forms of ownership have been allowed, and there has been an effort to separate the government's function from "enterprise management." As a result, the light industries (such as energy, transportation, and financial services) have grown, and retail sales are up, as is per capita income.

On the second day, Zhang Zhuoyuan, director of CASS's Institute of Finance and Trade, discussed price adjustment and reform. The major reform is away from a unitary, state-controlled system of prices and toward various forms that the Chinese call floating, consulted, and negotiated. The goal is to have prices reflect value, or production costs, more accurately.

On their visit to Cambridge, the Chinese delegation heard presentations by Richard B. Freeman, director of NBER's Program in Labor Studies; Benjamin M. Friedman, director of NBER's Program in Financial Markets and Monetary Economics; Research Associate Lawrence H. Summers; Bureau President Martin Feldstein; and Zvi Griliches, director of NBER's Program in Productivity and Technical Change.

The Chinese-American exchange was hosted jointly by NBER and the Committee on Scholarly Communication with the People's Republic of China. In the first part of the exchange in spring 1982, seven NBER economists lectured throughout China under CASS auspices. (For details, see *NBER Reporter,* Fall 1982, p. 19.)

Bureau History Published

Toward a Firmer Basis of Economic Policy: The Founding of the National Bureau of Economic Research, written by Research Associate Emeritus Solomon Fabricant, was published in July by NBER. This 40-page booklet describes how and why the Bureau was formed and includes some personal recollections of the author and other NBER directors and directors emeriti. The booklet should be of particular interest to students of the history of economic thought, as well as to anyone who would like to learn more about a unique organization devoted to scientific economic research.

A limited number of copies are available free of charge. Send your request in writing to: Fabricant Report, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138.

Reprints Available

The following NBER Reprints, intended for nonprofit education and research purposes, are now available. (Previous issues of the *NBER Reporter* list titles 1-486 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 $1.50 per reprint to defray the costs of production, postage, and handling. Advance payment is required on orders totaling less than

$10.00. Reprints must be requested by number, in writing, from: Reprint Series, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138.

487. "Measuring the Average Marginal Tax Rate from the Individual Income Tax," by Robert J. Barro and Chaipat Sahasakul, 1983 (NBER Working Paper No. 1060)

488. "A Theory of Current Account and Exchange Rate Determinations," by Joshua Aizenman, 1983 (NBER Working Paper No. 1177)

489. "The Theory of Local Public Goods Twenty-Five Years after Tiebout: A Perspective," by Joseph E. Stiglitz, 1983 (NBER Working Paper No. 954)

490. "The International Financial Market and U.S. Interest Rates," by David G. Hartman, 1984 (NBER Working Paper No. 598)

491. "Taxes, Firm Financial Policy, and the Cost of Capital: An Empirical Analysis," by Alan J. Auerbach, 1984 (NBER Working Paper No. 955)

492. "Toward a Reconstruction of Keynesian Economics: Expectations and Constrained Equilibria," by J. Peter Neary and Joseph E. Stiglitz, 1983 (NBER Working Paper No. 376)

493. "Saddlepoint Problems in Continuous-Time Rational Expectations Models: A General Method and Some Macroeconomic Examples," by Willem H. Buiter, 1984 (NBER Technical Working Paper No. 20)

494. "The U.S. Productivity Slowdown: A Case of Statistical Myopia," by Michael R. Darby, 1984 (NBER Working Paper No. 1018)

495. "On the Relevance or Irrelevance of Public Financial Policy: Indexation, Price Rigidities, and Optimal Monetary Policies," by Joseph E. Stiglitz, 1983 (NBER Working Paper No. 1106)

496. "The Taxation of Risky Assets," by Jeremy I. Bulow and Lawrence H. Summers, 1984 (NBER Working Paper No. 897)

497. "Response Variation in the CPS: Caveats for the Unemployment Analyst," by James M. Poterba and Lawrence H. Summers, 1984 (NBER Working Paper No. 1109)

498. "Why Haven't Nominal Rates Declined?" by Zvi Bodie, Alex Kane, and Robert L. McDonald, 1984 (NBER Working Paper No. 1141)

499. "Balance-of-Payments Crises and Devaluation," by Maurice Obstfeld, 1984 (NBER Working Paper No. 1103)

500. "A Synthesis of Keynesian, Monetary, and Portfolio Approaches to Flexible Exchange Rates," by Thorvaldur Gylfason and John F. Helliwell, 1983 (NBER Working Paper No. 949)

501. "Pensions as Severance Pay," by Edward P. Lazear, 1984 (NBER Working Paper No. 944)

502. "The Changing Relationship between Aggregate Price and Output: The British Experience," by Richard T. Froyen and Roger N. Waud, 1984 (NBER Working Paper No. 1134)

503. "The Gold Standard Crisis of 1847," by Rudiger Dornbusch and Jacob A. Frenkel, 1984 (NBER Working Paper No. 1039)

504. "A Theory of Expropriation and Deviations from Perfect Capital Mobility," by Jonathan Eaton and Mark Gersovitz, 1984 (NBER Working Paper No. 972)

505. "The Theory of Optimum Deficits and Debt," by Willem H. Buiter, 1983 (NBER Working Paper No. 1232)

506. "A Comparison of Methodologies in Empirical General Equilibrium Models of Taxation," by Don Fullerton, Yolanda K. Henderson, and John B. Shoven, 1984 (NBER Working Paper No. 911)

507. "Optimal Stock Trading with Personal Taxes: Implications for Prices and the Abnormal January Returns," by George M. Constantinides, 1984 (NBER Working Paper No. 1176)

508. "The Importance of Lifetime Jobs in the U.S. Economy," by Robert E. Hall, 1982 (NBER Working Paper No. 560)

509. "Modeling Deviations from Purchasing Power Parity (PPP)," by Joshua Aizenman, 1984 (NBER Working Paper No. 1066)

510. "Case Mix, Costs, and Outcomes: Differences between Faculty and Community Services in a University Hospital," by Alan M. Garber, Victor R. Fuchs, and James F. Silverman, 1984 (NBER Working Paper No. 1159)

511. "The Economics of Price Scissors," by Raaj Kumar Sah and Joseph E. Stiglitz, 1984 (NBER Working Paper No. 1156)

512. "Labor Force Participation: Timing and Persistence," by Kim B. Clark and Lawrence H. Summers, 1982 (NBER Working Paper No. 977)

513. "The Aftertax Rate of Return Affects Private Savings," by Lawrence H. Summers, 1984 (NBER Working Paper No. 1351)

514. "Observations on the Indexation of Old Age Pensions," by Lawrence H. Summers, 1984 (NBER Working Paper No. 1023)

515. "Tax Reform and Corporate Investment: A Microeconometric Simulation Study," by Michael A. Salinger and Lawrence H. Summers, 1983 (NBER Working Paper No. 757)

516. "Black-White Earnings Ratios since the Civil Rights Act of 1964: The Importance of Labor Market Drop-

outs," by Charles C. Brown, 1984 (NBER Working Paper No. 617)

517. "Consumption during Retirement: The Missing Link in the Life Cycle," by Daniel S. Hamermesh, 1984 (NBER Working Paper No. 930)

518. "Optimal Stabilization Rules in a Stochastic Model of Investment with Gestation Lags," by John B. Taylor, 1983 (NBER Working Paper No. 1225)

519. "Stagflation and the Productivity Decline in Canada, 1974–82," by John F. Helliwell, 1984 (NBER Working Paper No. 1185)

520. "Unemployment Insurance and Labor Market Transitions," by Kim B. Clark and Lawrence H. Summers, 1982 (NBER Working Paper No. 920)

521. "The Nonadjustment of Nominal Interest Rates: A Study of the Fisher Effect," by Lawrence H. Summers, 1983 (NBER Working Paper No. 836)

522. "Aggregation and Stabilization Policy in a Multicountry Economy," by Alan S. Blinder and N. Gregory Mankiw, 1984 (NBER Working Paper No. 873)

523. "Life-Cycle Effects on Consumption and Retirement," by Daniel S. Hamermesh, 1984 (NBER Working Paper No. 976)

524. "Right-to-Work Laws and the Extent of Unionization," by Henry S. Farber, 1984 (NBER Working Paper No. 1136)

525. "Public Opinion and the Balanced Budget," by Alan S. Blinder and Douglas Holtz-Eakin, 1984 (NBER Working Paper No. 1234)

526. "Modeling the Retirement Process for Policy Evaluation and Research," by Alan L. Gustman and Thomas L. Steinmeier, 1984 (NBER Working Paper No. 1069)

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 $1.50 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.

39. "Data Problems in Econometrics," by Zvi Griliches, July 1984 (JEL Nos. 211 and 229)

40. "Flexible Functional Forms and Global Curvature Conditions," by W. E. Diewert and T. J. Wales, September 1984

41. "Rational Expectations Models with a Continuum of Convergent Solutions," by Michael L. Mussa, September 1984 (JEL No. 023)

Bureau Books

The following volumes 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.

U.S. Trade Policy Examined

The Structure and Evolution of Recent U.S. Trade Policy, edited by Robert E. Baldwin and Anne O. Krueger, is available from the University of Chicago Press at a cost of $50.00. This conference volume examines specific trade policies, both tariffs and nontariff measures, that bear on America's increasing interdependence with the world economy. In addition to presenting an overview of U.S. trade and related policy, the volume specifically analyzes: the Japanese voluntary agreement to control exports of autos; the Trigger Price Mechanism used to regulate steel imports; the Multifiber Agreement for textile and apparel imports; the Trade Adjustment Assistance program; the Generalized System of Preferences; legislation on Domestic International Sales Corporations; and subsidization of export credits by the U.S. Export-Import Bank. The authors consider how these policies operate, their effectiveness in terms of their stated purposes, and their economic costs and benefits.

Baldwin is an NBER research associate and professor of economics at the University of Wisconsin-Madison. Krueger, formerly an NBER research associate, is vice-president, economics and research, of the World Bank. She is on leave from the economics department of the University of Minnesota.

Volume on Exchange Rates Released

Exchange Rate Theory and Practice, edited by John F. O. Bilson and Richard C. Marston, was recently published by the University of Chicago Press. It is priced at $58.00.

This conference volume, a product of NBER's Project on Productivity and Industrial Change in the World Economy, examines various recent approaches to the analysis of exchange rates, an area in which economic research has evolved rapidly over the last 15 years. At the beginning of the 1970s, most economists felt that exchange rates would adjust gradually and predictably

to offset differences in national rates of inflation. But exchange rates in the 1970s were more volatile than expected, and new ideas have evolved to explain their movements.

This volume should interest both policymakers and economists concerned with the effects of changes in exchange rates. Its editors are both NBER research associates. Bilson is also a professor at the University of Chicago's Graduate School of Business; Marston is a professor in the department of finance, University of Pennsylvania.

Bureau Volume Looks Back at the Gold Standard

A Retrospective on the Classical Gold Standard, 1821-1931, edited by Michael D. Bordo and Anna J. Schwartz, is available from the University of Chicago Press at a cost of $65.00. This volume is composed of papers commissioned by NBER to serve as background for the discussions of a presidential commission on the gold standard chaired by Schwartz.

Certain of the papers survey the major themes in the literature on the gold standard since the 18th century. Other work describes the Bank of England's performance during two crises in 1847 and, more generally, throughout the decades before 1914 at which time its technical procedures were well developed. Studies of the gold standard experiences of Germany, Italy, Sweden, and Canada in the post-WWI years are also included in the book.

The papers in this volume are designed to help the reader understand how the gold standard functioned for its 110 years, until convertibility of the British pound ended in 1931. It is hoped that this historic evidence will apply to today's question of whether a gold (or commodity) standard could solve problems of inflation, high interest rates, and low productivity growth.

Bordo is professor of economics, University of South Carolina at Columbia. Schwartz is a research associate at NBER.

NBER Volume Explores Transfer Payments

Economic Transfers in the United States, edited by Marilyn Moon, was published by the University of Chicago Press this fall. It is priced at $42.00.

This volume of papers and discussions presented at a 1982 NBER Conference on Income and Wealth deals with the definition and measurement of transfer payments. It should be of particular interest because it brings together diverse views of what constitutes a transfer and presents a number of different approaches to how such transfers should be measured.

Moon is a senior research associate at the Urban Institute, Washington, D.C.

Current Working Papers

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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 1984 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 NBER.

Counterfactuals, Forecasts, and Choice-Theoretic Modeling of Policy

Herschel I. Grossman
Working Paper No. 1381
June 1984
JEL Nos. 011, 211

This paper focuses on the problem of formulating an analysis of economic policy that is consistent with rational expectations. Cooley, LeRoy, and Raymon show that the Lucas-Sargent strategy for econometric policy evaluation is itself vulnerable to the logic of the Lucas critique. My paper develops the distinction between counterfactuals and forecasts to clarify the nature of the inconsistencies in the Lucas-Sargent strategy. It goes on to propose and illustrate a strategy for positive economic analysis that incorporates choice-theoretical modeling of policy. Such modeling can allow better forecasting, but it also shifts attention away from policy actions and their effects and toward the more fundamental relation between the policymaker's constraints and targets and economic outcomes. The forecasting problem in a choice-theoretic model of policy concerns the effects of hypothetical realizations of variables that determine the policymaker's constraints and targets. The analysis of counterfactuals in this context recognizes that the parameters of the policy process are not invariant with respect to the processes that generate these exogenous vari-

ables. A program of positive economics that includes choice-theoretic modeling of policy also preserves a distinct role for policy advice as part of the process being modeled.

Pricing FHA Mortgage Default Insurance

Donald F. Cunningham and **Patric H. Hendershott**
Working Paper No. 1382
June 1984
JEL Nos. 313, 315

This paper computes the fair premiums on FHA mortgage default insurance contracts under alternative assumptions about the expected inflation rate for house prices and its variance and homeowners' default costs. The contracts considered vary by amortization schedule (15- and 30-year level-payment mortgages and two graduated-payment mortgages) and initial loan-to-value ratio (80 to 95.8 percent). The results indicate a wide variation in fair insurance premiums. Because FHA charges all borrowers the same premiums, large cross-subsidies exist within the program, with borrowers obtaining low loan-to-value or rapidly amortizing loans that subsidize borrowers with high loan-to-value or negative amortizing loans. Moreover, the movement toward insuring riskier loans—graduated-payment, price-level-adjusted, and adjustable-rate—without increasing insurance premiums seems almost certain to lead to significant overall losses for the program.

Household Saving: An Econometric Investigation

Patric H. Hendershott and **Joe Peek**
Working Paper No. 1383
June 1984
JEL Nos. 840, 932

We recompute household or personal saving to include net purchases of consumer durables, net contributions to government life insurance and pension reserves, and an adjustment for the inflation premium component in interest income. These adjustments raise the measured household saving rate by nearly 5 percentage points in the 1965-75 period but result in an extremely sharp 7 percentage point decline between 1975 and the early 1980s.

We then present and estimate a model of household saving behavior using annual data from the 1952-82 period. While saving responds to numerous influences, major swings in the adjusted saving rate—a significant decline in the 1950s and rebound in the early 1960s, as well as the decline since 1975—are largely explained by two variables: the wealth/income ratio and the growth rate of real income.

The Heights of Americans in Three Centuries: Some Evidence and Demographic Implications

Kenneth L. Sokoloff
Working Paper No. 1384
June 1984

This paper discusses the potential usefulness of anthropometric measurements in exploring the contributions of nutrition to American economic growth and demographic change. It argues that, although the value of height-by-age data to economic historians will ultimately be resolved in the context of investigating specific issues, the early results of the NBER Project on Long-Term Trends in Nutrition, Labor Productivity, and Labor Welfare have been encouraging. Among the most significant findings to date are that: (1) by the time of the Revolution, Americans had attained a mean final height (and net nutritional status) that was very high, one that European populations did not generally reach until the twentieth century; (2) the variation in stature across occupational classes was much less in the United States than in Europe; (3) natives of the South have been taller than those from other regions of the United States since the middle of the eighteenth century, and their absolute height increased during the antebellum period while mortality was declining there; and (4) natives of large antebellum cities were much shorter than their countrymen born in rural areas or in small cities. The paper also examines, in a preliminary fashion, how a newly available data set bears on the hypothesis that a cycle in U.S. final heights began during the antebellum period. The theory might continue to be sustained, but a sample of U.S. Army recruits from 1850 to 1855 does not seem to provide much support for it.

Investment in Fixed and Working Capital during Early Industrialization: Evidence from U.S. Manufacturing Firms

Kenneth L. Sokoloff
Working Paper No. 1385
June 1984

This paper uses a survey of U.S. manufacturing firms taken in 1832 to investigate the structure of manufacturing investment during early industrialization. Although several manufacturing industries, such as cotton textiles, depart from the pattern, most appear to have devoted the bulk of their investments to working capital. This variation across industries in the composition of capital investments is indicative of a more general variation in factor intensities and bears on the issues of why industries became concentrated in the regions they did, and the degrees to which they were adversely

affected by the limited availability of long-term loans. I also present evidence that most manufacturing industries had quite modest investments in machinery and tools per unit of labor, serving to undercut the notion that the early period of industrialization was based on a proliferation of new, machinery-intensive technologies.

Was the Transition from the Artisanal Shop to the Nonmechanized Factory Associated with Gains in Efficiency? Evidence from the U.S. Manufacturing Censuses of 1820 and 1850

Kenneth L. Sokoloff
Working Paper No. 1386
June 1984

There are few more dramatic episodes in economic history than the displacement of the artisanal shop by the factory as the predominant form of manufacturing organization during the early stages of the Industrial Revolution. Despite the attention this development has received, however, the issues of why and how it occurred remain in dispute. This paper employs recently collected samples of data on northeastern firms from the 1820 and 1850 Federal Census of Manufactures to investigate this transition in the U.S. context. It argues that the evidence is consistent with the hypothesis that even the early nonmechanized factories enjoyed an efficiency advantage over the traditional artisanal shop organization. The growth of average firm size in nearly all manufacturing industries between 1820 and 1850 indicates a systematic movement toward the factory organizational form. Some shops did survive, but they accounted for only modest shares of industry value added and became increasingly concentrated in areas where the extent of the market was less likely to justify firm expansion. Moreover, the estimation of production functions suggests that the nonmechanized industries were generally characterized by scale economies up to a threshold size similar to that of a small factory.

Determinants of Neonatal Mortality Rates in the United States: A Reduced-Form Model

Hope Corman and **Michael Grossman**
Working Paper No. 1387
June 1984

This paper aims to contribute to an understanding of the determinants of differences in race-specific neonatal mortality rates among large counties of the United States in 1977. After estimating cross-sectional regressions, we apply their coefficients to national trends in the exogenous variables to "explain" the rapid decline in neonatal mortality since 1964. The regressions and the extrapolations point to the importance of the availability of abortion and neonatal intensive care, levels of schooling of females, and to a lesser extent Medicaid, BCHS projects, and WIC in trends in black neonatal mortality between 1964 and 1977. They also underscore the importance of schooling, neonatal intensive care, abortion, Medicaid, WIC, and to a lesser extent poverty and organized family planning clinics in trends in white neonatal mortality in those years. A particularly striking finding is that the increase in availability of abortion is the single most important factor in the reduction in the black neonatal mortality rate. Not only does the growth in abortion dominate other program measures, but it also dominates trends in schooling, poverty, female employment, and physician availability. The actual reduction resulting from abortion amounts to 1.2 deaths per 1000 live births or 10 percent of the observed decline.

An Empirical Model of Wage Indexation Provisions in Union Contracts

David Card
Working Paper No. 1388
June 1984
JEL No. 832

Cost-of-living escalators are an important feature of North American labor contracts. This paper presents a measure of the response of index-linked wage increases to concurrent price increases for a sample of Canadian contracts and then analyzes this response in terms of a simple model of indexation to the aggregate price level. The model highlights the importance of aggregate price movements in conveying information about industry-specific prices. The empirical analysis confirms that industry-specific correlations between input and output prices and the Consumer Price Index are important determinants of the response of wages to prices across indexed contracts.

Debts, Deficits, and Finite Horizons

Olivier J. Blanchard
Working Paper No. 1389
June 1984
JEL Nos. 130, 320

Many issues in macroeconomics, such as the level of the steady-state interest rate, or the dynamic effects of government deficit finance, depend crucially on the horizon of economic agents. This paper develops a simple analytical model in which such issues can be examined and in which the horizon of agents is a parameter that can be chosen arbitrarily.

The first three sections of the paper characterize the dynamics and steady state of the economy in the absence of a government. The focus is on the effects of the horizon index on the economy. The paper clarifies in particular the separate roles of finite horizons and declining labor income through life in the determination of steady-state interest rates.

The next three sections study the effects and the role of fiscal policy. The focus is on the effects of deficit finance both in closed and open economies. The paper clarifies the respective roles of government spending, deficits, and debt in the determination of interest rates.

Household Formations

Patric H. Hendershott and **Marc Smith**
Working Paper No. 1390
June 1984
JEL Nos. 840, 932

Between 1960 and 1980, the number of households in the United States increased by 50 percent and the proportion of the population that were household heads rose from 29.5 to 36.3. While some of this increase was caused by the maturing of the "baby-boom" population, over half was caused by rising age-specific headship rates. In contrast, between 1980 and 1983, headship rates fell sharply for the under-34 population. This paper explains, in terms of changes in real income and the price of privacy, household formations resulting from changes in headship rates.

The Role of Consumption in Economic Fluctuations

Robert E. Hall
Working Paper No. 1391
June 1984
JEL Nos. 212, 921

Consumption and income tend to move together; the correlation of their first differences is about 0.4. Most accounts attribute the correlation to the upward slope of the consumption function. That is, when the public is better off, it consumes more.

In the microeconomic theory of the household, however, income is one variable that the household chooses. Choosing to work more, and therefore to consume less leisure (time away from work), is a sign of diminished well-being. The structural relation between earnings and consumption should thus have a *negative* slope.

The explanation of the observed positive correlation of consumption and income must rest on shifts of the consumption-income relation, not movements along it. Data for the United States in the twentieth century show that the slope of the consumption-income relation has been approximately zero. Shifts in consumer behavior explain the observed positive correlation; they are an important, but not dominant, source of overall fluctuations in the aggregate economy.

Are Business Cycles All Alike?

Olivier J. Blanchard and **Mark W. Watson**
Working Paper No. 1392
June 1984
JEL Nos. 130, 212

This paper asks two questions: First, are economic fluctuations—business cycles—caused by an accumulation of small shocks or by infrequent large shocks? The paper concludes that neither of these two extreme views accurately characterizes fluctuations. Second, are fluctuations caused mostly by one type of shock (for example, monetary) or by shocks with many sources? The evidence strongly supports the hypothesis of many sources of shocks of nearly equal importance.

To analyze the empirical evidence and to reach these conclusions, the paper uses two different statistical approaches. The first is estimation of a structural model, using a set of just-identifying restrictions. The second is nonstructural and may be described as a formalization of the Burns-Mitchell techniques. Both approaches are somewhat novel and should be of independent interest.

Capital Structure Puzzle

Stewart C. Myers
Working Paper No. 1393
July 1984
JEL No. 521

This paper contrasts the "static trade-off" and "pecking order" theories of the choice of capital structure by corporations. In the static trade-off theory, optimal capital structure is reached when the tax advantage to borrowing is balanced, at the margin, by the costs of financial distress. In the pecking order theory, firms prefer internal to external funds, and debt to equity, if external funds are needed. Thus, the debt ratio reflects the cumulative requirement for external financing. Pecking order behavior follows from simple asymmetric information models. The paper closes with a review of empirical evidence relevant to the two theories.

The Development and Role of the Bureau's Business Cycle Chronologies

Geoffrey H. Moore and **Victor Zarnowitz**
Working Paper No. 1394
July 1984
JEL No. 131

A working definition, first formulated in the 1920s by Mitchell and then revised in the 1940s, has been in use at the Bureau for over fifty years and is still employed to identify and date business cycles. The NBER historical chronologies for England, France, and Germany, as well as the United States, have been used intensively in economic research and are widely accepted. The U.S. chronology, which is being updated as promptly as the data allow, also has the important practical function of aiding the analysis of current business conditions and of forecasting near-term cyclical developments. This paper discusses the main aspects of the NBER concept of business cycles; the early views and developments bearing on the construction of the chronologies; the problems and procedures involved; the characteristics and dependability of the historical reference dates; and the Bureau's work in this field since World War II. We illustrate some recent uses of the U.S. dates to measure the duration, amplitudes, and diffusion of business expansions and contractions. Finally, we show and discuss chronologies of "growth cycles," that is, trend-adjusted business cycles, for 13 countries in the post-World War II period.

Major Changes in Cyclical Behavior

Victor Zarnowitz and **Geoffrey H. Moore**
Working Paper No. 1395
July 1984
JEL No. 131

Various structural, institutional, and policy changes have contributed to the evolution of business cycles. Since World War II, business expansions have been much longer and contractions much shorter than before. Over nearly 200 years of U.S. history, expansions have been long relative to contractions when prices had upward secular trends, and shorter when price trends were down. The rising price trend since the 1930s fits this pattern, although we find no association between the rate of inflation during each business cycle and the relative duration of the phases. Shifts in the industrial composition of employment, in labor force participation, and in the distribution of personal income have all contributed to the post-1945 moderation of cyclical amplitudes. The variability of economic change was low by historical standards in both 1948–69 and 1969–81, although the inflation rate was much higher and real growth lower, on the average, after 1969. The recent long-term inflation is attributable mainly to the new persistence of upward price movements in business cycle contractions rather than to more rapid price increases during expansions. But prices have always been sensitive to the degree of severity of business contractions, and they still are. The same is true of short-term interest rates, although they became more sensitive during 1949–82 than before. Despite the deep changes in the economy, many basic characteristics of the business cycle remain unchanged, notably the timing relationships among groups of leading and lagging indicators.

Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have

Stewart C. Myers and **Nicholas S. Majluf**
Working Paper No. 1396
July 1984
JEL No. 520

This paper considers a firm that must issue common stock to raise cash and undertake a valuable investment opportunity. Management is assumed to know more about the firm's value than potential investors do. Investors interpret the firm's actions rationally. We develop an equilibrium model of the issue–invest decision under these assumptions. The model shows that firms may refuse to issue stock and therefore may pass up valuable investment opportunities. The model suggests explanations for several aspects of corporate financing behavior, including the tendency to rely on internal sources of funds, and to prefer debt to equity if external financing is required. We also discuss extensions and applications of the model.

Incentives for the Homogenization of Time Use

Daniel S. Hamermesh
Working Paper No. 1397
July 1984
JEL No. 821

An increasing variety of phenomena involves the mixing of market work and leisure, or market work and

home production, both by individuals and across household members. Data for a number of developed countries all demonstrate the growth of vacations, holidays, and days absent from work; the rise in part-time employment and the reduction in moonlighting; and the convergence between the sexes of labor force participation rates and of time spent in household production. This paper examines the phenomenon, an increasing consumption of *mixed leisure*, in the context of a model in which the consumption of one commodity reduces the market wage. If income effects dominate substitution effects, as time-series evidence on the demand for leisure suggests they do, then higher full incomes will increase the demand for mixed leisure. Similarly, greater differences between tax rates on market work and on mixed leisure will also increase the demand for the latter.

Whether the growth of mixed leisure has resulted from changing tax incentives or from increased full incomes is not clear, but the paper presents some weak formal evidence for the latter cause. I discuss the implications of expanded consumption of mixed leisure for earnings inequality and for the welfare effects of unemployment and suggest some approaches to testing the theory of the demand for mixed leisure.

Risk and Return: Consumption versus Market Beta

N. Gregory Mankiw and **Matthew D. Shapiro**
Working Paper No. 1399
July 1984
JEL Nos. 131, 313

The interaction between the macroeconomy and asset markets is central to a variety of modern theories of the business cycle. Much recent work emphasizes the joint nature of the consumption decision and the portfolio allocation decision. In this paper, we compare two formulations of the Capital Asset Pricing Model. The traditional CAPM suggests that the appropriate measure of an asset's risk is the covariance of the asset's return with the market return. The consumption CAPM, on the other hand, implies that a better measure of risk is the covariance with aggregate consumption growth. We examine a cross section of 464 stocks and find that the beta measured with respect to a stock market index outperforms the beta measured with respect to consumption growth.

Economically Sensible Solutions for Linear Rational Expectations Models with Forward- and Backward-Looking Dynamic Processes

Michael L. Mussa
Working Paper No. 1398
July 1984
JEL Nos. 023, 311, 431

Using variants of a modified version of Dornbusch's model of price level and exchange rate dynamics, I demonstrate that satisfaction of the formal condition for existence of a unique, nonexplosive solution of a linear rational expectations model with forward- and backward-looking dynamic processes (equality of the number of stable roots with the number of independent, backward-looking processes) does not guarantee the economic sensibility of this solution, even if one accepts the usual arguments for excluding "speculative bubbles" from the solutions of such models. Moreover, satisfaction of the formal condition for existence of an infinity of nonexplosive solutions for such rational expectations models (more stable roots than independent, backward-looking processes) does not assure that any of these solutions is economically sensible.

Ricardian Consumers with Keynesian Propensities

Robert B. Barsky, N. Gregory Mankiw, and **Stephen P. Zeldes**
Working Paper No. 1400
July 1984
JEL Nos. 131, 321

In this paper, we examine Ricardian equivalence of debt and tax finance in a world in which taxes are not lump sum but are levied on risky labor income. First, we show that the marginal propensity to consume (MPC) out of a tax cut, coupled with a future income tax increase, is positive under reasonable assumptions regarding preferences toward risk. Second, we document the fact that the degree of income uncertainty facing the typical individual or family is large. Third, we show that, for plausible utility function parameters and distributions of future income, the MPC out of a tax cut is quantitatively large. Indeed, the MPC out of a tax cut, coupled with a future income tax increase, can be closer to the Keynesian value that ignores the future tax liabilities than to the Ricardian value that treats future taxes as if they were lump sum.

The Compliance Cost of the U.S. Individual Income Tax System

Joel Slemrod and **Nikki Sorum**
Working Paper No. 1401
July 1984
JEL No. 323

This paper uses evidence from a survey of Minnesota taxpayers to estimate the magnitude and demographic patterns of the compliance cost of filing federal and state income tax returns. It concludes that in 1982 this cost was between $17 and $27 billion, or from 5 to 7 percent of the revenue raised by the federal and state income tax systems combined. About two billion hours of taxpayer time were spent on filing tax returns, and about $3 billion were spent on professional tax assistance.

Nutrition and the Decline in Mortality since 1700: Some Preliminary Findings

Robert W. Fogel
Working Paper No. 1402
July 1984

This paper uses the data in the NBER/CPE pilot sample of genealogies to create a new time series on life expectation in the United States since 1720. After it had attained remarkably high levels toward the end of the eighteenth century, life expectation (as measured by e°_{0}) began a decline that lasted about 80 years before the onset of another rise with which we have long been familiar. To measure nutritional status, the paper uses a time series on the average adult stature of national populations in North America and Europe. Next, I discuss the properties of this measure in the analysis of labor welfare and an explanation for the high correlation between stature and the Gini ratio. The time series on stature is strongly correlated with the series on e°_{0} and other measures of mortality. Then I use these correlations to estimate the contribution of improvements in nutritional status (not diet alone, but diet net of prior claims) to the decline in mortality in Europe and America since 1800. Improvements in nutritional status may have accounted for as much a four-tenths of the decline in mortality rates, but nearly all of this effect was concentrated in the reduction in infant mortality. The new findings resolve several paradoxes; I consider their implication for the standard-of-living controversy.

The Impact of Annuity Insurance on Savings and Inequality

Laurence J. Kotlikoff, John B. Shoven, and **Avia Spivak**
Working Paper No. 1403
July 1984
JEL No. 321

This paper examines the amount of precautionary savings that arise from uncertainty of the life span. It compares saving behavior under perfect insurance arrangements with what occurs under imperfect arrangements, namely when longevity risk can be pooled only with members of one's own family. We consider both intergenerationally altruistic preferences and selfish (zero bequest motive) life-cycle preferences, determining stochastic steady-state wealth levels and wealth distributions in both models.

The central findings of the paper are: (1) perfecting insurance arrangements can sharply lower savings in both intergenerationally altruistic and life-cycle economies and (2) in intergenerationally altruistic economies, perfecting annuity insurance can greatly influence the degree of inequality. Indeed, in the long run in our model, where everyone has the same endowments, switching from imperfect family insurance to perfect insurance can mean the difference between absolute inequality and absolute equality.

An Empirical Evaluation of the Disequilibrium Real Wage Rate Hypothesis

Jacques R. Artus
Working Paper No. 1404
July 1984

The rise in the share of labor costs in value added in many industrial countries during the 1970s and early 1980s has led many observers to conclude that real wages are now too high and are a source of "classical" unemployment. These conclusions are not necessarily valid. The increase in the labor share could be warranted by long-run changes in production techniques, in the price of energy, or in the relative availability of labor and capital. This paper uses a production function approach to examine these possibilities.

The Impact of OSHA and EPA Regulations on Productivity

Wayne B. Gray
Working Paper No. 1405
July 1984
JEL No. 613

This paper presents estimates of the impact of OSHA and EPA regulations on productivity. It merges pro-

duction information for 450 manufacturing industries from 1958 to 1980 with measures of regulation, including both information on compliance expenditures by industry and on enforcement efforts by OSHA and EPA.

Industries that faced higher regulation during the 1970s had significantly lower productivity growth, and had a greater productivity slowdown, than industries that faced lower regulation. Under certain assumptions, I estimate the regulation to have reduced average industry productivity growth by 0.57 percent, 39 percent of the average productivity slowdown. These results are robust to variations in the model and to the inclusion of other productivity determinants, including poor output growth and dependence on energy. The results also suggest a one-time cost of adjustment to regulation, so that the long-run impact may be less than that estimated here.

I find that both OSHA and EPA target their enforcement effort toward those industries that are doing poorly in meeting the goals of the regulation. However, in the only area where benefits from regulation can be examined—worker injury rates and OSHA safety inspections—I find no significant benefits.

Exchange Rate Determination with Systematic and Unsystematic Policy Regime Changes: Evidence from the Yen-Dollar Rate

John H. Makin and **Raymond D. Sauer**
Working Paper No. 1406
July 1984
JEL Nos. 310, 320

This paper presents the results of estimating an exchange rate equation in light of theoretical considerations regarding changes in policy toward sterilization, intervention, and taxes. Such policy changes imply that the coefficients in the equation will not behave as fixed parameters in a given sample period, as standard econometric practice assumes. We compare the results of ordinary least squares (OLS) and of a random-coefficients model of the Japanese yen-U.S. dollar exchange rate during the floating period of July 1973 through June 1982.

When we explicitly model systematic, end-of-year policy changes that affect Japanese reserves, both OLS and the random-coefficients model show increased explanatory power. However, the random-coefficients model appears to be superior to OLS. Since we allow the coefficients to vary over time, as required by the economic theory discussed above, estimates of the mean response coefficients for the floating period all have the hypothesized sign, and explanatory power is sharply increased.

Domestic and Foreign Disturbances in an Optimizing Model of Exchange Rate Determination

Stephen J. Turnovsky
Working Paper No. 1407
July 1984
JEL No. 430

This paper analyzes the effects of various disturbances of domestic and foreign origin in a small open economy under imperfect capital mobility in which the behavioral relationships are derived from optimization by the private sector. In this model the domestic economy instantaneously jumps to its new equilibrium following a change in either the domestic monetary growth rate or domestic fiscal policy. In response to a disturbance in either the foreign interest rate or the inflation rate, the economy initially undergoes a partial jump toward its new equilibrium, which it thereafter approaches gradually. I discuss the implications of these results for exchange rate adjustment and for the insulation properties of flexible exchange rates.

The Pricing of Default-Free Mortgages

Stephen Buser and **Patric H. Hendershott**
Working Paper No. 1408
July 1984
JEL No. 313

In this paper we examine the household's option to prepay or call a standard fixed-rate mortgage. Results based on simulation indicate that the value of this option is sensitive to the expected path of interest rates, the variation around that path, risk aversion, and refinancing costs. Unfortunately, efforts to estimate the interest rate process (by us and by previous authors) have met only limited success, and uncertainty exists about the degree of risk aversion and the magnitude of refinancing costs. Thus we conclude that the application of contingent-claims methodology to options on bonds is conceptually more difficult and operationally less reliable than is the analogous application to options on stocks.

Despite these reservations concerning the use of our model as a technique for absolute valuation, preliminary findings on the effects of changes in the design of mortgage contracts on the value of the prepayment option are encouraging. For example, our estimates of the relative values of the call options on 30- and 15-year mortgages and on level-payment and graduated-payment mortgages appear to be reasonably robust with respect to specifications of the interest rate process and the other parameters. These findings suggest that our model may be of considerable use in the context of relative or comparative valuation.

Dissaving after Retirement: Testing the Pure Life-Cycle Hypothesis

B. Douglas Bernheim
Working Paper No. 1409
July 1984

In this paper, I examine several aspects of saving and dissaving after retirement. First, I argue that existing evidence on bequeathable age-wealth profiles is suspect, and I provide new evidence, based on longitudinal data, that indicates that significant dissaving may occur, particularly among single individuals and early retirees. Second, I argue that, in the presence of annuities, estimates of dissaving should be adjusted by including the simple discounted value of benefits in total wealth. Such adjustments reveal relatively little dissaving among any group of retirees. Finally, I test the pure life-cycle hypothesis by observing the behavioral response of rates of accumulation to involuntary annuitization and find empirical refutation of life-cycle implications.

Cyclical Unemployment: Sectoral Shifts or Aggregate Disturbances?

Katharine G. Abraham and **Lawrence F. Katz**
Working Paper No. 1410
July 1984
JEL No. 821

Recent work by David Lilien has argued that the existence of a strong positive correlation between the dispersion of employment growth rates across sectors (σ) and the unemployment rate implies that shifts in demand from some sectors to others are responsible for a substantial fraction of cyclical variation in unemployment. This paper demonstrates that, under certain empirically satisfied conditions, aggregate demand movements alone can produce a positive correlation between σ and the unemployment rate. We develop two tests that permit one to distinguish between a pure sectoral shift interpretation and a pure aggregate demand interpretation of this positive correlation. The finding that σ and the volume of help wanted advertising are negatively related, and the finding that σ is directly associated with the *change* in unemployment rather than with the *level* of unemployment, both support an aggregate demand interpretation. We then develop a proxy for sectoral shifts that is purged of the influence of aggregate demand. Models that allow sectoral shifts in the composition of demand and fluctuations in the aggregate level of demand to affect the unemployment rate independently are then estimated using this proxy. The results support the view that pure sectoral shifts have not been an important source of cyclical fluctuations in unemployment.

On the Rationality of Black Youth Unemployment

Harry J. Holzer
Working Paper No. 1411
August 1984

This paper provides some evidence on whether the behavior of young unemployed blacks, whose reservation wages are relatively high and whose jobless spells are very long, reflects rational maximizing choices. I use a simple, income-maximizing, job search model that implies employment probabilities and various elasticities and then compare those to actual observations for young blacks.

The results show that, for reasonable discount rates, the employment probabilities implied by income maximization are consistent with those observed for young blacks. The elasticities of reservation wages with respect to nonwage income that are implied by income maximizing are also consistent with those estimated econometrically for this group. This is true despite the assumptions embodied in this model that are of questionable validity for low-income youth.

The evidence thus suggests that young blacks are making economically rational choices by choosing high reservation wages and lengthy spells without jobs.

A Supergame-Theoretic Model of Business Cycles and Price Wars during Booms

Julio J. Rotemberg and **Garth Saloner**
Working Paper No. 1412
August 1984
JEL Nos. 020, 130, 610

This paper studies oligopolists who face fluctuating demand and who collude implicitly. The credible threat of future punishment provides the discipline that facilitates their collusion. However, the temptation to unilaterally deviate from a collusive outcome is often greater when demand is high. To moderate such a temptation, the optimizing oligopoly reduces its profitability, and lower prices result. If the oligopolists' output is an input to other sectors, the output of those sectors may also increase. This explains the comovements of outputs that characterize business cycles. The behavior of the railroads in the 1880s, the automobile industry in the 1950s, and the cyclical behavior of cement prices and price-cost margins support this theory.

Asset Markets, Tariffs, and Political Risk

Alan C. Stockman and **Harris Dellas**
Working Paper No. 1413
August 1984
JEL No. 410

This paper examines a simple model in which exogenous political risk creates uncertainty about tariffs. The model predicts a relationship between consumption and tariffs that differs radically from that implied by models without asset markets or political risk. Given the probability distribution of tariffs, domestic consumption and utility (ex post) are lower in states of the world with a domestic and no foreign tariff rather than the opposite. This conclusion emerges despite the fact that the opposite conclusion would be obtained in the absence of asset markets. Economists should thus not be surprised if observed relationships between consumption and tariffs differ from the predictions of static theory in either time series or cross sections.

Empirical Tests of Alternative Models of International Growth

Laurence J. Kotlikoff and **Edward E. Leamer**
Working Paper No. 1414
August 1984
JEL No. 423

Recent changes in patterns of international trade and growth have rekindled interest in the relationships among the two and the international distribution of income. Three alternative models can form the theoretical foundation for an empirical analysis of these relationships: (1) the standard Heckscher-Ohlin-Samuelson (HO) trade model with equal numbers of factors and goods and incomplete specialization; (2) a model allowing complete specialization and more goods than factors; and (3) a model that posits short-run immobility of capital. Each of these models has quite different implications for the determination of wage levels and growth rates.

We draw rather mixed conclusions from this research. Each of the models performs well on certain criteria and poorly on others. The standard HO model clearly fails to satisfy certain cross-equation constraints, but national endowments are remarkably good predictors of the locus of international production. There are, however, significant nonlinearities in the relationship between factor allocations and national endowments. Such nonlinearities are predicted by the uneven version of the HO model (2). At odds with both of these models is our finding that lagged values of inputs provide an important explanation of current demands for factors. Such correlations are suggested by the adjustment cost model (3).

Modeling the Term Structure of Interest Rates under Nonseparable Utility and Durability of Goods

Kenneth B. Dunn and **Kenneth J. Singleton**
Working Paper No. 1415
August 1984
JEL No. 310

This paper investigates the term structure of interest rates implied by a model with two durable goods in which the preference function of consumers may be nonseparable both over time and over the decision variables. We estimate the parameters that characterize preferences and examine the implied restrictions on the comovements of consumption and the returns from following different investment strategies in bonds. Both the durability of goods (modeled by a linear service technology) and the nonseparability of preferences over services from goods are important factors in explaining the time paths of individual returns. However, we obtain substantial evidence against our model when the restrictions associated with two different investment strategies are studied simultaneously. Specifically, the differences between the sample means of the returns are too large relative to the differences between the sample covariances of the returns and the marginal utility from acquiring a unit of the numeraire good. Our findings suggest that these discrepancies are not a consequence of either the relatively small variability in aggregate acquisitions of goods or of our small estimates of relative risk aversion.

Notches

Alan S. Blinder and **Harvey S. Rosen**
Working Paper No. 1416
August 1984
JEL No. 320

Economists instinctively have a negative reaction to any government program that creates a "notch," that is, a discontinuity in a budget constraint. For example, welfare programs such as public housing are structured so that a finite lump sum of benefits is lost all at once when a household's income crosses a certain threshold. Such notches deserve their bad reputation—they effectively impose a high marginal tax rate over a small income range, which, no doubt, discourages work and promotes welfare dependency.

However, this paper argues that in other contexts, tax and subsidy plans with notches at least should be considered as serious contenders when public policy seeks to encourage or discourage some activity. Using simulations, we show how notch schemes can dominate linear schemes using a standard efficiency criterion.

International Policy Coordination in Dynamic Macroeconomic Models

Gilles Oudiz and **Jeffrey D. Sachs**
Working Paper No. 1417
August 1984
JEL Nos. 430, 440

Recent analyses of the gains to policy coordination have focused on the strategic aspects of macroeconomic policymaking in a static setting. A major theme is that noncooperative policymaking is likely to be Pareto inefficient because of the presence of beggar-thy-neighbor policies. This paper extends the analysis to a dynamic setting, thereby introducing three important points of realism to the static game. First, the payoffs to beggar-thy-neighbor policies look very different in one-period and multiperiod games, and thus so do the gains to coordination. Second, policy coordination may reduce economic welfare if governments are myopic in their policymaking, as is sometimes claimed. Third, governments act under a fundamental constraint that they cannot bind the actions of later governments. We investigate how this constraint alters the gains to policy coordination.

Wages and Working Conditions

Henry Saffer
Working Paper No. 1418
August 1984
JEL No. 913

This paper provides a new empirical test of the compensating-difference hypothesis. Prior empirical studies have encountered problems with omitted data on ability and working conditions and with measurement error. The empirical model presented in this paper uses a difference specification to eliminate bias from omitted data on ability. By assuming that all working conditions are measured by a single unobserved variable, this empirical model also eliminates bias resulting from omitted working conditions and measurement error. I estimate the empirical model using the 1973–77 version of the Quality of Employment Survey. The unique data in this survey facilitate estimation of a model that includes a variable for unobserved working conditions. Using a two-stage technique for consistent and efficient estimation, the empirical results reported in this paper support the compensating-difference hypothesis.

Raids and Offer-Matching

Edward P. Lazear
Working Paper No. 1419
August 1984

Many job changes occur without intervening spells of unemployment. I construct a model that incorporates this feature into the process of wage setting and turnover. It implies that the best workers are hired away first. With imperfect information, prices do not adjust fully for quality. Because job changes and/or offers are an important component in the identification of worker productivity, a stigma develops that is associated with failing to receive outside offers. The force of the stigma, which affects wages, depends upon the likelihood of discovering a worker's ability and the size of the market. The implication is that in some occupations pronounced differences in the treatment of raided and unraided workers develop quickly. One consequence is a theory of occupational wage dispersion. The Peter Principle—that workers are promoted to the level of their incompetence—is a direct implication.

Testing the Sorting Model of Education

Andrew Weiss
Working Paper No. 1420
August 1984

I analyze proprietary data for production workers to determine which aspects of productivity are affected by secondary schooling. The measures of productivity explored are: propensity to quit and be absent, physical output per hour, and ability to perform complex tasks. The data suggest that the sorting effect of education is an important determinant of earnings for semi-skilled production workers.

The Short-Run Demand for Money: A Reconsideration

Robert J. Gordon
Working Paper No. 1421
August 1984
JEL No. 311

The partial-adjustment approach to the specification of the short-run demand for money has dominated

the literature for more than a decade. There are three basic problems with this approach. First, the same lag structure is imposed on all variables, and each independent variable enters only as a current value. In contrast, a rational individual would respond to different variables (income, interest rates, prices) with quite different lags. Second, when the general price level is subject to gradual adjustment but can move quickly in response to supply shocks, the influence of these supply shocks should enter with a negative sign. Third, the estimated equation for real balances may not be a money demand equation at all, but rather its coefficients may represent a shifting mixture of demand and supply responses.

The empirical work in this paper examines several alternative dynamic specifications, including a generalized partial-adjustment framework and the error-correction label. Both of the latter specifications exhibit greater structural stability after 1973 than the standard partial-adjustment specification, and the generalized partial-adjustment model also yields relatively small errors in post-sample dynamic simulations. Shifts in coefficients as the sample period is extended past 1973 are consistent with the interpretation that the real balance equation no longer traces out structural demand parameters but rather a mixture of demand and supply responses.

The Open Economy: Implications for Monetary and Fiscal Policy

Rudiger Dornbusch and **Stanley Fischer**
Working Paper No. 1422
August 1984

By 1984, the exchange rate has become as central to economic policy discussions in the United States as it has long been in the rest of the world. In this paper we show how the standard, closed-economy macroeconomic model—the Phillips curve augmented IS-LM analysis—has to be modified for the United States to take account of the economy's international interactions. The only key structural equation that goes unamended is the equation for money demand. Foreign prices, foreign activity, and foreign asset yields in the goods and asset markets appear as important determinants of domestic activity, prices, and interest rates.

We show that international interactions exert an important effect on the manner in which monetary and fiscal policies operate. The Phillips curve is much steeper under flexible than under fixed interest rates. A tight money policy leads to appreciation under flexible rates and thus to more rapid disinflation. Fiscal expansion, because it induces currency appreciation, is less inflationary under flexible than under fixed exchange rates, but it also involves more crowding out. We show that in practice these effects are significantly large for the United States economy.

The International Linkage of Real Interest Rates: The European-U.S. Connection

Robert E. Cumby and **Frederic S. Mishkin**
Working Paper No. 1423
August 1984
JEL No. 430

Casual observation indicates that in recent years real interest rates in the United States appear to have risen sharply and have remained high relative to historical standards. Many observers have claimed that these high real rates have been transmitted abroad and have led to high real rates in the rest of the industrialized countries. Concern over the level of real rates has been widespread in the analyses by economic policymakers both in Europe and in the United States.

In this paper we present evidence on several questions that have been raised by the recent policy debates in Europe and the United States regarding the movement in short-term real interest rates in eight countries: Have ex ante real rates in the United States and Europe been high during recent years? Has there been a link between U.S. real rates and those in other countries? Can this link be quantified?

The basic finding in this paper is that real rates have climbed dramatically from the 1970s to the 1980s in both the European countries and the United States. Indeed, real interest rates in the United States are currently at high levels unprecedented in the postwar period—rates that rival the levels that occurred during the Great Depression. Complaints that real interest rates in the United States are exceedingly high seem to be well justified. There is also strong evidence that there is a positive association between movements in U.S. real rates and those in Europe. However, European real rates typically do not move one-for-one with U.S. real rates, still leaving open the possibility that European monetary policy can influence domestic economic activity.

Monetary Policy under Dual Exchange Rates

Robert E. Cumby
Working Paper No. 1424
August 1984

This paper finds that the introduction of dual exchange rates gives the monetary authority greater independence from external constraints than it would otherwise enjoy. The monetary authority is able to influence the level of aggregate demand in the short run and to sterilize the effects of temporary foreign disturbances. In addition, the paper finds that dual rates fully insulate the domestic economy from foreign interest rate changes but do not provide insulation from speculative disturbances.

Unobservable Family and Individual Contributions to the Distributions of Income and Wealth

J. R. Kearl and **Clayne L. Pope**
Working Paper No. 1425
August 1984
JEL No. 840

This paper uses a data set composed of combinations of full brothers, half brothers, fathers, and sons to measure the effect of common family background on households' income and wealth. While the data are drawn from a nineteenth-century population, the intraclass correlation (after the effects of age, occupation, nativity, residence, and duration have been removed) for income ranges from .13 to .18, which is similar to that found in modern samples. Intraclass correlations for wealth are significantly higher (.18 to .35) than those for income. The addition of fathers' observed characteristics to the sweeping regressions reduces the unobserved common background effect shared by brothers by about 20 percent.

The intraclass correlations of half brothers were lower than those observed for full brothers, although the small differences between the two groups suggest that fathers played a dominant role in the transmission of the common family effect. Unobserved background was decomposed into individual and family effects by a variance components procedure. The individual effect was dominant for income while the family effect was dominant for wealth.

Fixed Investment in the American Business Cycle, 1919-83

Robert J. Gordon and **John Veitch**
Working Paper No. 1426
August 1984
JEL Nos. 131, 211, 311

This paper makes contributions in three areas: methodology, data creation, and empiricism. The methodological section finds that, while structural exercises in model building may be useful in suggesting lists of variables that may play an explanatory role in investment equations, they generally achieve identification of structural parameters only by imposing arbitrary and unbelievable simplifying assumptions and exclusion restrictions. The paper advocates a hybrid methodology combining guidance from traditional structural models on the choice and form of explanatory variables to be included, with estimation in a reduced-form format that introduces all explanatory variables and the lagged dependent variable with the same number of unconstrained lag coefficients.

The second contribution is the use of a new set of quarterly data for major expenditure categories of GNP extending back to 1919. The data file also contains quarterly data back to 1919 for other variables, including the capital stock, interest rates, the cost of capital including tax incentive effects, a proxy for Tobin's q, and the real money supply.

The empirical results support the view that there are two basic impulses in the business cycle: real and financial. The real impulse appears in our statistical evidence as an autonomous innovation to investment in structures. We interpret these structures innovations as the result in turn of changes in the rate of population growth, episodes of speculation and overbuilding, and Schumpeterian waves of innovation. The financial impulse works through the effect on investment of changes in the money supply as well as the real interest rate (in the case of postwar investment in durable equipment). There is a strong role for the money supply as a determinant of investment behavior, relative to such other factors as the user cost of capital or Tobin's q. The role of the money supply is interpreted as primarily reflecting the banking contraction of 1929-33 and the episodes of credit crunches and disintermediation in the postwar years.

Another feature of the empirical work is the attention paid to aggregation. Coefficient estimates are more stable when four types of investment expenditures are aggregated along the structures-equipment dimension than along the household-business dimension. Historical decompositions highlight the role of autonomous innovations in structures investment and in the money supply, and an inspection of residuals suggests that the main autonomous downward shift in spending in 1929-30 was in fixed investment, not nondurable consumption.

Borrowing Abroad: The Debtor's Perspective

Richard N. Cooper and **Jeffrey D. Sachs**
Working Paper No. 1427
August 1984
JEL Nos. 430, 440

This paper addresses the issue of external borrowing from the perspective of the borrowing country.

The first section sketches a formal framework for optimal borrowing by a developing country, as seen from the planner's point of view. The next three sections use this framework to develop three important limits on extrnal borrowing: the problem of solvency, the problem of liquidity, and the problem created by the possibility of repudiation. The fifth section relates external borrowing to macroeconomic management of the borrowing country, and the sixth section pulls together the many factors that suggest that external debt of a country should be subject to central management or at least surveillance. Following that, we offer some guidelines for limits to the magnitude of external debt and then discuss the character or mix of external debt. In an appendix, we present various simulation exercises for optimal debt management in a discrete-time, infinite-horizon setting.

Securities Activities of U.S. Commercial Bank Affiliates: Lessons from the International Financial Markets

Richard M. Levich
Working Paper No. 1428
August 1984

One issue confronting U.S. policymakers is whether restrictions on securities activities of U.S. commercial banks ought to be abolished within a broader program of banking and financial market deregulation. The Eurobond market offers an opportunity to examine the performance of a largely unregulated securities market and the behavior of U.S. commercial bank affiliates within that market. In this paper, I present evidence on the development and performance of the Eurobond market over the last 20 years and then infer the likely consequences if a similar level of deregulation and competition were permitted in the United States.

I present data on the level of competition along with an analysis of underwriting strategies and innovations that have been pursued in the market. I then review the most serious criticisms of Eurobond market operations—for example, excessive spreads, conflicts of interest, and the gray market.

Overall, the evidence suggests that the Eurobond market has experienced dynamic and vigorous growth, resulting in net benefits to both borrowers and lenders without exposing the financial institutions to significant risks. Large U.S. companies regularly tap the Eurobond market and capture some of these benefits. Allowing U.S. commercial bank affiliates to compete in the U.S. securities markets could make these benefits more certain and could expand their availability to all firms with a minimal increase in risk to the safety and soundness of the banking system.

Fiscal Policy in Open, Interdependent Economies

Willem H. Buiter
Working Paper No. 1429
August 1984
JEL Nos. 411, 431, 320, 023

This paper studies the effects of alternative financing policies in an open economy. Financial policy has a nontrivial role because of the failure of first-order debt neutrality caused by uncertain private lifetimes. I consider both the single-country case and the interdependent two-country case. Capital formation is endogenous, and there are unified global financial and goods markets that determine the interest rate, each country's Tobin's q, and the terms of trade. The government's present-value budget constraint, or solvency constraint, and the assumption that the interest rate exceeds the growth rate imply that, given spending, current tax cuts imply future tax increases. Such policies boost the outstanding stock of public debt, raise the world interest rate, crowd out capital formation at home and abroad, and lead to a loss of foreign assets. Provided that a "supply-side-response-corrected" transfer criterion is satisfied, the terms of trade will improve in the short run and worsen in the long run.

"Precautionary" Saving Revisited: Social Security, Individual Welfare, and the Capital Stock

R. Glenn Hubbard
Working Paper No. 1430
August 1984

This paper focuses on precautionary saving for uncertain longevity and on the annuity insurance aspects of Social Security within the life-cycle framework. There are three principal findings. First, I review the evolution of Social Security as a response to missing markets for providing insurance for consumption in the face of lifetime uncertainty. A simple life-cycle model shows that even an actuarially fair, fully funded Social Security system can reduce national saving. Second, to the extent that the introduction of Social Security reduces the size of accidental bequests, the net effect on the consumption of subsequent generations is diminished. Finally, consideration of the welfare gains from compulsory Social Security requires an examination of the trade-off between the benefits to early participants from access to the annuities and the

costs to later generations of a lower capital stock. Across a range of parameter values, the partial equilibrium impact of Social Security on consumption is reversed. The introduction of an explicit bequest motive mitigates both the initial impact of Social Security on saving and the long-run welfare loss from the introduction of Social Security.

Tied Wage-Hours Offers and the Endogeneity of Wages

Shelly Lundberg
Working Paper No. 1431
August 1984
JEL No. 824

In the standard model of labor supply, each worker is a price taker, where the relevant price is an hourly wage rate that is fixed in the short run, and that does not depend on the number of hours supplied. With this basic assumption, the wage can be regarded as exogenous for the purpose of estimating a labor supply function. This paper proposes and implements a pair of tests for the exogeneity of wages in a longitudinal labor supply model, and for the particular failure of exogeneity associated with jobs that offer wage-hour packages.

The first test is very simple—it amounts to a test of whether hours Granger-cause wages at the individual level. The second test involves a simultaneous estimation of labor supply and wage offer equations. Both tests indicate that the offered wage is related to hours worked, although, for this sample, the offer locus is very flat. The principal conclusion is that labor supply equations cannot be properly estimated in isolation from the process generating wages, even when long time series are available on a sample of individuals.

The Effects of Market Demand, Technological Opportunity, and Research Spillovers on R and D Intensity and Productivity Growth

Adam B. Jaffe
Working Paper No. 1432
August 1984
JEL No. 621

This paper uses data on sales and patent distribution to establish the market and technological "positions" of firms. I develop a notion of technological proximity of firms in order to quantify potential R and D spillovers. I then explore the importance of the position variables and the potential spillover pool in explaining R and D intensity, patent productivity, and TFP growth.

I find that both technological and market positions are significant in explaining R and D intensity, and that the technological effects are significant in explaining patent productivity. I cannot distinguish between the two effects in explaining TFP growth. Spillovers are important in all three contexts. Firms in an area where there is a high level of research by other firms do more R and D themselves, they produce more patents per R and D dollar, and their productivity grows faster, even after controlling for the increased R and D and patents. These effects are present while controlling for both industry and technological position effects.

Debt and Taxes in the Theory of Public Finance

Martin Feldstein
Working Paper No. 1433
August 1984
JEL No. 320

If a specified amount of government spending must be financed, how should that finance be divided between taxes and government borrowing? In the case of a *temporary* increase in government spending, it has been argued that debt finance is optimal because the small increments in all future tax rates needed to finance interest payments involve a smaller excess burden than the single large increase in tax rates that would be required to avoid an initial increase in the national debt. This argument ignores the excess burden of debt finance that results if the initial capital stock is smaller than optimal (for example, because of taxes or capital income).

The first section of this paper shows how the debt finance advantage of a small increase in tax rates can be explicitly balanced against the disadvantage of the excess burden that arises from additional debt. The analysis shows that, with plausible parameter values, the excess burden of debt finance is likely to outweigh the advantage of avoiding a large single tax change. Therefore, financing a temporary increase in government spending by an immediate tax increase may be preferable to debt financing.

The second section examines the appropriate response to a *permanent* increase in government spending and shows that such spending cannot be financed by a permanent increase in government debt. Moreover, whenever the golden rule level of capital intensity is an optimality condition independent of the level of government spending, any increase in government spending should be matched by an equal increase in tax revenue.

Can an Increased Budget Deficit Be Contractionary?

Martin Feldstein
Working Paper No. 1434
August 1984
JEL No. 131

This paper shows how a *negative* fiscal multiplier is possible in a two-sector economy that is otherwise similar to the traditional one-sector Keynesian analysis. The key to this surprising possibility is that an increased budget deficit changes the sectoral balance of demand. A reduction in taxes or an increase in transfer payments raises the demand for consumer goods. At the same time, the rise in the interest rates that results from the deficit causes a fall in the demand for investment goods.

In the one-good economy assumed in both Keynesian and monetarist theories, the intersectoral shift of demand is of no consequence. But when consumer goods and investment goods are explicitly distinguished, the change in the sectoral pattern of demand causes separate changes in the prices of the two kinds of goods. As a result, the overall price level can rise even if the total real volume of output declines. The rise in the overall price level implies a reduction in the real value of the money stock. The contractionary effect of the decline in the real money stock can more than offset the direct expansionary effect of the increased deficit. The net effect of the increased deficit can therefore be to reduce real GNP. The paper analyzes the conditions that affect the likelihood that the fiscal multiplier is negative.

It is is important to distinguish this demand composition reason for a negative multiplier from two other possibilities that previously have been discussed: (1) the adverse effect of budget deficits on business "confidence" and (2) the contraction of current demand that occurs if anticipated *future* budget deficits raise real long-term interest rates.

On the Theory of Optimal Taxation in a Growing Economy

Martin Feldstein
Working Paper No. 1435
August 1984
JEL No. 320

This paper considers the following question: Would a "golden rule" capital accumulation policy of equating the marginal product of capital to the rate of growth of population be appropriate in a mixed economy in which the government does not have direct control over resource allocation but can use distortionary taxes to obtain resources for augmenting the private capital stock?

The key result derived here is that the golden rule level of capital intensity remains optimal if the tax structure that prevails at the equilibrium does not alter the individual labor supply. This is true even if the constancy of labor supply represents a balancing of income effects and substitution effects of a distortionary tax. In contrast, if the form of the tax and the nature of the utility function imply that labor supply is distorted, the optimal capital intensity in general will not correspond to the golden rule level.

Adjusting the Gross Changes Data: Implications for Labor Market Dynamics

James M. Poterba and **Lawrence H. Summers**
Working Paper No. 1436
August 1984
JEL Nos. 821, 813, 826

This paper develops a procedure for adjusting the gross changes data in the Current Population Survey for the effects of reporting errors. The corrected data suggest that the labor market is much less dynamic than has frequently been suggested. Conventional measures may understate the duration of employment by as much as 80 percent and overstate the extent of movement into and out of the labor force of several hundred percent. The adjusted data also throw into sharp relief demographic differences in patterns of labor market dynamics.

Speculative Attack and the External Constraint in a Maximizing Model of the Balance of Payments

Maurice Obstfeld
Working Paper No. 1437
August 1984
JEL No. 431

This paper uses a balance-of-payments model where individual preferences are explicitly specified to analyze inevitable transitions between fixed and floating exchange rate regimes. The goal is to assess the analogy between speculative attacks in foreign exchange markets and attacks on official price-fixing schemes in natural resource markets. In discrete time the analogy with resource markets is only partially correct, for in a deterministic model the collapse of a fixed rate may be characterized by two successive attacks. The two-attack equilibrium is peculiar to discrete-time analysis, however. In the continuous-time limit of discrete-time models there is a single attack timed so as to rule out an anticipated discrete jump in the exchange rate.

Balance-of-payments models differ from models of nonrenewable resources in that foreign exchange reserves may be borrowed from abroad. The paper, therefore asks whether there are limits to central bank borrowing possibilities. In an idealized world where all private income is subject to lump-sum taxation, central bank reserves can become infinitely negative with no violation of the public sector's intertemporal budget constraint. Nonetheless, a growth *rate* of domestic credit that exceeds the world interest rate, if maintained indefinitely, leads to violation of the constraint in the model developed in this paper.

Intercountry Comparisons of Labor Force Trends and of Related Developments: An Overview

Jacob A. Mincer
Working Paper No. 1438
August 1984

This paper, originally presented at a conference in Sussex, England, in June 1983, is a survey of analyses of growth of women in the labor force in 12 industrialized countries. The main focus of the conference papers and of this survey is on growth of the labor force of married women in 1960–80. Trends in fertility, family mobility, and wages also receive attention as related developments.

Growth in the married women's labor force was observed in all countries, except for the USSR after 1970, when labor force rates of women reached the level of the rates of men. Growth rates differ among countries. They apparently respond to growth in real wages and/or to growth in education, but response elasticities differ among countries. Estimates of these elasticities included in the country paper were helpful in predicting the trends.

Other findings include ubiquitous declines in fertility and the growth of divorce in the 1970s. Both developments are related to longer-run labor force growth. In all countries wages of women were lower than wages of men. The 1960 average gap of 38 percent narrowed to 29 percent in 1980. Factors related to these trends, including public policy, are discussed in the survey.

Debt Policy and the Rate of Return Premium to Leverage

Alex Kane, Alan J. Marcus, and **Robert L. McDonald**
Working Paper No. 1439
August 1984
JEL No. 313

Equilibrium in the market for real assets requires that the price of those assets be bid up to reflect the tax shields that they can offer to levered firms. Thus there must be an equality between the market values of real assets and the values of optimally levered firms. The standard measure of the advantage to leverage compares the values of levered and unlevered assets and can be misleading and difficult to interpret. We show that a meaningful measure of the advantage to debt is the extra rate of return, net of a market premium for bankruptcy risk, earned by a levered firm relative to an otherwise identical unlevered firm. We construct an option valuation model to calculate such a measure and present extensive simulation results. We use this model to compute optimal debt maturities, show how this approach can be used for capital budgeting, and discuss its implications for the comparison of bankruptcy costs versus tax shields.

International Policy Coordination in Historical Perspective: A View from the Interwar Years

Barry J. Eichengreen
Working Paper No. 1440
September 1984
JEL Nos. 040, 400

This paper examines the international financial relations of the interwar period to see what light this experience sheds on current concerns over the coordination of international policy. The analysis proceeds in three parts. The first part considers the role for policy coordination as viewed by contemporaries at the start of the period; it takes as a case study the Genoa Economic and Financial Conference of 1922. Efforts at Genoa to coordinate policies ended in failure; the second part therefore considers the effects of noncooperative strategies within the framework of the interwar gold standard. The analytical model developed in this section suggests that the failure to coordinate policies lent a deflationary bias to the world economy that may have contributed to the onset of the Great Depression. The third part asks what policymakers learned from this failure to coordinate policies, taking evidence from the next effort to establish a framework for international financial collaboration—the Tripartite Monetary Agreement of 1936.

Taxes and Ownership Structure: Corporations, Partnerships, and Royalty Trusts

E. Philip Jones and **Robert A. Taggart, Jr.**
Working Paper No. 1441
September 1984
JEL No. 520

This paper investigates the effect of taxes on the equilibrium ownership structure of productive assets.

Ownership structure includes the traditional choice between debt and equity financing but also the larger choice between corporate and partnership forms.

A key feature of these alternative forms is that corporations are subject to taxation at both the corporate and investor levels, whereas partnerships are not. At the same time, depreciation and interest tax shields are taken at the corporate tax rate for corporate assets and at investors' tax rates for partnership assets. We find that assets endowed with excess, noninterest tax deductions are best held in partnership form by investors in high tax brackets. Assets whose allowed deductions are low enough to generate a net tax liability in corporate form are best held as partnerships by investors in low tax brackets. All other assets are held in the corporate sector and are financed in a manner consistent with Miller's (1977) capital structure equilibrium.

We argue that our analysis illuminates the tax aspects of such transactions as mergers and sales or spin-offs of corporate assets to partnerships and royalty trusts. We also show that our results afford a simple characterization of the decision to lease or buy.

Theories of Wage Rigidity

Joseph E. Stiglitz
Working Paper No. 1442
September 1984

This paper considers two sets of theories that attempt to explain wage rigidities and unemployment: implicit contract theories and efficiency wage theories. The basic thesis of the paper is that the former (set of theories) does not provide a convincing explanation of the kind of wage rigidity associated with cyclical unemployment, while the latter set of theories does.

I consider several of the more recent versions of implicit contract theory. Implicit contracts with asymmetric information may give rise to overemployment rather than underemployment. The forms of contracts to be expected, if asymmetric information considerations were paramount, are not observed. Other versions of the asymmetric information-implicit contract model, explicitly long term in nature, may give rise to full employment. One version of implicit contract theory, which gives rise to layoffs, occurs when search is costly and cannot be monitored. But, even this extension does not explain certain important features of observed patterns of unemployment.

In contrast, the efficiency wage models not only provide an explanation of the existence of unemployment equilibrium in competitive economies but also provide part of the explanation of the observed patterns of unemployment. Moreover, they explain why different firms may pay similar workers different wages, why wages may be sticky, why firms may not lose much if they fail to adjust their wages, and why, when they adjust their wages optimally, they adjust them slowly.

The policy implications of the efficiency wage model are markedly different from those of models in which wages are absolutely rigid and from those in which unemployment arises from asymmetric information.

Are Tax Cuts Really Expansionary?

N. Gregory Mankiw and **Lawrence H. Summers**
Working Paper No. 1443
September 1984
JEL No. 321

In this paper, we reexamine the standard analysis of the short-run effect of a personal tax cut. We argue that consumer spending generates more demand for money than other components of GNP. Therefore, tax cuts, by stimulating consumer spending and thereby increasing the demand for money, may depress aggregate demand. We examine a variety of evidence and conclude that the necessary condition for tax cuts to be contractionary is probably satisfied in the U.S. economy.

Are Business Cycles Symmetric?

J. Bradford DeLong and **Lawrence H. Summers**
Working Paper No. 1444
September 1984
JEL No. 131

This note shows that, contrary to widespread belief, there is little evidence that the business cycle is asymmetric. Using American data for the prewar and postwar periods and data on five other major OECD nations for the postwar period, we are unable to support the hypothesis that contractions are shorter and sharper than expansions. We conclude that there is not much basis for preferring some version of traditional cyclical techniques to more modern statistical methods.

The Use of Expected Future Variables in Macroeconometric Models

Ray C. Fair
Working Paper No. 1445
September 1984

In this paper, I test a more sophisticated expectational hypothesis than is traditionally used in the specification of macroeconometric models. I assume that economic agents use a vector of variables (Z_t) in forming their expectations for the next period and beyond. These expectations may or may not be rational in the Muth sense.

The results provide some evidence in favor of the more sophisticated hypothesis, but they are not strong enough to allow much weight to be put on it. The evidence in favor of the hypothesis is strongest regarding the responses of households to future wages and prices in their decisions about consumption and labor supply, and for the Fed's response to future inflation rates.

In the paper I also examine the sensitivity of the policy properties of my macroeconometric model to the more sophisticated hypothesis. The properties are not sensitive for a policy action in which government expenditures are changed. They are somewhat sensitive for an action in which personal tax rates are changed. In the latter case the properties are also sensitive to whether or not the policy action is anticipated.

Retail Pricing, the Time Distribution of Transactions, and Clearance Sales

Edward P. Lazear
Working Paper No. 1446
September 1984

Sellers of new products are faced with having to guess demand conditions in order to set price appropriately. But sellers are able to adjust price over time and to learn from past mistakes. Additionally, it is not necessary that all goods be sold with certainty. It is sometimes better to set a high price and to risk no sale. This paper models the process to explain retail pricing behavior and the time distribution of transactions. Prices start high and fall as a function of time on the shelf. The initial price and rate of decline can be predicted; they depend on the thinness of the market, the proportion of customers who are "window shoppers," and other observable characteristics. In a simple case, when prices are set optimally, the probability of selling the product is constant over time. Among the more interesting predictions of the paper is that women's clothes may sell for a higher average price than men's clothes, given similar cost, even in a competitive market. Another is that the initial price level and the rate of price decline are positively related to the probability of selling the good. Other observable relationships are also discussed in the paper.

New Estimates of the Value of Federal Mineral Rights and Land

Michael J. Boskin, Praveen Kumar, Terrance O'Reilly, and **Marc S. Robinson**
Working Paper No. 1447
September 1984

We calculate a time series of the value of federal mineral rights in oil and natural gas by using various estimates of proven and unproven reserves and time series on federal government royalties and bonus payments. We also present estimates of the components of the revaluation of this series through time.

The results are striking. Federal mineral rights are the single largest item in a complete balance sheet of the federal government, dominating the total value of tangible capital or financial assets. In 1981, for example, we estimate that the value of federal oil and gas rights exceeded $800 billion, which was larger than the privately held national debt. The paper also presents estimates of various confidence bounds on the value of oil and natural gas. The methodology can be extended to other minerals, although we have not done so; our estimate is a lower bound on the total value of all mineral rights.

The paper also expands and extends previous estimates of the value of federal land. New data, and attention to the detailed decomposition of federal land holdings by type, lead to substantially larger estimates of the value of federal land than have been presented in previous research. Our estimate is that by 1981 the total value of federal land was $175 billion.

Estimating the Long-Run Relationship between Interest Rates and Inflation: A Response to McCallum

Lawrence H. Summers
Working Paper No. 1448
September 1984
JEL No. 132

This note demonstrates that Bennett McCallum's recent critique of low-frequency estimates of macroeconomic relationships is of little empirical significance. It also demonstrates that readily available and frequently used techniques can be employed to diagnose the problem that McCallum raises. Finally, it shows that the standard critique of expectational distributed lags is not warranted once the role of learning by economic agents is recognized.

Relative Factor Price Changes and Equity Prices

Peter J. Elmer and **Patric H. Hendershott**
Working Paper No. 1449
September 1984
JEL No. 313

This paper suggests that the decline in equity prices, and thus in the average Tobin's q, during the 1970s may be attributable to changes in expected relative

factor prices. More specifically, q is shown to be a negative function to the extent to which current relative factor price expectations differ from those that existed when capital was put in place. Because relative factor prices became more volatile after 1967, the observed decline in average q, and thus in stock prices, can be explained by the "relative price" hypothesis.

The Changing Cyclical Variability of Economic Activity in the United States

J. Bradford DeLong and **Lawrence H. Summers**
Working Paper No. 1450
September 1984
JEL No. 131

This paper examines the changing cyclical variability of economic activity in the United States. It first shows that the decline in variability since World War II cannot be explained by changes in the composition of economic activity nor by the avoidance of financial panics. We then show that increased automatic stabilization by the government, and the increased availability of private credit after World War II, combined to stabilize consumption and to reduce the variability of aggregate demand. The main argument of the paper holds that greater price rigidity in recent times may have contributed to economic stability by preventing destabilizing deflations and inflations. We present empirical evidence to support this proposition.

Financial Intermediation in the United States

Benjamin M. Friedman
Working Paper No. 1451
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JEL No. 314

The principal rationales that give rise to financial intermediation are benefits of size and specialization, the diversification of specific asset risks, and the pooling of even broader classes of risk. Each is a significant factor in accounting for the U.S. economy's reliance on intermediation. In addition, since World War II a further important factor has been the economy's continual shift away from government debt toward the debt of private nonfinancial entities, including individuals and businesses. Nonfinancial investors (primarily individuals) have exhibited a strong preference for holding the debt of these nonfinancial borrowers via financial intermediaries rather than directly.

As the U.S. economy's overall reliance on financial intermediaries has increased during the postwar period, some specific kinds of intermediary institutions have grown more rapidly than others. Commercial banks have about held their own in relative terms, while steadily shifting their basic business back toward lending activities and away from securities investments. Nonbank deposit intermediaries have grown in relation to overall economic and financial activity, as the growth of savings and loan associations has more than offset the (relative) decline of mutual savings banks. Among private nondeposit intermediaries, life insurance companies have declined in relative terms while both public- and private-sector pension funds have shown exceptionally rapid growth. Finally, the federal government's participation in the financial intermediation process in the United States has also increased rapidly during these years, in part as a result of the pressures created by the economy's shift to private instead of government debt.

Unionism Comes to the Public Sector

Richard B. Freeman
Working Paper No. 1452
September 1984

This paper argues that labor relations in the public sector are best understood in the framework of a union's ability to *shift* demand curves rather than to raise wages, as is the case in the private sector. It reviews the literature on public sector labor relations and finds that: (1) unionism in the public sector has flourished as a result of changes in laws; (2) the effects on wages of unions in the public sector are likely to have been underestimated; (3) unions in the public sector have a somewhat different effect on wage structures than do unions in the private sector; (4) compulsory arbitration reduces strikes but has no clear-cut impact on the level of wage settlements; (5) unions in the public sector have diverse effects on nonwage outcomes as do unions in the private sector.

The paper argues that by raising both the cost of public services (taxes) and the amount of services, unionism in the public sector involves a different welfare calculus than does unionism in the private sector.

The Causes of Inflation

Frederic S. Mishkin
Working Paper No. 1453
September 1984
JEL Nos. 134, 310

This paper considers why sustained inflations occur and how monetary policy is involved in the inflation

process. In the last ten years, there has been a convergence of views in the economics profession on the causes of inflation. I conclude that as long as inflation is appropriately defined to be a sustained condition, macroeconomic analysis, whether of the monetarist or the Keynesian persuasion, leads to agreement with Milton Friedman's famous dictum, "Inflation is always and everywhere a monetary phenomenon."

However, the conclusion that inflation is a monetary phenomenon does not settle the issue of what causes it. We also need to understand why monetary policy that is inflationary is followed. I find that the underlying cause of inflation in the United States has been monetary policy designed to accommodate a target of high employment. Expectations have also been important in the inflationary process. Therefore, to prevent the resurgence of inflation at a minimum cost in terms of unemployment and lost output, monetary policy must be both nonaccommodating and credible.

Is There a Lag?

Bronwyn H. Hall, Zvi Griliches, and **Jerry A. Hausman**
Working Paper No. 1454
September 1984

This paper extends earlier work on the relationship between R and D and patents (Pakes–Griliches, 1980, and Hausman, Hall, and Griliches, 1984) to a larger, but shorter (in time) panel of firms. The paper focuses on solving a number of econometric problems associated with the discreteness of the dependent variable and the shortness of the panel in the time dimension. We compare weighted, nonlinear least squares as well as Poisson-type models as solutions to the first problem. In attempting to estimate a lag structure on R and D in the absence of a sufficient history of the variable, we take two approaches: first, we use the conditional version of the negative binomial model; and second, we estimate the R and D variable itself as a low-order stochastic process and use this information to control for unobserved R and D. R and D itself turns out to be fairly well approximated by a random walk. Neither approach yields strong evidence of a long lag. The available sample, although numerically large, turns out not to be particularly informative on this question. It does not reconfirm, however, a significant effect of R and D on patenting (with most of it occurring in the first year) and the presence of rather wide and semipermanent differences among firms in their patenting policies.

Estimating the Covariates of Historical Heights

T. James Trussell and **Kenneth W. Wachter**
Working Paper No. 1455
September 1984

Data on human height can provide an index that may measure changes in the standard of living more accurately than the more conventional index of real wages. Data on height, like those on real wages, are relatively abundant and extend back to the seventeenth century. In a previous paper, we developed and tested procedures for estimating the mean and standard deviation of the distribution of human height when the sample is distorted to an unknown extent by missing observations at lower heights. The purpose of this analysis is to extend our techniques so that we can estimate the covariates of height. Such an extension is necessary when one tries to draw inferences about the causes of shifts in the height distribution over time in order to control for changes in sample composition.

The Capital Inflows Problem Revisited: A Stylized Model of Southern Cone Disinflation

Maurice Obstfeld
Working Paper No. 1456
September 1984
JEL No. 431

In the late 1970s, countries in Latin America's Southern Cone attempted to lower domestic rates of inflation by progressively reducing a preannounced rate of devaluation in the exchange rate. The stabilization programs gave rise to massive capital inflows, appreciation of the real exchange rate, and current account deficits. This paper develops a stylized intertemporal framework in which one can study the effects of a preannounced scheme for disinflation that is oriented toward exchange rates. I show that even when agents have perfect foresight and markets clear continuously, the problem of "capital inflows" and the associated real appreciation may result.

While unanticipated, changes in inflation are neutral in the paper; anticipated inflation is neutral only in exceptional circumstances. A preannounced disinflation alters the path of a real domestic interest rate that is based on expenditures and depends on expected changes in the prices of liquidity services and nontradable consumption goods. Alternatively, by raising future real balances, anticipated disinflation may cause an incipient change in the time path of the marginal utility of consumption, leading agents to revise their consumption plans. It is noteworthy that the long-run

effect of disinflation on the real exchange rate more than reverses its short-run effect. If disinflation occasions a real appreciation on impact, the relative price of tradables must rise in the long run so that the economy can service the additional external debt incurred in the transition period.

The Economics of Content Protection

Michael L. Mussa
Working Paper No. 1457
September 1984
JEL Nos. 411, 422

In a model that allows smooth substitution between domestic and imported inputs, content protection distorts the choice of input but does not force a divergence between price and unit production cost. Content protection biases gains in technical efficiency away from those who save domestic input and toward those who save imported input. By increasing the derived demand for the domestic input, a content requirement that is marginally effective benefits the suppliers of this input. Increases in the content requirement above the marginally effective level increase such benefits, provided that the price elasticity of demand for the final product is less than a critical value. The consequences of content protection are not materially affected by monopoly in the domestic market for final products nor by monopsony in the market for domestic input unless such monopoly or monopsony is created by content protection. The situation of a monopolistic supplier of the domestic input is enhanced by content protection.

The Adjustment Process and the Timing of Trade Liberalization

Michael L. Mussa
Working Paper No. 1458
September 1984
JEL Nos. 411, 422

This paper examines the appropriate time path of the tariff rate for a small open economy that has decided to move to free trade and away from protection of industries that compete with imports. Adjustment costs for moving resources to alternative uses do not provide a rationale for gradual adjustment of the tariff rate because, in the absence of distortions, optimizing agents who are rational will make investment decisions about adjustment that are socially appropriate when they are given correct price signals. Some distortions of the adjustment process imply that gradual adjustment of the tariff rate is more desirable than slow adjustment, but other distortions imply that subsidizing imports in the short run is desirable in order to speed movement of resources out of previously protected industries. Concern with the effects on income redistribution of reductions in the tariff rate (which usually injure owners of factors in previously protected industries) does provide a general rationale for a gradual move to free trade. How the unemployment consequences of a reduction in tariffs influence the appropriate path of commercial policy depends on the response of the rate of resource allocation to the level of unemployment in previously protected industries.

An Analysis of the Health and Retirement Status of the Elderly

Robin C. Sickles and **Paul J. Taubman**
Working Paper No. 1459
September 1984
JEL Nos. 211, 212, 822, 913, 915, 918

In this paper we specify and estimate a model with which we study both the health and the retirement status of the elderly. Standard linear estimators, which assume that these variables are continuous, are not appropriate. We prefer categorical estimation techniques. Our model differs from previous work in that we have longitudinal data and random effects that are correlated over time for different individuals. The problem is made more complicated because there is sample truncation, which could potentially bias coefficient estimates, since approximately 20 percent of the individuals in our sample die. We outline the full-information, maximum-likelihood estimator for such a model and implement it in our empirical anlysis. With our structural estimates we analyze, among other things, the degree to which endogenously determined health status affects the probability of retirement and how changes in Social Security benefits and eligibility for transfer payments modify both healthiness and the demand for leisure.

An Examination of Aggregate Price Uncertainty in Four Countries and Some Implications for Real Output

Richard T. Froyen and **Roger N. Waud**
Working Paper No. 1460
September 1984
JEL Nos. 130, 210

This study constructs measures of aggregate price uncertainty for four industrialized countries (Canada, West Germany, Great Britain, and the United States) and attempts to assess the extent to which more rapid

and more variable price changes appear to have contributed to increased aggregate price uncertainty. For this purpose we examine the relationship across countries and through time between the rate of inflation, the variability of inflation, and our measures of price uncertainty. In addition, we use our measures of price uncertainty to examine the hypothesis, variously put forward by Marshall, Keynes, Milton Friedman, and Okun, that higher aggregate price uncertainty is likely to result in lower real output and higher unemployment. Our results suggest that the higher and more variable inflation of the 1970s did increase uncertainty about the aggregate price level in Canada, Great Britain, and the United States, but not in West Germany. Finally, we did find evidence of a significant effect on output of aggregate price uncertainty for Canada and the United Kingdom, but not for the United States or West Germany.

A General Equilibrium Model of Taxation That Uses Microunit Data: With an Application to the Impact of Instituting a Flat-Rate Income Tax

Joel Slemrod
Working Paper No. 1461
September 1984
JEL No. 321

This paper develops a methodology by integrating the information from a microunit data file of tax returns into the framework of a general equilibrium model of taxation with endogenous financial behavior. It discusses how the available information on capital income flows can be used to impute portfolios to households, and how these portfolios and the other observed characteristics of the households can be made consistent with expected utility maximization.

In order to illustrate the value of this methodology, I apply it to a study of the general equilibrium impact of instituting a flat-rate income tax system. The analysis reveals that there would be substantial changes in the pattern of rates of return and the distribution of asset ownership. The sectoral allocation of capital does not change substantially, though. The microunit database shows that, in general, lower-income households are worse off and higher-income households are better off, although there is substantial dispersion of welfare change within income groups.

Because these results rest on a very simple model of the economy and a particular data imputation procedure and parameterization, they should not be taken literally as a guide to policy decisions. Nevertheless, they do indicate that substantial insight can be provided by integrating microunit data with general equilibrium tax modeling.

The Persistence of Volatility and Stock Market Fluctuations

James M. Poterba and **Lawrence H. Summers**
Working Paper No. 1462
September 1984
JEL No. 313

This paper examines the potential influence of changes in volatility of stock market prices on the level of stock market prices. It demonstrates that volatility is only weakly serially correlated, implying that shocks to volatility do not persist. Therefore, these shocks can have only a small impact on stock market prices, since changes in volatility affect expected required rates of return for relatively short intervals. These findings lead us to be skeptical of recent claims that the stock market's poor performance during the 1970s can be explained by volatility-induced increases in risk premiums.

Host-Country Regulation and Other Determinants of Overseas Operations of U.S. Motor Vehicle and Parts Companies

Ksenia Kulchycky and **Robert E. Lipsey**
Working Paper No. 1463
September 1984
JEL Nos. 441, 442

The likelihood that a U.S. auto company will carry out some manufacturing operations in a country is mainly a function of market characteristics such as aggregate and per capita income. However, that likelihood is increased by the imposition of local content requirements. The entry of U.S. producers of parts into manufacturing in a host country is determined mainly by market size and by the presence of U.S. auto producers. Therefore, it is indirectly promoted by local content rules.

The scale of production by individual auto producers does not appear to be increased by a country's imposition of local content requirements. It may even be reduced, with the result that inefficiently small operations might proliferate. The scale of a U.S. company's production of parts depends on market size and on the extent of activity of U.S. auto companies.

The combination of induced entry of auto and parts producers with no effect or a negative effect on the scale of their individual operations suggests that countries imposing these restrictions do raise the aggregate level of local auto and parts production. However, they presumably pay some penalty in terms of suboptimal scale and consequently high costs of production.

Export Subsidies and International Market Share Rivalry

James A. Brander and **Barbara J. Spencer**
Working Paper No. 1464
September 1984
JEL No. 422

Countries often perceive themselves as being in competition with each other for profitable international markets. In such a world, export subsidies can appear to be attractive policy tools from a national point of view, because they improve the relative position of a domestic firm in noncooperative rivalries with foreign firms, thus enabling the domestic firm to expand its market share and earn greater profits. In effect, subsidies change the initial conditions of the game that firms play. The terms of trade move against the subsidizing country, but its welfare can increase because price exceeds the marginal cost of exports under imperfect competition. International, noncooperative equilibrium is characterized by such subsidies, even though they are jointly suboptimal, on the part of exporting nations.

Argentina since Martinez De Hoz

Rudiger Dornbusch
Working Paper No. 1466
September 1984

This paper reviews macroeconomic events and policies in Argentina in 1981-84. In that period, inflation, which had decelerated to less than 100 percent, resumed and reached more than 600 percent in mid-1984. The real exchange rate, which had appreciated during the period of disinflation, depreciated sharply; in the end-phase, real wages grew more than 40 percent. These events, by North Atlantic standards, are dramatic and the paper attempts to sort out the main issues and connections among them. I focus special attention on the role of the real exchange rate and its relation to real wages, on the determinants of the black market premium for foreign exchange, and on the budget.

International Comparison of the Sources of the Productivity Slowdown, 1973-82

John F. Helliwell, Peter Sturm, and **Gerard Salou**
Working Paper No. 1465
September 1984

This paper uses an integrated model of aggregate supply to analyze the post-1973 slowdown in productivity growth in the seven major OECD economies. Factor substitution, unexpected changes in demand, profitability, and inventory disequilibrium all contribute to the explanation. It is based on a three-factor, nested, aggregate production function that includes energy and postulates Harrod-neutral, disembodied, technical progress. The model is first applied to the seven countries separately assuming constant (although country-specific) rates of technical progress. The model provides empirical evidence that this rate of progress has in fact slowed down for several of the faster-growing countries, even after it is adjusted for factor substitution and cyclical factors. The model is reestimated, and the sources of productivity decline are recalculated, on the hypothesis that rates of efficiency growth in other countries are converging with those in the United States.

How Long Is a Spell of Unemployment? Illusions and Biases in the Use of CPS Data

Nicholas M. Kiefer, Shelly J. Lundberg, and **George R. Neumann**
Working Paper No. 1467
September 1984

Most data used to study the duration of unemployment spells come from the Current Population Survey, which is a point-in-time survey and gives an incomplete picture of the underlying distribution of duration. We introduce a new sample of completed unemployment spells obtained from panel data and apply CPS sampling and reporting techniques to replicate the type of data used by other researchers. Distributions of predicted duration derived from this CPS-like data are then compared to the actual distribution. We conclude that the best inferences that can be made about unemployment durations using CPS-like data are seriously biased.

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